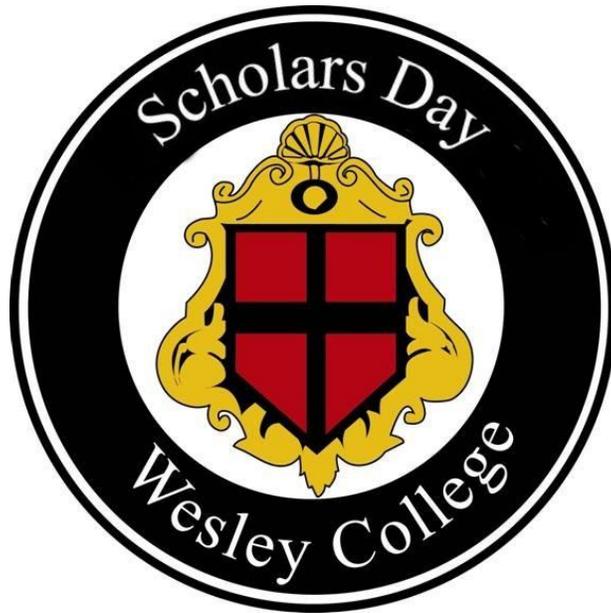


Scholars Day
PROGRAM
&
ABSTRACTS



Wesley College
Dover, Delaware

April 19, 2018

About Scholars Day at Wesley College

Scholars Day has grown and become a signature annual event at Wesley College in Dover Delaware during which students present their research works and other creative activities from all disciplines to the entire community of friends and family members as well as faculty, fellow students, staff, industry leaders, members of government, and grant agencies that often attend the Scholars Day of festivities. The first Scholars Day took place on April 11, 2007. Upon approval by the then Dean of Academic Affairs (Dr. Paul DeGategno), the Faculty Scholars Day Committee (then called Scholars Day Task Force) co-chaired by Dr. Jeffrey Gibson (then a new faculty member) and Dr. Bruce Allison organized it. The first Scholars Day began with an opening address at exactly 1:00pm on that day by the then President of Wesley College, Dr. Scott D. Miller. Thirty-five students mentored by sixteen faculty members made both oral and poster presentations on that occasion. Other members of the first Scholars Day Committee for that first year were Dr. Jessica James, Dr. Karen Panunto and Dr. H. Earl Roberts.

Over the years and with the help of grant support from various grant efforts led by Dr. Malcolm D'Souza, the Scholars Day under the leadership of various Scholars Day committees has blossomed into a magnificent event. Various initiatives of the Scholars Day are made possible by the resources provided by the grant money. The introduction of Scholars Day T-shirts was a big milestone in the life of Scholars. It served both as incentive (to the students, faculty mentors, moderators, etc.) and advertisement of Scholars Day to the entire community. Around the year 2010, Scholars Day was approved by the full faculty as a standing faculty committee whose members were no longer appointed but elected by the entire faculty. In 2017, the six-person Scholars Day Committee chaired by Dr. Agashi Nwogbaga introduced both the polo shirts and sweat vests for faculty mentors to serve as enhanced incentives for their labor of love in mentoring and nurturing our students. The introduction of the polo shirts and vests also marked a key milestone and served as a visible token of appreciation for their voluntary mentorship. Scholars Day is made possible by the hard work and dedication of the student presenters and their faculty mentors who work tirelessly on their research and other creative undertakings to present at Scholars Days.

Furthermore, Scholars Day would not be a success without the countless volunteers of students, faculty and staff that step up to help on Scholars Day. But most importantly, Scholars Day would not be a success without the dedication and countless sacrifices made by the members of the Scholars Day Committee that plan and put together the Scholars Day celebration each year. They solicit and review applications and often go extra miles to organize a befitting Scholars Day event. For the Scholars Days of the following years, the Scholars Day Committee has been chaired by the following people: 2007 (Dr. Jeffrey Gibson & Dr. Bruce Allison), 2008 (Dr. Jeffrey Gibson), 2009 & 2010 (Dr. Jack Barnhardt), 2011 & 2012 (Dr. Frank Fiedler), 2013 (Dr. Alban Urbanas), 2014 (Dr. Valerie Perez & Prof. Elizabeth Marchioni), 2015 (Dr. Kraiwinee "Nok" Bunyaratavej & Dr. Derald Wentzien), 2016 (Dr. Brantley Craig), and 2017 & 2018 (Dr. Agashi Nwogbaga). All the Scholars Day Committee members for all these years are listed in the special "Thank You" section towards the end of this program booklet. Special thanks are due to Robert E. Clark II (President of Wesley College) and Dr. Jeffrey Gibson (Provost/VPAA) for their unwavering support of the Scholars Day.

Finally, although Wesley College is a small liberal arts college, over one hundred students from various disciplines have been making presentations at Scholars Days each year in recent years especially this year and it is noteworthy that a number of the undergraduate research activities are sponsored (in part) with grants from the State of Delaware, the NIH-NIGMS-INBRE, the NSF-EPSCoR, the NASA DESGC, and the NSF S-STEM programs.

Schedule of Events

Wells Auditorium (Slaybaugh Hall 107)

1:00 – 1:15 p.m.

Welcome & Opening Remarks

Robert E. Clark II

President of Wesley College

Session I

1:25-2:05 p.m.

Oral Presentations

Art Demonstrations

Session II

2:15-2:55 p.m.

Oral Presentations

Poster Presentations

Musical Performances

Session III

3:05-3:45 p.m.

Oral Presentations

Art Demonstrations

Session IV

3:55-4:35 p.m.

Oral Presentations

Poster Presentations

4:45-6:00 p.m.

Reception & Award Ceremony (College Center 206)

Remarks from Dr. Agashi Nwogbaga

Professor of Mathematics and Chair of Scholars Day Committee

Invited Speaker: Dr. Gulnihal Ozbay

Professor and Extension Specialist in Natural Resource

Delaware State University

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Oral Presentations in

Slaybaugh Hall 104, Cannon Hall 7, Cannon Hall 110

Poster Presentations in College Center Portico (North Circle)

In the event of rain, poster presentations will be in the College Center Lobby.

Musical Performances in the Bennett Chapel

Art Demonstrations/Exhibitions are in the Faculty Lounge and Longwood Hall 101

Invited Speaker



Dr. Gulnihal Ozbay is a Research Professor and Extension Specialist of Natural Resources in the Department of Agriculture and Natural Resources at Delaware State University. She has advised and mentored over 300 undergraduate students in their undergraduate research projects. She has advised over 30 graduate students (27 of them have completed their M.Sc. degrees). She has also served in these committees of other 40 graduate students.

She published over 70 peer reviewed journal articles, five book chapters, and over 50 proceedings, magazines, and extension white papers. She has received several outstanding researcher and service awards at the national, regional, and institutional levels (such as the Prestigious Coastal America Partnership Award,

Distinguished Scientist Award, and Faculty Excellence Award in Research & Creative Activity 9 in 2009; the Faculty Excellence Award in Student Advising in 2010; the Morrison-Evans Outstanding Scientist Award in 2011; and the Faculty Excellence Award in Services & Community Outreach in 2012). She received her Ph.D. in Fisheries and Allied Aquacultures from Auburn University, Auburn, Alabama and earned her M.Sc. degree in Marine Bio-resources from the University of Maine. Her research interests include water quality, habitat restoration, aquatic ecology and health, sustainable marine aquaculture and fisheries, seafood safety, microbial ecology, phytoplankton dynamics, and climate change driven nutrient tracking and their sources.

She has served in the Research Advisory Committee for NOAA Living Marine Resource Cooperative Science Center and Mid-Atlantic Climate Change Advisory Committee and was appointed by the Secretary of the Delaware Department of Natural Resources and Environmental Control as a member of the Delaware Climate Change Vulnerability Assessment Steering Committee for the State of Delaware. She served as a treasurer and secretary for the United States Aquaculture Society and a former Executive Board member for the Atlantic Estuarine Research Society, and chair and co-chair of the Northeast Regional Aquaculture Center Technical Advisory Committee and Technical Advisory Committee for the Northeast Aquaculture Center. She serves as an Editorial Board Member for various journals in aquaculture, environmental and earth science disciplines. She is the Chairperson for the Faculty Research Committee and member of the Honors Council. She has been the institutional lead person for the various climate change related education grants and environmental research programs funded by NSF, USDA-NIFA, and NOAA and one of the lead team members for the Northeast Climate HUB Program. She is an institutional PI for NSF funded Maryland and Delaware Climate Change Education Assessment and Research (MADE-CLEAR) Program that will be completed by August of 2018.

Session I: Oral Presentations

1:25-2:05 p.m.

Panel 1: Cannon Hall 7
Moderator: William Kroen
Assessor: Erin Perchiniak

Chronic Wasting Disease, its effects on White-Tailed Deer, and what it may mean for Delaware
Alena Brown

Analyzing Compendium of Study Supplements for Success in Science Courses
Julia Young

Panel 2: Cannon Hall 110
Moderator: Sharon Wong
Assessor: Brantley Craig

Tender Stages Transition Program
Bradford Melvin

Obesity & Sleep Deprivation Calculus and Implications for College Students
Omasan Uyebi

Panel 3: Slaybaugh Hall 104
Moderator: Alban Urbanas
Assessor: Stephanie Stotts

Long Live Mom and Pop Stores: A study of the natural and healthy groceries retail industry and strategies for competing with the juggernauts
Althea Mignone, Sarah Fryer

Childhood Lost: Happy Meals Can Lead to Obesity and McDonald's Branding Strategy to sell more of them
Christian Earle

Panel 5: Longwood Hall 101
Moderator: Joshua Nobiling
Assessor: Ethan Hawkley

The Journey of Delicate Butterflies
Lily Neff

Session II: Oral Presentations

2:15 – 2:55 p.m.

Panel 1: Cannon Hall 7

Moderator: Robert Contino

Assessor: Julie Fisher

The Impact of the International Field Study in Guatemala

Trevor Derr, Anna Frangia, Marisa Marchegiano, Claneg Samuel, Yuly Rodriguez & Kayla Ryan

Natural Disasters: Hurricanes, Earthquakes, etc. and How Math Helps

Janae Jones

Panel 2: Cannon Hall 110

Moderator: Ben Pingel

Assessor: Donald Lonski

DACA Program

Nicole Bader

Death In Fairytales

Christina McTheny

Panel 3: Slaybaugh Hall 104

Moderator: Elizabeth Marchioni

Assessor: Jordan Kinsey

Hidden Figures of Psychology – Margaret Floy Washburn

Kaitlin Forestieri

Hidden Figures of Psychology – Mamie Phipps Clark

Shelby Segars

Session II: Musical Performances

2:15 – 2:55 p.m.

Panel 5: Bennett Chapel

Moderator: David Laganella

Assessor: James Wilson

Balance

Alexa Cherico

Harmony and Emotion in the Lieder of Franz Schubert

Jacob Sasso

French Melodie Interpretation and Composition

Alana Nicole Walker, Elizabeth Hazlett

Session II: Poster Presentations

2:15 – 2:55 p.m.

Poster 01: The Effects of Temperature Variation on Bean Beetles

Lily Neff, Jordan Brockwell, Christina Roe

Poster 02: Correlations of the Abiotic Factors that Affect the St. Jones Water System

Lily Neff

Poster 03: Proposed Vaccine for Dental Caries Caused by Streptococcus mutans

Kylea Lankford

Poster 04: Comprehending the substituent and solvent effects in ethyl esters of chloroformic acid

Matthew Dina

Poster 06: Comparison of the Rates of Reactions of 3-Chloropropyl Chloroformate and Propyl Chloroformate

Osama Mahmoud

Poster 07: An Occupational Therapy Inter-Professional Approach in a Mental Health Assertive Community

Treatment (ACT) Team

Erica Horton, Jessica Hayes, Lauren Bukowski

Poster 09: Chemistry Rocks

Alexander Jean-Francois

Poster 11: Perceived Harm, Ease of Access, and Social Approval of Prenatal Cannabis Use

Jordan Brockwell

Poster 12: Predicting the Spread of the Zika Virus in the United States

Lily Neff, Jordan Brockwell, Josephine Veeria

Poster 13: Sensory Diets: Knowing the Importance of Who, How, and Why

Jenna Gruwell

Poster 14: Influential Women in the History of Psychology

Destyne Roberts, Kyndal Showell, Luis Arteaga, Ayowunmi Kuforiji

Poster 15: Staphylococcus aureus Infections Vaccine

Aditya Bajaj

Poster 16: Analysis of Water Quality of the St. Jones River

Sydney Hall

Poster 17: Discharge Precipitation Relationship for White Clay Creek in Newark Delaware

Katelynn Fry

Poster 18: How to Get Millennials into the Ball Park Through Partnership Sales

Destiny Davis

Poster 19: The Development of an Occupational Therapy Pro Bono Clinic for Underserved and Disadvantaged Families

Bhumika Patel, Samantha Fulton

Poster 20: Let's Talk About Cultural Competence: A Student Perspective

Ariana Rizzo, Stephanie Mendez

Poster 21: Graduate Teaching Assistantship Program Development for the Masters of Occupational Therapy Program

Danielle Marshall, Matthew Montano

Poster 24: Mothering metamorphosis, managing transitions through Occupational Therapy

LaToya Prioleau, Molly MacMillan

Poster 28: The Correlation Between Asthma and Air Quality

Jayson Feld

Poster 29: Investigating the Potential Medicinal Properties of the Chaga Mushroom

Courtney Dorsey

Poster 30: Keep Calm & Be Productive: The Influence of Interdisciplinary Productivity Standards in Skilled Nursing Facilities on Burnout and Job Satisfaction

Melanie Maffei, Kaitlyn Mears

Poster 31: Patient Advocacy versus Inadequate Facility Staffing: Contributions to Elderly Patient Abuse

Kaylynn Hall

Poster 32: Vegetation Community Response to Large Scale Tidal Marsh Restoration at Prime Hook National Wildlife Refuge in Delaware

Kassandra Rodriguez

Poster 33: Community-Dwelling Elderly Population's Self-Efficacy for Managing Chronic Disease: Impact of a Nursing Student Intervention

Taylor O'Donnell, Angelina Scott, Shelby Schirmer, Rodneisha Scott

Poster 34: Leaving group affects analyses in ROCOX substituents

Jeremy Wirick

Session III: Oral Presentations

3:05-3:45 p.m.

Panel 1: Cannon Hall 7

Moderator: Paul Olsen

Assessor: Kathleen Curran

Tree growth and cellular response: 20 years after a major ice storm in Kent and Sussex, Delaware

Michael Skivers

Comparison and Validation of Two Popular Commercial Genomic DNA Isolation Kits
Adrienne Holliday, Matthew Stone

Panel 2: Cannon Hall 110
Moderator: Ron Douglas
Assessor: Sharon Wong

Perceived Improvements in Activities of Daily Living by Senior Arthritis Patients in Physical Therapy
Taryn Cornish

Rape Culture and Research: Process, Presentation, and Publishing
Kaitlin Forestieri

Panel 3: Slaybaugh Hall 104
Moderator: Mandi Tierney
Assessor: Rebecca Schroding

Being Conscious Through the Bullets: Gun Violence, Mental Health & the Necessity of Change
Betty Lee, Sarah Holt, Ben Janocha

An Investigation of Family Trans-Atlantic Lives: The Remarkable Story of Ayuba Suleiman Diallo (Job Ben Solomon)
James Poole

Session III: Art Demonstrations
3:05 – 3:45 p.m.

Panel 5: Faculty Lounge
Moderator: Tamala Paxton
Assessor: Joshua Nobiling

Spoken Word Performance by SPEAK
Azana-Tatjana Crawley, Savanah Love, Asia Harmon, Noah Drayton, Kai Lee

Session IV: Oral Presentations
3:55-4:35 p.m.

Panel 2: Cannon Hall 110
Moderator: Rebecca Benson
Assessor: Gwen Pursell

Voting Behaviors and Patterns of Black Wesley College Students and Their Potential Impact on The 2020 Presidential Election.
Nyair Stanford

What drives YOU?
Rhiannon Dillon

Session IV: Poster Presentations

3:55-4:35 p.m.

Poster 35: Cellularly Understanding Chamaecyparis thyoides Resiliency to Salinity Intrusion
Olivia Gullledge

Poster 39: Therapeutic Use of Self and Patient Participation
Elizabeth Englert

Poster 40: Study of the Effects of Lymphedema Related Occupational Therapy Services on Breast Cancer
Olubukola Tifase, Seibatu Gaojia, Brandi Moore

Poster 41: HEADS UP Wesley College Football
Shergeel Saleem

Poster 43: Combination of physical therapy and nutrition on recovery following musculoskeletal injury: A systematic review
Ryan Cassidy, Marissa Perez

Poster 44 Non-Athlete Males; Exploring Ways to Increase Retention
Tykera Tolson

Poster 47: Phobia
De'Mari Barnett

Poster 48: Molecular Profiling of Malignant Melanoma in the State of Delaware
Austin Lonski

Poster 49: Estimating Sediment Deposition Rates And The Influence Of Slope Along White Clay Creek Using Riparian Trees
Teric Henry

Poster 50: A spatial analysis of Wesley College Retention Rates
Teric Henry, Katelyn Null

Poster 52: Proposed Respiratory Syncytial Virus Vaccine
Shellby Bowman

Poster 53: ArcMap vs. ArcPro: A Comparison between ESRI Mapping Programs
Michael Skivers

Poster 57: Dorothea Orem
Casie Lewis, Brianna Krebs, Kaitlyn Adams, Whitney Capitano, Whitney Summerall, Bryane Bratten

Poster 58: Concussions in the NFL and the Long Term Effects
Osama Mahmoud

Poster 60: Influences on Academic Performance
Kalani Hollman

Poster 63: Screening Student Bags for Fecal Contamination
Ashley George, Lauren Benedetto

Poster 65: Parent Absenteeism: A comparison of military dependents and children of incarcerated parents
Yasmine Allen, Luis Arteaga

Poster 66 Sea Level Rise on the St. Jones River and the Effect on Forested Areas
Shawn Kauffman

Poster 67: Race Results
Aleya Cummings, Anthony Calcutta

Poster 69: Data-Mining Impacts of U.S' Mortality from Diseases of the Circulatory System, Diabetes, and Neoplasms
Morgan Gannon

Poster 70: Effects of Day Night Cycle on Bean Beetle Allele Frequency
Jeremy Wirick, Aditya Bajaj, Austin Lonski

Poster 73: Air Quality
Anthony Calcutta, Aleya Cummings, Momina Toseef, Cole Grider

Poster 74: Is Delaware a Cancer Cluster?
Samuel Meck, William Barton, Rylee Thompson

Poster 76: Assessing Eastern Oyster Crassostrea virginica Growth and Sustainability and Performance of Aquaculture Gear in the Delaware Inland Bays
Jillian Bradley, Scott Borsum, Melanie Fuoco

Poster 77: The Effect of Land Use on Atmospheric CO2
Joseph Hee

ABSTRACTS

The Effects of Temperature Variation on Bean Beetles

Lily Neff, Jordan Brockwell, Christina Roe

Mentor: Dr. KellyAnn Miller

Bean beetles are an invasive species known to lay eggs on legumes. Precautionary measures must be taken during the importation of legumes from foreign countries to prevent the introduction of this species in the U.S. The purpose of this study was to determine how the allelic frequency of bean beetles would change due to temperature variation. Previous research has demonstrated that beetles thrive in temperatures between 24°C and 30°C. So, the bean beetles were exposed to the following three temperature treatments: 24°C, 30°C, and 40°C. Afterwards, six female and six male beetles were isolated from the 24°C and 30°C temperature treatments. Subsequently, DNA extraction, PCR, NanoDrop 2000 Spectrophotometry, and Gel Electrophoresis were completed to obtain data. An abnormal phenotype was demonstrated in the 24°C temperature treatment. No beetles survived the 40°C temperature treatment. So, further testing could be completed with this variable in terms of prevention.

Correlations of the Abiotic Factors that Affect the St. Jones Water System

Lily Neff

Mentor: Dr. Derald Wentzien

Water temperature, air temperature, turbidity, salinity, specific conductivity, and dissolved oxygen are major abiotic factors that affect an ecosystem. In this study, we determined the correlation between various abiotic factors that affect the St. Jones River System. Multiple sources have collected data on these abiotic factors, but these data sets have not been combined to provide further insights on how these factors interact. It was determined that the strongest relationships were between temperature (°C) and dissolved oxygen (mg/L) and between specific conductivity and salinity. The correlations were significant at the 0.05 level, and all variables were found to have a statistically significant correlation along with only positive correlations being observed.

Proposed Vaccine for Dental Caries Caused by Streptococcus mutans

Kylea Lankford

Mentor: Dr. KellyAnn Miller

Dental caries, commonly referred to as cavities, is a disease that is known to affect almost everyone on a daily basis. The disease of the oral cavity is caused by the pathogen *Streptococcus mutans* and is known to cause at least 61,000 known cases of hospitalizations due to untreated cavities. Untreated cavities can lead to the formation of abscesses, pockets of pus at the tip of the root of a tooth, and in extreme cases could eventually lead to death. The purpose of this project was to create a novel vaccine for a disease. Through the injection of glucosyl-transferases (GTF), C and D of *S. mutans*, it increases several proinflammatory cytokines. Specifically interleukin-6 (IL-6) from T cells, the production of IL-6 would aid in the body's ability to carry out the desired immune response against the *Streptococcus mutans* pathogen.

Comprehending the substituent and solvent effects in ethyl esters of chloroformic acid

Matthew Dina

Mentor: Dr. Malcolm D'Souza

Alkyl chloroformates (ROCOCl) are esters of chloroformic acid that react with amines or ammonia to synthesize useful derivatives of carbamic acid (urethanes). Such derivatives are important in systemic insecticide synthesis and as wood and paint preservatives. Even though widely used, chloroformates in general, are federally listed as being very hazardous pollutants. Thus, it is important to comprehend the influences of aqueous solvent effects on chloroformate chemical compound structure and chemical reactivity.

Rape Culture and Research: Process, Presentation, and Publishing

Kaitlin Forestieri

Mentor: Dr. Albee Mendoza

According to Strain, Jericho, & Saucier (2013), it appears that the rape culture in American educational institutions continues to be perpetuated by normative beliefs and behaviors (i.e., accepting rape myths, being unwilling to intervene). For example, though Stanford University had 259 sexual assault victims between 2002-2013, only 1 perpetrator was expelled (Ziering & Dick, 2015). Thus, the purpose of this study is to examine the variables which most strongly influence acceptance of rape myths in college students in order to inform future research and development of prevention programs. Learning objectives from this presentation will include [a] understanding the factors that influence rape myth acceptance, [b] strategies on how to formulate a research project, [c] a sample timeline to complete the research process, [d] tips on professionalism throughout the scientific process, and [e] transforming an undergraduate paper into an oral presentation.

Comparison of the Rates of Reactions of 3-Chloropropyl Chloroformate and Propyl Chloroformate

Osama Mahmoud

Mentor: Dr. Malcolm D'Souza

Chloroformates are a class of chemical compounds that are esters of chloroformic acid and are used as reagents. They are used in a variety of commonly used products such as pesticides, fungicides, and herbicides. 3-chloropropyl chloroformate is used in herbicidal sulfonamides (EP0209230), heart failure remedies (EP0693283), and oxidation dyes(US2001005914). 3-chloropropyl chloroformate follows pseudo first order kinetics. The chlorine that acts as the leaving group is attached to the third carbon of the organic structure. The Grunwald-Winstein equation was used to calculate the solvolysis rates of the reagent when it was placed in various solvents. The experiment was kept at a temperature of 25.0 °C. An acid-base titration method was used to conduct this research. The rates of 3-chloropropyl chloroformate was compared to the rates of n-propyl chloroformate. The rates of these two compounds are compared to show whether the chlorine leaving group acts as an electron withdrawing group or distributor to either speed up or slow down the reaction. The rates of 3-chloropropyl chloroformate was a lot faster than the other compound in the various solvents because of the electronegative chlorine group acting as an electron withdrawing group, creating a positive region around the carbon. The study of 3-chloropropyl chloroformate can be used to help further the quality and efficiency of heart medication and herbicidal chemicals.

An Occupational Therapy Inter-Professional Approach in a Mental Health Assertive Community Treatment (ACT) Team

Erica Horton, Jessica Hayes, Lauren Bukowski
Mentors: Taliah Cook, Eileen Scanlon

The purpose of this study is to determine efficacy of occupational therapy (OT) in collaboration with other professionals for individuals with severe and persistent mental illness within an Assertive Community Treatment (ACT) team. A mixed method longitudinal design is used to analyze quantitative data and qualitative interviews to assess efficacy of an OT inter-professional approach on individuals with severe and persistent mental illness within an ACT team. This study involved 15 clients with severe and persistent mental illness residing in clustered housing who received OT services within an ACT team. Assessments used included the Canadian Occupational Performance Measure (COPM), an occupational profile, the interest checklist, and ACT team member interviews to measure the change in their perception of the individuals ADL and IADL skills. A post-assessment of the COPM will be administered to 10 clients approximately 12 months after intervention to evaluate efficacy of OT treatment within the ACT team.

Chronic Wasting Disease, its effects on White-Tailed Deer, and what it may mean for Delaware

Alena Brown
Mentor: Dr. Kathleen Curran

Chronic Wasting Disease (CWD) is a contagious neurological disease that causes abnormal behaviors, loss of bodily functions, and even death in several members of the deer family, including white tailed deer, elk, mule, and moose. In infected deer, the conversion of a normal cellular protein to an abnormal form can be detected in the brain, and is used as a means of monitoring in deer populations. This presentation will discuss the causes of chronic wasting disease and how it spreads, and the impact that it has on other wildlife. This study will also examine how CWD can be detected in the brain, how and why monitoring occurs in Delaware, and the importance of monitoring this disease. This research will aim to provide a better perspective for the Delaware community on this neurological disease and provide more public support for wildlife and environmental control.

Chemistry Rocks

Alexander Jean-Francois
Mentor: Dr. Malcolm D'Souza

“Chemistry Rocks”, was the theme for the 2017 DE-ACS Section Annual Family Science Adventure Program at the Independence School, in Newark, Delaware. This program was designed to teach students about the wonders of science while increasing the numbers in the STEM field. Each year approximately 300-350 K-8 students participate. Wesley students in Organic Chemistry II participate in this day long event for additional class-credit, supervise fun and safe hands-on activities and demonstrations that are free and open to the public. The undergraduates formulate experiments, demonstrations and hands-on activities. They also understand content and safety, and learn to budget time and money. The Wesley participants gained valuable experience in their ability to demonstrate scientific principles through this interactive program.

Death In Fairytales
Christina McTheny
Mentor: Susan Redington Bobby

Fairy tale creators often feature narratives in which death plays a prominent role. Fairy tales focus heavily on the death of children, parents, and villains. But why is death so important to fairy tale authors? By exploring these three facets of death in fairy tale narratives, one can learn about the ways death is often the driving force behind both plot and characterization. Furthermore, the prevalence of death as a significant theme in fairy tales normalizes its discussion, bringing a taboo subject into the open, encouraging readers to examine its importance.

Perceived Harm, Ease of Access, and Social Approval of Prenatal Cannabis Use
Jordan Brockwell
Mentor: Dr. Derald Wentzien

Evidence shows an increasing trend in prenatal cannabis use. Adverse birth outcomes due to cannabis use have been documented. Understanding perception toward cannabis use and its relation to prenatal cannabis use is important. This study investigated the correlation between psychosocial factors and cannabis use. Survey participants (N = 160) were on average 28 years old and 26 weeks pregnant, with 18% Hispanic, 41% Caucasian, 39% African American, 55% with 12 or less years of education, and 4% with previous involvement with Child Protective Services. The correlation analysis revealed that women are more likely to use cannabis ever in their lifetime, prior to pregnancy, and during pregnancy if they have a less degree of perceived harm on themselves or their babies, a greater social approval for cannabis use or easier access to cannabis. Education on potential harm of cannabis use for patients and providers with careful consideration for stigmatization is encouraged.

Predicting the Spread of the Zika Virus in the United States
Lily Neff, Jordan Brockwell, Josephine Veeria
Mentor: Dr. Stephanie Stotts

Zika virus is a RNA virus that is spread by the vectors, *Aedes aegypti* and *Aedes albopictus*. Currently, there are no vaccines or treatments for the Zika virus so precautions must be taken by individuals when mosquito populations are high. Based on the 2015-2017 data, we can predict the spread of the Zika virus in the United States for 2018. Choropleth maps and a percent change map will be created for each dataset year that demonstrates the number of infected individuals by state divided by the total population by state. Using these figures, we can predict the trends of viral transmission. Understanding these trends will allow for an increase in awareness for healthcare providers to improve clinical care.

Sensory Diets: Knowing the Importance of Who, How, and Why

Jenna Gruwell

Mentor: Barbara Abbott

The purpose of this study was to assess the current level of knowledge of teacher, paraprofessionals, and other related service staff regarding the implementation of sensory diets. As the prevalence of sensory processing disorder is increasing in our population, students are experiencing increasing difficulties with concentration, academics, and social interaction in the school setting. These difficulties can be suppressed with consistent use of sensory diets, which allow students to learn how to regulate their sensory input and integration. In this study, a questionnaire was distributed to all volunteering teachers, paraprofessionals, and other related service staff members at a local school for students with disabilities. Responses were organized according to similar responses and the relevance to the research questions. The hypothesis is that a lack in knowledge of the implementation and importance of sensory diets hinders their effectiveness, preventing the students from reaching their full potential in the school setting.

Influential Women in the History of Psychology

Destynee Roberts, Kyndal Showell, Luis Arteaga, Ayowunmi Kuforiji

Mentor: Dr. Mary Jenson

This poster will examine three influential women in the history of psychology. These women are Ruth Hubbard Cousins, Mamie Phipps Clark, and Martha E. Bernal. This poster will highlight the personal struggles these women faced as pioneers in psychology as well as their contributions to the field of psychology, thereby giving credit to women who are often overlooked in modern textbooks.

Staphylococcus aureus Infections Vaccine

Aditya Bajaj

Mentor: Dr. KellyAnn Miller

Staphylococcus aureus causes many types of infections as it is one of the major human pathogens. Vaccines represent a way to treat and prevent the spread of infections by triggering a helpful immune response. *Staphylococcus aureus* infections currently remain without a readily available vaccine. So, it is important that a vaccine be created in order to treat the disease. The purpose behind this research based project was to develop a novel vaccine for a disease that does not currently have a viable vaccine available. Through the research, it was found that Superantigenic *Staphylococcus aureus* activates T-helper 17 cells which in turn stimulates Interleukin-17. The stimulation of this interleukin leads to a desired immune response.

Analysis of Water Quality of the St. Jones River

Sydney Hall

Mentor: Dr. Stephanie Stotts

The St. Jones River in Kent County, Delaware has a legacy of both agricultural and urban land use, leading to a history of elevated pollution levels. Using temperature, dissolved oxygen, and phosphorus data from Lebanon Landing between 2002 and 2016 (collected by DNERR), we found that phosphorus levels were significantly correlated to both temperature and oxygen levels. We also found no notable changes in phosphorus over the 14 year study period.

Discharge Precipitation Relationship for White Clay Creek in Newark Delaware

Katelynn Fry

Mentor: Dr. Stephanie Stotts

The White Clay Creek in Delaware is characterized by non-point source pollution, flooding, and most significantly, erosion. In this study, we attempt to better understand the hydrology of White Clay Creek by combining historical discharge data, collected by the USGS, with precipitation data from NOAA. The results indicate that precipitation and stream flow are very closely related for the White Clay Creek system. As climate change progresses, Delaware is expected to experience increases in precipitation. Therefore, land managers should be prepared for an increased occurrence of high flow events.

How to Get Millennials into the Ball Park Through Partnership Sales

Destiny Davis

Mentor: Barbara Abbott

The purpose of this research is to determine the best marketing strategies that when combined with appropriate partnerships will bring millennials back into the ball park. This study will use a random sample of millennials from higher education institutions in the Baltimore area. The population consists of participants aged 18 to 34 years old (a millennial). Three elements of understanding emerged through the literature review. The study aims to understand what marketing strategies are most appealing to individuals who are termed millennials, what brands better relate to millennials, and what practices are best in coordinating the strategies and partnerships to accomplish an increased in attendance of millennials. Male and female comparison information identifying what seems more appealing to the different genders will also be identified to determine appropriate marketing strategies accordingly. Through the literature, a survey was created to confirm and/or deny all information found.

The Development of an Occupational Therapy Pro Bono Clinic for Underserved and Disadvantaged Families

Bhumika Patel, Samantha Fulton

Mentor: Dr. Varleisha Gibbs

In Delaware, there is a shortage of occupational therapists (OTs) which is impacting the availability of fieldwork placements for students enrolled at Wesley College and services that are provided to children with developmental delays who may be living in poverty. The clinic will address the OT shortage by servicing clients who are placed on waiting lists and providing opportunities for fieldwork placements for students. We will utilize occupational therapy assessments and pre/post test scores will be compared to identify progress. Families that participated in the clinic reported reduced caregiver burden that lead to better outcomes for the child and family. This is an expansion of the clinic that was created off-site in Middletown, Delaware. It will benefit individuals living in poverty and those who need OT services by providing services at no cost, including caregiver training, education, and recommendations of local programs and resources.

Let's Talk About Cultural Competence: A Student Perspective

Ariana Rizzo, Stephanie Mendez

Mentor: Dawnn Thomas

Lack of evidence supporting cultural competence in occupational therapy programs has driven us to explore the following questions: What themes and topics should be addressed related to cultural competence within Wesley's Masters of Occupational Therapy curriculum? Can real life experiences produce a stronger level of cultural competence among students? This study consists of a qualitative, ethnographic design. Researchers worked in the Philippines while actively engaging in reflection and journaling with hopes to bring useful information to their peers. The interventions involve interviewing MOT students about their previous cultural experiences in which themes will emerge for a larger focus group presentation. The presentation aims to fill in the gaps within the curriculum relating to culture and experiential learning. Reflective feedback will be obtained from participants in order to understand if an emphasis on this topic and type of learning would be more beneficial than standard didactic learning within Wesley's MOT program.

Graduate Teaching Assistantship Program Development for the Masters of Occupational Therapy Program

Danielle Marshall, Matthew Montano

Mentor: Dawnn Thomas

Occupational therapy research is replete with data surrounding the use of models and frames of reference to guide teaching methods in graduate programs. However, there is a paucity of published research that discusses how master's level occupational therapy programs implement graduate teaching assistants. This presents the problem that occupational therapy educators lack the knowledge of how to best implement graduate teaching assistants within their curriculum. Wesley College's Masters of Occupational Therapy Program does not currently utilize a graduate teaching assistant program. This participatory action research utilized a prospective case-study to potentially illustrate the positive effects from the use of graduate teaching assistants on educational programs, faculty, and the students who partake in the teaching assistantship. Occupational therapy educational standards, trends in occupational therapy education, and direct and indirect benefits of the program were considered in order for an effective and sustainable program to be developed.

Perceived Improvements in Activities of Daily Living by Senior Arthritis Patients in Physical Therapy

Taryn Cornish

Mentor: Barbara Abbott

The purpose of this study was to determine how physical therapy assisted senior arthritis patients with improvements in carrying out daily tasks without assistance and/or pain. The study focused on seniors, age 60 and older, who had been diagnosed with arthritis and were engaging in some form of physical therapy for joint function and mobility. Seniors with arthritis may be at a higher risk for falls, decreased functionality, and decreased quality of life and independence. An open-ended questionnaire was used which assessed individual arthritis symptoms and limitations as well as perceptions towards the overall effectiveness of the physical therapy program. Participants volunteered for participation and completed a consent form as well as the questionnaire with honest feedback. The results of this study can potentially highlight the benefits of physical therapy programs as an intervention for arthritis symptoms as well as identifying the best methods or techniques for relieving symptoms of arthritis.

Mothering metamorphosis, managing transitions through Occupational Therapy

LaToya Prioleau, Molly MacMillan

Mentor: Marcella Legath

The Mothering Metamorphosis research study was designed to determine the needs of women, during and after pregnancy, and build the evidence base in this emerging role of Occupational Therapy (OT) practice. With the belief that OT practitioners can play an important role in supporting families through the inevitable transitions that accompany the birth of a new child, researchers worked to document the associated challenges. In partnership with the Lighthouse Birth Collective (LBC), researchers joined with a homebirth midwife to collaborate, and interview expectant mothers in order to begin developing occupation-based programming. This research included an interview process and formal assessment using the Occupational Profile template and Satisfaction With Life Scale (SWLS), which, when re-administered, reveal changes in roles, routines and occupations during the childbearing cycle.

Tender Stages Transition Program

Bradford Melvin

Mentor: Dr. Varleisha Gibbs

The Individuals with Disabilities Act (2004) provides students with intellectual or developmental disabilities (IDD) with the resources and services to participate in school. One of the services provided by IDEA (2004) are post-secondary transition services. A growing amount of research shows that students with intellectual or developmental disabilities (IDD) post-secondary outcomes may result in not attending college, gaining paid employment, or successfully participating in social or community events. Occupational therapy is often underutilized in transitional services. High Road School of Southern Delaware is a local school that is looking to improve the success of IDD population. The students and faculty of the host site have expressed their support and enthusiasm to participate in a transition program focused in occupation. Future plans for this transition program will be to increase the number of participants. It is desired to have the site incorporate the program into their curriculum.

DACA Program

Nicole Bader

Mentor: Vilma Lazo-Butera

The purpose of this presentation is primarily to inform us about the effects of the continuation or demise of the DACA program on their recipients and on the US. The Deferred Actions for Childhood Arrivals (DACA) is a program in the United States that allows minors who are illegal immigrants (many brought to US as babies by their parents) to obtain working permits. The program was created by Obama and his administration to give children a chance for a better life. If a child is brought to the United States by their parents at a young age, this life is all they know. Many of these minors do not know any other language or any other culture besides the American culture. The DACA program gives these minors 2-year working permits to work towards becoming a citizen in the future. These individuals stay safe from deportation while working towards something greater.

The Correlation Between Asthma and Air Quality
Jayson Feld
Mentors: Dr. Derald Wentzien, Dr. Malcom D'Souza

Every asthma attack has a possibility to be life threatening. One thing that triggers someone's asthma is anything airborne, but not all asthmatics are affected by airborne pollutants. The air quality of the United States has gotten worse as city's have grown. This study will focus on showing the correlation between increased asthma attacks and the decrease in air quality. This study will be used to pull data from two sites together so that the information is easier to find. The data that will be used in this presentation will be information gathered from the CDC, for asthma attacks, and EPA for air quality and will be for the individual counties in Delaware and the United States. This data will be looked at monthly or quarterly based upon amount of data, and it will be observed from 1980 to 2017.

Investigating the Potential Medicinal Properties of the Chaga Mushroom
Courtney Dorsey
Mentor: MaryAnn Yaeger

Inonotus obliquus, Chaga, is often referred to as the King of Medicinal Mushrooms because of its claimed nutritional and therapeutic benefits. Chaga is purported to have anti-inflammatory and pain-relieving effects, as well as the ability to boost the immune system. Memorial Sloan Kettering Cancer Center reports that Chaga has inhibited cancer progression in laboratory animals, while stating human clinical trials are still needed. Chaga is an edible fungus found in cold regions of the United States and several other countries, as a non-toxic parasite on birch trees. This project will include literary research on the mushroom and test its antimicrobial properties to the bacteria *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Escherichia coli* and *Bacillus subtilis* via the disk diffusion method.

Keep Calm & Be Productive: The Influence of Interdisciplinary Productivity Standards in Skilled Nursing Facilities on Burnout and Job Satisfaction
Melanie Maffei, Kaitlyn Mears
Mentor: Dawnn Thomas

Productivity is a measurement established by healthcare administrators that quantifies therapy services to ensure optimal reimbursement (Winistorfer, Schierton, Yarett Slater, 2016). Skilled nursing facilities (SNFs) are infamous in the healthcare community for implementing the highest productivity standards for their rehabilitation staff. The effects of productivity standards have been identified as an ethical issue for occupational therapy practitioners, physical therapy practitioners, and speech therapists in causing burnout and decreased job satisfaction. The purpose of this quasi-experimental study is to investigate the effectiveness of mindfulness strategies on burnout among interdisciplinary rehabilitation staff working in SNFs. The investigators created a website for their participants to anonymously access educational materials on mindfulness strategies. The participants were administered a demographics survey to gain data about their current employment and administered a rehabilitation practitioner burnout inventory as the pre and post-test. The investigators hope their study will contribute to higher job satisfaction among SNF rehabilitation staff.

Patient Advocacy versus Inadequate Facility Staffing: Contributions to Elderly Patient Abuse

Kaylynn Hall

Mentor: Jerry Mench

This review of systematic review of literature evaluates how patient advocacy and inadequate facility staffing leads to the abuse of older adult patients. An older adult is considered any person who is 65 years of age or more. Themes such as improperly trained staff, overworked and underpaid staff, ageism, and nursing career limitations were identified as contributors to abuse of elder adults. These themes fit under the umbrella that is patient advocacy and nurse staffing. In order to combat these factors, staff should be trained better, given appropriate patient to nurse ratios, given a career ladder and lessen the occurrence ageism.

Vegetation Community Response to Large Scale Tidal Marsh Restoration at Prime Hook National Wildlife Refuge in Delaware

Kassandra Rodriguez

Mentor: Dr. Stephanie Stotts

Several dunes at Prime Hook NWR experienced saltwater intrusion during storms like Hurricane Sandy. Wetlands previously managed as freshwater impounds have been restored to tidal marsh through reconstructing the breached dune and beach complex, planting marsh and dune vegetation on a created back barrier platform, dredging tidal channels, and aerial seeding to enhance vegetation recovery. Vegetation community response is monitored through ground surveys, as well as photo documentation. Prior to this project, the area was mostly shallow open water with little vegetation. Following restoration, dramatic vegetation response was evident after the first growing season. During the second growing season, vegetation continued to expand, with the amount of low marsh doubling. The back barrier was carefully designed with placement of sand from offshore dredging and planting of *Panicum* and *Spartina* species. The results thus far are encouraging but it is expected to take several more years for full vegetation recovery.

Community-Dwelling Elderly Population's Self-Efficacy for Managing Chronic Disease: Impact of a Nursing Student Intervention

Taylor O'Donnell, Angelina Scott, Shelby Schirmer, Rodneisha Scott

Mentor: Tamala Paxton

Chronic diseases affect 90 million adults and account for 70% of health care expenditures in the United States. The majority of those affected are 65 years of age and older. Given the importance of self-management of these conditions, this project studied the impact that senior-level nursing students could have on community-dwelling people at least 65 years of age who have at least one chronic health condition as it regards their self-efficacy for managing chronic disease. Using Bandura's (1977) work on self-efficacy, the project director taught senior-level nursing students a framework to use in three planned interactions with recruited community-dwelling elderly people. A quantitative, quasi-experimental design using pre- and post-testing with the Self-Efficacy for Managing Chronic Disease 6-Item Scale was employed. The results demonstrated a statistically significant improvement in overall self-efficacy for managing chronic disease scores following the nursing student interventions.

Leaving group affects analyses in ROCOX substituents

Jeremy Wirick

Mentor: Dr. Malcolm D'souza

In medicinal chemistry, ROCOX compounds are common pharmaceutical reagents in the preparation of peptides. For binary solvent mixtures, the two-term Grunwald-Winstein equation is a linear free energy relationship (LFER) between the specific rates of solvolysis of a substrate in a given solvent and the corresponding scales of solvent nucleophilicity (NT) and ionizing power (YCl). Multiple regression analysis provides sensitivities l and m to NT and YCl respectively, and the l and m values serve as useful indicators for the determination of the mechanism of reaction. In this project, we analyze the experimental data for six ROCOX substrates that have either a chloride or a tosylate as the leaving group. For the six substrates studied, the l/m ratios for similar compounds studied were constant and were independent of the leaving group. Furthermore, for all six ROCOX substrates, the resultant l and m values also signaled the occurrence of an addition-elimination process.

Cellularly Understanding Chamaecyparis thyoides Resiliency to Salinity Intrusion

Olivia Gullledge

Mentor: Dr. Stephanie Stotts

This study examines cellular response of mature Atlantic white cedars to rapid salinity increase. Cross sections were collected from specimens that died from dredging and straightening of the St. Jones River ending in 1932. Slides of annual rings, made using a microtome, were photographed and average tracheid diameter, cell wall thickness, and number of resin ducts were measured. The cellular response to salinization could provide insight on how coastal forests respond to sea level rise.

Natural Disasters: Hurricanes, Earthquakes, etc. and How Math Helps

Janae Jones

Mentor: Dr. Agashi Nwogbaga

Natural disasters such as hurricanes and earthquakes can be particularly devastating especially if they catch us unprepared. According to the National Hurricane Center, the best time to prepare for a hurricane is well before a hurricane comes. The purpose of this study is therefore four-fold: to prepare us for these natural catastrophes by increasing our knowledge about them; to showcase the huge roles that mathematics plays in studying them and protecting us from these frightening disasters; to determine the rate of change in natural catastrophes over the last 100 years as well as the possible reasoning for the change; and finally, to discuss several ways that natural disasters affect our lives apart from killing us. This topic is unique and relevant because natural disasters can affect everyone directly or indirectly at some point in their life. A phenomenon so relevant should therefore gather everyone's attention and interest.

Obesity & Sleep Deprivation Calculus and Implications for College Students

Omasan Uyebe

Mentor: Dr. Agashi Nwogbaga

Many adults struggle with getting sufficient sleep everyday due to a myriad of factors. Lack of sleep ultimately leads to various health problems including obesity. According to Harvard School of Public Health, a growing body of research suggests that there is a link between how much people sleep and how much they weigh. What is still unknown by many people is exactly how sleep deprivation can lead to obesity and what measures can be taken to prevent it. Obesity is a global concern. In fact, the StateOfObesity.org states that adult obesity rates now exceed 25% in 46 states in the US and it is actually more than 30% in Delaware. By analyzing sleep data statistics from the CDC and related sources, we will show how math is used to study sleep vs. obesity and suggest ways to address these problems.

Long Live Mom and Pop Stores: A study of the natural and healthy groceries retail industry and strategies for competing with the juggernauts

Althea Mignone, Sarah Fryer

Mentor: Dr. Yu Tian

Whole Foods, Trader Joe's, and Sprouts, the list of the chain stores offering natural or organic groceries goes on and on. Some suggest the number of consumers buying and the amount of money spent on such groceries will continue to rise. It seems the chain stores are unstoppable. Many local and small Mom and Pop stores are going out of business or struggling to stay open. Our study finds another trend. Many consumers do not prefer the one-stop shopping any more. They visit smaller stores with carefully selected yet fewer choices. These places give them a more relaxed and intimate experience. Some stores offer personal services such as meal recommendations based on the groceries selected, while others carry groceries based on the core demographics of local customers. Those services inspire a healthier and greener lifestyle. We offer some strategies that will make Mom and Pop strong competitors in the industry.

Therapeutic Use of Self and Patient Participation

Elizabeth Englert

Mentor: Dawnn Thomas

Occupational therapists use therapeutic use of self to develop a positive relationship with their clients. Therapeutic use of self utilizes a therapist's strengths to relate to clients on a psychosocial level. The value of therapeutic use of self is widely recognized by practitioners (Taylor, Lee, Kielhofner, & Ketkar, 2009). Patient participation is predictive of functional outcomes and length of stay (Lenze, et al. 2004). A patient must engage in the therapeutic relationship and have adequate participation to achieve optimal outcomes. A small sample of occupational therapists will complete the Use of Self Questionnaire (Taylor, et al., 2009) to measure therapeutic use of self and then the Pittsburgh Rehabilitation Participation Scale (Lenze, et al., 2004) on each patient on their existing caseload. Results will be analyzed for correlations between the two variables. The therapeutic relationship and patient participation needs further exploration to determine effects within the occupational therapy profession.

Study of the Effects of Lymphedema Related Occupational Therapy Services on Breast Cancer

Olubukola Tifase, Seibatu Gaojia, Brandi Moore

Mentors: Marcella Legath, Dr. Varleisha Gibbs

Breast cancer patients are at increased risk for developing lymphedema. Lymphedema is a side effect of cancer which typically develops months or years after cancer treatments. Current research indicates that physicians are not addressing lymphedema and are underutilizing occupational therapy (OT). This research will explore the effectiveness of OT interventions in improving the quality of life of breast cancer survivors diagnosed with lymphedema. The study will occur at an outpatient clinic with a randomized convenience sample of twenty breast cancer participants who satisfy the inclusion criteria. A pretest of the Disability of Arm, Hand, and Shoulder (DASH) and the Lymphedema Life Impact Scale (LLIS) will be allocated to each participant to assess the impact of OT intervention on quality of life. A post-test will be implemented four weeks after initial contact. Additionally, a paired t-test will be used to examine and analyze the data from the pre-and post-assessments.

HEADS UP Wesley College Football

Shergeel Saleem

Mentor: Dawnn Thomas

According to the Centers for Disease Control and Prevention (CDC), in 2010 there were 2.5 million emergency department visits associated with traumatic brain injury (TBI), and 75% of TBIs that occurred each year are concussions or other forms of mild TBI (Brayton-Chung, 2016). Sport participation is common among the youth as it leads to improved physical and psychosocial health. Occupational therapy has not been utilized within the sports industry for rehabilitating concussions. An athlete must perform physical skills while responding to cognitive cues (eg. teammates, coaching, audible play-calling) in order to be competitive during football games. Concussion symptoms can contribute to mental and physical exertion that changes the metabolic activity of the brain (Majerske, 2008). This education awareness program will educate student athletes on concussion injuries and how it affects their occupational performance while highlighting a program geared towards students to support the role of occupational therapy for maximizing function.

The Journey of Delicate Butterflies

Lily Neff

Mentor: Joshua Nobiling

During the summer, as a child, my favorite activity was going outside to watch and catch butterflies in my mother's gardens. Now, in the spring and summer, I rarely see butterflies outside and many species are endangered. Butterflies are delicate creatures that demonstrate beautiful colors and flutter around the world. Origami is a delicate form of art used to create final, complex forms through the folding of paper. Through this piece, butterflies are demonstrated as fragile pieces of origami paper traveling across the page to bring awareness to their endangerment. An abstract approach is used in the coloring of the butterflies so that the lines of folded origami paper remain displayed. Each butterfly will be colored to demonstrate a unique, endangered species. The materials used for this art work are micron pen and watercolor.

Combination of physical therapy and nutrition on recovery following musculoskeletal injury: A systematic review

Ryan Cassidy, Marissa Perez
Mentor: Ryan Hubble

There is evidence that supports nutrition's positive effect on overall health and athletic performance. However, there is limited evidence on the role of nutrition in aiding the recovery process of an injury during physical therapy. Considering this, the objective of this systematic review is to examine the current literature on the relationship between physical therapy and nutrition on the recovery process following injury. Three electronic data bases will be searched by title and abstract to identify articles assessing recovery from musculoskeletal injury where physical therapy and nutrition were assessed factors. It is hypothesized that physical therapy with nutritional assistance will result in reduced healing time and an improvement in the quality of recovery following musculoskeletal injury.

Non-Athlete Males; Exploring Ways to Increase Retention

Tykeria Tolson
Mentor: Chelsey Vest

Retention rate is described as the measure of a "student who remains in continuous full-time enrollment from the point of matriculation to the completion of a degree" (Habley, Bloom & Robbins, 2012). The Student Success and Retention team partnered with Pharos 360 analysts and identified that males who are non-athletes have low retention rates. This presentation will use the retention rate of first-time, full-time freshmen for Fall 2016 completing a full school year at Wesley College as a baseline for comparison. The rates of attrition will also be discussed. Attrition is defined as "The number of individuals who leave a program of study before it has finished" (Higher Education Academy, 2015). Many factors impact retention, so focusing on a sub-group offers a chance to identify potential reasons specific students are not returning. What is it that keeps male non-athletes engaged at an institution?

Analyzing Compendium of Study Supplements for Success in Science Courses

Julia Young
Mentor: MaryAnn Yaeger

Achieving academic success in rigorous science courses can prove to be daunting for any student, whether one has newly graduated from high school or is returning as an adult for supplemental education. One well-known barrier to academic distinction is simply learning how to study. This presentation will feature a few of the most notable and successful student resources available today, and how each can be easily grafted into study regimens for superior knowledge retention and overall course success. These resources include Mastering A and P, Mastering Microbiology, Picmonic, SketchyMicro, Quizlet, Brainscape, and VangoNotes. For each study resource showcased, we will provide a brief walkthrough of the program or resource, cost analysis and describe how to implement the resource side by side with their current study program.

Childhood Lost: Happy Meals Can Lead to Obesity and McDonald's Branding Strategy to sell more of them

Christian Earle
Mentor: Dr. Yu Tian

McDonald's recent announcement on making Happy Meal 'healthier' by 2022 has caused an uproar in the news. Around 30% of children and 25% of adults are obese. That's more than 190 million Americans! This topic hits at home for me. My uncle owns eight McDonald's in Pennsylvania and I plan to work there soon. I study the trend of obesity and the McDonald's branding strategy to push unhealthy meals. It serves 43% of the fast food meals daily, distributes more toys than Toys R Us, and most children can recognize the Golden Arch before they could speak. I propose some promotional and branding strategies that could help McDonald's serve healthier foods while improving profit margins. Most of the strategies would work for the entire fast food industry.

Phobia

De'Mari Barnett
Mentor: Dr. Gwen Pursell

Are you afraid of spiders? Or possibly clowns? Or maybe heights? If so, you may have a phobia. A phobia is an irrational fear that results in the avoidance of a specific stimulus (e.g., objects, activities, or situations). Phobias may develop in childhood or adulthood and are often associated with a threatening or stressful experience (DSM-IV-TR, 2000). The primary purpose of this project is to raise awareness about phobias and to present coping methods and treatment options for phobias. Specifically, this project will 1) define and identify the many phobias that exist, 2) examine causes behind the development of phobic behavior, and 3) discuss the various ways that phobias can be treated with an emphasis on cognitive-behavioral therapy. Cognitive-behavioral therapy (CBT) has been found to reduce phobic behavior through the reduction of irrational thought patterns and the process of systematic desensitization or small exposures to a feared stimulus.

Molecular Profiling of Malignant Melanoma in the State of Delaware

Austin Lonski
Mentors: Dr. Malcolm D'Souza, Dr. Fady Gerges, MD (Green Clinics Lab, LLC)

Malignant Melanoma is presenting itself through the State of Delaware as a leading cause behind increased cancer related morbidity and mortality. While following a national trend of increasing prevalence and incidence, Malignant Melanoma has also proven significantly resistant to conventional cancer treatment. Novel molecular markers have evolved recently in correlation with a high percentage of newly diagnosed cases that serve as a target for personalized treatments. In a recent study focusing mainly on the Sussex and Kent Counties within Delaware, we were able to demonstrate a following of the national trends in regards to BRAF mutation in Melanomas. The current study will add another target analyte (NRAS) as well as continuation of the BRAF analysis. This will be correlated throughout the state with the aim of inferring better representation of the Melanoma status in Delaware, as well as produce tentative guidelines for prognostics and management of Melanoma.

Estimating Sediment Deposition Rates And The Influence Of Slope Along White Clay Creek Using Riparian Trees

Teric Henry

Mentor: Dr. Stephanie Stotts

White Clay Creek, which flows through Northwestern Delaware and Southeastern Pennsylvania, has a history of chronic erosion, requiring costly bank stabilization and restoration efforts. As a result, there is a push to understand the sediment dynamics of the system, including the location of sediment sources and sinks and the calculation of a sediment budget for the system. The goal of this project was to use riparian trees to estimate deposition rates and to understand how slope influences sediment deposition in the watershed. Tree cores were collected from three study sites along White Clay Creek, including high, medium, and low slopes. The age of each tree was determined through tree ring analysis and the sediment deposition rate was calculated by dividing the depth of root-flair burial by the age of the tree. The high slope site had a lower average deposition rate (0 cm/yr) than the medium (.11 cm/yr) and the low (.22 cm/yr) slope sites.

A spatial analysis of Wesley College Retention Rates

Teric Henry, Katelyn Null

Mentor: Dr. Stephanie Stotts

Wesley College has made an effort to increase its retention rates over the past 5 years. The goal of this project is to provide information about where Wesley's students come from and what locations have the best and worst retention rates. Wesley College provided data including zip code, graduating high school, and retention for 2013, 2014, 2015, and 2016 freshmen classes. A student was classified as retained if they return for a 2nd consecutive year of college at Wesley. Zip codes with less than 4 individuals were excluded from the study to ensure that no individuals could be identified. The data was imported into ArcMap, and a map depicting retention rates for Delaware, Maryland, New Jersey, Pennsylvania, and Virginia was generated. Hopefully, this map can be used to further improve retention rates at Wesley College.

Proposed Respiratory Syncytial Virus Vaccine

Shellby Bowman

Mentor: Dr. KellyAnn Miller

Respiratory Syncytial Virus (RSV) is a growing epidemic plaguing those who are immune-compromised, such as newborns, infants, young children and the elderly. The virus causes an increase in hospitalizations of these population nationwide while also increasing their risk for contracting hospital acquired illnesses. The purpose of a vaccine effective against RSV is to decrease hospitalizations and deaths in these populations. Through research a variety of vaccines have been shown to help in immunizing susceptible individuals against RSV. The vaccine proposed for development is a G-protein adjuvant vaccine, using Sendai virus as the primary adjuvant with the inclusion of monophosphoryl lipid A (MPLA), and GcfAB, a recombinant fusion protein. The vaccine will provide a robust immune response without causing vaccine-enhanced disease. By using an intradermal route of vaccination, the vaccine will be more readily available to immune cells and facilitate a quicker immune response. Research in this area of vaccine development would provide valuable information crucial for the understanding of RSV and human vaccination that would impact the design of future RSV vaccines.

ArcMap vs. ArcPro: A Comparison between ESRI Mapping Programs

Michael Skivers

Mentor: Dr. Stephanie Stotts

Technological programs are constantly evolving to be more powerful and user-friendly which usually involves expensive upgrades that may or may not be necessary since the older technology is still relevant. The ESRI based software ArcMap, a required component of the Environmental Science, Biological Chemistry, Biology, and Data Informatics programs at Wesley College, is being transitioned to ArcPro with most geospatial platforms in governments and industry making ArcPro the flagship software. Wesley currently teaches ArcMap which can be used with older technology because the software is not resource demanding. But offering ArcPro will require expensive upgrades. The goal of this project is to compare and contrast ArcPro vs ArcMap to determine if upgrading a computer lab to be ArcPro compatible is a wise use of resources by using personal experience and global-based user reviews of these two software programs.

Spoken Word Performance by SPEAK

Azana-Tatjana Crawley, Savannah Love, Asia Harmon, Noah Drayton, Kai Lee

Mentor: Joshua Nobiling

SPEAK has been a talent organization on campus for five years and have been bringing a creative outlet to students on campus through poetry and other performances. The following members of SPEAK have decided to partake on Scholars Day by performing some original spoken word poetic pieces. Kai, Savannah, Asia, Noah, and Azana will bring important issues to light through individual performances of original pieces. Highlighted topics will include politics, love, racism, campus life, and other controversial issues to enlighten the minds of the campus community.

Balance

Alexa Cherico

Mentor: Dr. David Laganella

The performance portion of this presentation will be the playing of Balance, an original art song written for voice and piano. The song is written to lyrics in the poem titled Balance by Alice Fogel. The presentation will explain the composition process and steps that were taken to create the song, and also the text painting process of putting music to the lyrics. The presentation will explain the steps to compose an art song such as looking at other pieces, comparing works and editing.

Hidden Figures of Psychology – Margaret Floy Washburn

Kaitlin Forestieri

Mentor: Dr. Mary Jensen

Margaret Floy Washburn is one of the most important women in psychology but is still often overlooked. Washburn studied under Cattell and Titchener and was the first woman to receive her PhD in Psychology in 1894. Washburn went on to become the second woman president of the APA. Throughout her life, Washburn remained an inspiration to women by remaining unmarried and only teaching at the undergraduate level because she disapproved of her female students receiving a higher education at anything but a coeducational university.

Washburn's research on the animal mind should have earned her a place among the Experimentalists, but because of her gender she was never awarded such a spot.

Dorothea Orem

Casie Lewis, Brianna Krebs, Kaitlyn Adams, Whitney Capitano, Whitney Summerall, Bryane Bratten
Mentor: Darla Davidson

Dorothea Orem developed the foundation of the self-care theory. The purpose of the self-care theory is to improve the quality of nursing care and to encourage the client to achieve the goal of the care plan by promoting self-care. The theory consists of self-care, self-care deficit, and the nursing system. Orem's Self-care Theory encourages nurses to assist clients in accomplishing their goals. Practicing the concepts of Orem's theory gives the client a chance to gain or maintain independence while the nurse provides support and encouragement. The purpose of this presentation is to discuss Orem's Self-Care Theory and the knowledge and framework she brought to nursing practice. This study involved a literature review and analysis of Orem's Self-care Theory to present as a guide for nursing practice.

Concussions in the NFL and the Long Term Effects

Osama Mahmoud

Mentor: Dr. Derald Wentzien

The NFL is coming under fire by its own participants in the league. Former NFL stars are currently suing the league for its correlation to life changing injuries that came from concussions. Victims claim that the NFL encouraged the violence of the sport and played down the seriousness of concussions. Data shall be acquired to find a correlation between concussions in the NFL and these life threatening damages done to former NFL players. The theory is that the concussions in the NFL and the improper handling the NFL has towards concussions cause a detrimental effect that spirals into horrid life injuries. The way the data will be acquired will be from public information that protects player confidentiality. The National Center for Biotechnology information provides all the data information that will be used. Observational studies of former NFL stars will also be looked at to judge the severity of their disability caused by the concussion.

An Investigation of Family Trans-Atlantic Lives: The Remarkable Story of Ayuba Suleiman Diallo (Job Ben Solomon)

James Poole

Mentor: Dr. Ethan Hawkley

The legacy of the Trans-Atlantic Slave Trade is one of abject horror and untold tribulations. One such man who lived through the trade was a Muslim man named Ayuba Suleiman Diallo (Job Ben Solomon). A native of West Africa, he was sold into slavery in America. Yet he found his freedom with the help of English patrons, and was able to travel to England for a time until he returned back home to West Africa. Ultimately, Ayuba's life shows a complex look into the slave trade, as he lived through each of the major parts of it (West Africa, America, and England). Through this presentation, the audience will gain a deeper understanding of some of the complexities of the early 18th century Trans-Atlantic world. These are exemplified in Ayuba's relations with the Christian Englishman who secured his freedom, his similarities to them, and even his own views of slavery.

Influences on Academic Performance

Kalani Hollman

Mentor: Dr. Gwen Pursell

Over many years, studies have examined the significances of birth order and its effects on factors such as personality, academics, and behavior in adolescents. Past research found that birth order influences academics in a significant sequence (Hussain & Khan, 2012). The following study will investigate the importance of birth order for academic achievement. However, this study will focus specifically on birth order and GPA in young adults. Based on previous findings, it is hypothesized that birth order will have an influence on GPA with first-born and last-born participants demonstrating greater academic achievement than middle-born participants. The sample will consist of approximately 25 college students attending a small, private college in the mid-Atlantic. Birth order and academic achievement will be measured using a demographic questionnaire and self-reported GPA. GPA will be compared across birth order categories for statistical differences. Results and implications will be discussed as they apply to college students.

What drives YOU?

Rhiannon Dillon

Mentor: Dr. Jamie Whitman-Smithe

All over the world people volunteer their time, work in non-profits, or focus on careers that give back to the community and individuals that are underprivileged and underserved. This presentation will focus on what motivates individuals to give back to their community despite insufficient recognition and monetary gain.

Voting Behaviors and Patterns of Black Wesley College Students and Their Potential Impact on The 2020 Presidential Election.

Nyair Stanford

Mentor: Dr. Cynthia Newton

In 2016, a U.S. presidential election was conducted. Racial minorities had poor voting turnout based upon evidence shown through statistics. 22.6% of Black minorities in Delaware voted in the presidential election compared to 70.1% of the White majority who participated. The impact of race on voting patterns has long been of interest to scholars because it shows the outcome of a specific demographics involvement with the presidential election. Likewise, the outcomes from certain demographics can show a relationship of future voting behaviors. This research project examines the voting patterns of Black Americans in presidential elections from 2000-2016 to draw conclusions and make predictions about the voting behavior of Black Wesley College students in the 2020 presidential election. By combining information from previous elections, and using scholarly research available, there is a solid foundation for understanding the importance of race to voting patterns. This project includes analysis of demographic data on Wesley College students, specifically race and age, to codify their political involvement in the 2016 election, potential for voting in 2020, and make predictions based upon national trends.

Screening Student Bags for Fecal Contamination

Ashley George, Lauren Benedetto

Mentor: MaryAnn Yaeger

Escherichia coli belongs to a group of bacteria called coliforms that normally inhabit the intestines of healthy humans and other animals. The presence of coliforms is an indicator of fecal contamination. Some strains cause infections in humans to include urinary tract infections, and food poisoning, which occasionally results in hemolytic uremic syndrome characterized by anemia, kidney failure and potential death. Gastrointestinal illness due to *E.coli* are contracted by the fecal-oral route of transmission, meaning a person gets sick after ingesting organisms from fecally contaminated material. Such contamination may occur from improper handwashing after using the restroom, or from items brought into the restroom. This project will screen 100 random school bags for fecal contamination by culturing them for *E. coli* or other coliforms. The goal is to provide understanding on *E.coli*'s mode of transmission and how students' bags may serve as fomites for bacteria that can cause illness.

Hidden Figures of Psychology – Mamie Phipps Clark

Shelby Segars

Mentor: Dr. Mary Jenson

Distinguished social psychologist, Mamie Phipps Clark emphasized self-esteem and illuminated the negative impacts of segregation within society. Her research was used to challenge discrimination and segregation laws in the Supreme Court. Clark earned her Bachelor's and Master's degree from Howard University. She then became the only black woman to obtain her Doctoral degree at Columbia University. She completed her dissertation under Dr. Henry Garrett. Clark and her husband, Kenneth, opened up Northside Center for Child Development in 1946, providing a homelike environment to children, as well as offering pediatric and psychological care. Her research was able to conclude that integrating schools is beneficial to self-esteem, positive race relations, and healthy self-identification. Mamie Clark's research greatly influenced modern day society and should be discussed more in classrooms.

Parent Absenteeism: A comparison of military dependents and children of incarcerated parents

Yasmine Allen, Luis Arteaga

Mentor: Dr. Gwen Pursell

When serving in the military, a person may be viewed as a leader, patriot, and a hero. However, with military service comes great sacrifice, not just for the service person but for his/her immediate family. Upon deployment, marital partners and children are often left behind. Research suggests that the children of deployed military members may experience problematic outcomes such as depression, anxiety, aggression, and insecure attachment (Lester & Flake, 2013). Although departing for a different reason, research suggests that the children of incarcerated parents experience similar problem behaviors (Murray, 2010). In contrast to military parents, however, incarcerated parents are viewed with contempt and distrust. The purpose of this project is to examine similarities and differences in the challenges that children of deployed and incarcerated people face, the risk and protective factors that surround these children, and the long-term outcomes associated with these parent-child experiences. Adaptive coping mechanisms and resources will be discussed.

Sea Level Rise on the St. Jones River and the Effect on Forested Areas

Shawn Kauffman

Mentor: Dr. Stephanie Stotts

The Intergovernmental Panel on Climate Change (IPCC) has observed that sea level rise on a global average is approximately 3.2 mm per year. Over time, this can have a devastating impact on low lying coastal communities. Riparian forests are valuable habitat that may become inundated from the rising sea. The goal of this project is to quantify the amount of forested area along the St. Jones River, a 12.8 mile channel that flows to the Delaware Bay, that will become inundated if the sea rises one meter. The analysis was completed using ArcMAP to combine digital elevation models and land cover classification. The results of this project could be useful for land planners and for the dendro research group and Wesley College.

Race Results

Aleya Cummings, Anthony Calcutta

Mentors: Dr. Derald Wentzien, Christine McDermott

Many people compete in running events, and all have different reasons why they compete. Each event has competitions that vary in many ways, specifically their age and the state they live in. The main goal of our project is to find a relationship between mean performance times of the running events, the demographic information of gender and age, and the race lengths of 5K, 10K, half-marathon and full marathon. Another objective is to see why the older one gets, the more the running times improve, and how the older runners can keep up with the younger, more athletic runners. These results are based on data from January 1, 2016 to October 28, 2017 for people of Delmarva (Delaware, Maryland, and Virginia) and will be compared and contrasted.

Being Conscious Through the Bullets: Gun Violence, Mental Health & the Necessity of Change

Betty Lee, Sarah Holt, Ben Janocha

Mentor: Rebecca Benson

Gun violence in America is at an all-time high. Even for people not personally witnessing the violence, the news headlines have us asking why so many people are dying. As the conversation about gun violence quickly turns into a political campaign, it is crucial that we dissect the issue at hand to save our future generations. As college students about to enter our various fields, we understand how important our own knowledge is in changing the future. Through personal conversations, literary reviews and observational research around our community and in our nation's capital, we provide steps for everyone to take to help lower America's death toll.

Data-Mining Impacts of U.S' Mortality from Diseases of the Circulatory System, Diabetes, and Neoplasms

Morgan Gannon

Mentors: Dr. Malcolm D'Souza, Dr. Derald Wentzien

There is an increasing prevalence of diseases of the circulatory system, diabetes, and neoplasms in the United States. The goal of this research is to determine the trends in mortality rates for these diseases. Variables such as race and age are being examined for each of the diseases in order to evaluate the risk for each demographic. Using data from the Centers for Disease Control and Prevention (CDC) WONDER database from 1999 to 2015, line graphs were created with SAS Programming Software to depict the mortality rate trends for each demographic and disease. In addition, the three Delaware counties are also being examined to determine whether or not a trend exists by county location in Delaware. Overall, the graphs show that nationally, the number of people dying from these diseases has continually decreased. In Delaware, the mortality rates fluctuate between counties, as there is no greater risk associated with county location.

Effects of Day Night Cycle on Bean Beetle Allele Frequency

Jeremy Wirick, Aditya Bajaj, Austin Lonski

Mentor: Dr. KellyAnn Miller

The bean beetle (*Callosobruchus maculatus*) is a common pest predominately inhabiting the tropical climates of Africa and Asia. Bean beetles oftentimes infest stored bean supplies, creating a need for a method of prevention of infestation. The purpose of this project was to record the various changes in allelic frequencies which occur in bean beetles as they undergo exposure to variations of the traditional day night cycle. To determine this information, beetles were cultured under identical conditions, altering only the amount of light each group received. The control group received a 12-hour day, 12-hour night cycle; while the other two groups received non-stop day and non-stop night. We analyzed the allele frequencies by performing DNA extraction, PCR amplification, and gel-electrophoresis. The results of this experiment showed the allele frequencies of the bean beetles stayed consistent throughout the treatment.

Harmony and Emotion in the Lieder of Franz Schubert

Jacob Sasso

Mentor: Dr. James Wilson

This research was conducted to outline the usage of Harmony to convey emotion in Franz Schubert's Lieder, and in particular, to show the way that Schubert himself portrayed his own emotions through the music. To elaborate this point, we explored Schubert's use of text painting and harmonic language. We also explored research conducted by Bernd and Daniela Wilimek from their article "Music and Emotions Research on the Theory of Musical Equilibration" to support the idea that particular harmonic structures outline human emotions. This research will provide valuable information about the connection between emotion and music.

French Melodie Interpretation and Composition

Alana Nicole Walker, Elizabeth Hazlett

Mentor: Dr. James Wilson

This presentation, titled "French Mélodie: Interpretation and Composition," will explore the interpretation of French song, otherwise known as Mélodie. We will speak about the genre's origins in comparison to that of German Lieder, its unique poetic qualities, and the style of music, including harmonic language and melodic contour. Settings of poems by Victor Hugo, Charles Baudelaire, and Paul Verlaine will be featured along with musical settings by Gabriel Fauré, Jean Martin, and Reynaldo Hahn. Following our analysis of each song and its connections between poetry and music, we will perform four selections of French Mélodie: Plaisir D'amour by Jean Martin, Lydia by Gabriel Fauré, AprÃs un rÃve by Gabriel Fauré, and Mes Vers Avaient Des Ailes by Reynaldo Hahn.

Air Quality

Anthony Calcutta, Aleya Cummings, Momina Toseef, Cole Grider

Mentor: Dr. Frank Fiedler

Good air quality is vital to our well-being. The Environmental Protection Agency (EPA) monitors and records the outdoor air quality at sites throughout the United States. We use EPA AirData Quality Monitors data and the SAS software suite to analyze correlations between air pollutants such as carbon monoxide, oxides of nitrogen, or ozone. We will discuss how pollutants interact by season and location.

Is Delaware a Cancer Cluster?

Samuel Meck, William Barton, Rylee Thompson

Mentor: Dr. Frank Fiedler

Cancer is the second leading cause of death in the United States. In Delaware, since 2008 the News Journal has turned state reports on cancer into maps of so-called cancer clusters, seeming to imply a relationship between elevated cancer rates and local industry. The Centers of Disease Control and Prevention (CDC) maintains the CDC Wonder online database on public health data. We use CDC Wonder and SAS to analyze cancer rates in Delaware to regional and national rates and discuss whether Delaware has "unusually high" cancer rates.

Tree growth and cellular response: 20 years after a major ice storm in Kent and Sussex, Delaware

Michael Skivers

Mentor: Dr. Stephanie Stotts

In 1994 a massive ice storm hit Central and Southern Delaware, causing extensive forest damage. Researchers in 1996 examined the resiliency of four co-dominant strata; *Pinus taeda*, *Quercus falcata*, *Liriodendron tulipifera*, and *Quercus alba* by surveying 786 trees from 20 control plots and 55 damaged plots. These trees were surveyed and measured in 1996, 1997, 1998 and 2001. Few studies have looked at the long-term response of specific forest species to ice damage, along with the cellular response to ice damage. Findings show that there is no significance between the cell sizes before and after the ice storm. However, there is a significant difference between cells in the live trees vs. the dead trees. The goal of this project is to resurvey all the trees to examine the growth response 20 years post storm, along with the cell sizes to provide insight for forestry management practices for future ice storms.

Assessing Eastern Oyster Crassostrea virginica Growth and Sustainability and Performance of Aquaculture Gear in the Delaware Inland Bays

Jillian Bradley, Scott Borsum, Melanie Fuoco
Mentor: Dr. Gulnihal Ozbay

Ecological effects of oysters raised with commercial aquaculture gears have been research focus to move the oyster aquaculture where it deserves and allow industry to move away from a wild fishery harvest. Years of research efforts to measure biodiversity in and around the oyster gears is one way to evaluate the impact of culture operations on the ecosystem. Similar to other shellfish culturing efforts, aquaculture equipment used by the volunteer oyster gardeners in Delaware Inland Bays has provided avenue to educate the public and increase public awareness for estuarine health. The objective of this study is to assess Eastern oyster growth and survival and performance of aquaculture gears. Off-bottom cage and tray aquaculture gears were deployed in Rehoboth, Indian River and Little Assawoman Bays. We found no difference in the performance of the two gears; however, more preparation was involved in the setup of the trays than the cages.

The Effect of Land Use on Atmospheric CO₂

Joseph Hee
Mentor: Dr. Gulnihal Ozbay

Air pollution is a key issue in modern society and one of the major contributors to the release of CO₂, primarily due to combustion and cellular respiration. CO₂ also exists as a major greenhouse gas and is the primary cause of global warming. Different land uses inevitably causes different levels of CO₂ release and absorption. A large parking lot will inevitably have higher levels of CO₂ compared to deep forest. Understanding how land use affects CO₂ levels throughout the day is key to future urban planning and civil design. The research goal in this study is to monitor CO₂ levels near vegetative field versus industrial/shopping areas throughout the day to assess overall change in CO₂ level in the atmosphere using hand-held CO₂ probe. CO₂ varied near vegetative field where morning CO₂ was higher. CO₂ did not vary in the industrial/shopping areas throughout the day but is consistently higher than the vegetative field.

Comparison and Validation of Two Popular Commercial Genomic DNA Isolation Kits

Adrienne Holliday, Matthew Stone
Mentors: Dr. Gulnihal Ozbay, Dr. Lathadevi Karuna Chintapenta, Dr. Venu Kalavacharla

The study of microbial communities from soil through molecular methods provides information about the nature of soil and how they affect the environment. We compared two popular commercial kits to isolate microbial DNA from soils collected from Blackbird Creek, Delaware. The two kits used in this study were MO BIO Power Soil DNA Isolation Kit and Zymo Research Soil Microbe DNA Mini Prep Kit. The genomic DNA for five soil samples was extracted using both kits. A NanoDrop test was performed to compare the concentration and purity of the isolated DNA from each kit. PCR was performed on both sets of extracted DNA using universal bacteria primers. The purity of the genomic DNA was higher for the MO BIO Kit. The PCR bands for MO BIO were brighter than the Zymo Research Kit. This suggests that the MO Bio Kit would be more efficient in extracting genomic DNA from soil.

The Impact of the International Field Study in Guatemala

Trevor Derr, Anna Frangia, Marisa Marchegiano, Clanege Samuel, Yuly Rodriguez & Kayla Ryan
Mentors: Margaret McElligott, Dianitza Runser

The purpose of our international field study was to enhance the quality of our education and to impact the healthcare of a global community through nursing care. We explored the geographical, educational and socioeconomic structures that have affected the health of Guatemalans for decades. The impact of poverty, homelessness and violence was also explored. Our research prepared us to provide care in rural communities of Antigua, Guatemala. We taught health education in Santo Tomas and to forty families in the hills of Tabacal. We minimized the effects of homelessness for a single woman by building her shelter; and provided nursing care to sixty patients at a clinic, initiated in 2017 by Wesley College nursing faculty. Our mission is to continue the collaboration between Wesley College Nursing and our Guatemalan partners; to positively impact the health of their communities while enriching our nursing education on global health and culturally competent care.

Reception in Honor of All Scholars Day Participants

4:45-6:00 p.m.

College Center 206

Mentors, Presenters, Moderators, Assessors, Committee Members, ETC.

Mentors

*Mentors with asterisks * beside their names are **five-star mentors**. Five-star mentors are current mentors who have mentored students in undergraduate research for five or more Scholars-Day years. Some of them are actually **ten-star mentor-generals** who have mentored for ten or more Scholars-Day years.*

Barbara	Abbott*	Jerry	Mench
Rebecca	Benson	Albee	Mendoza
Susan Redington	Bobby*	KellyAnn	Miller
Taliah	Cook	Cynthia	Newton*
Kathleen	Curran*	Joshua	Nobiling
Darla	Davidson	Agashi	Nwogbaga*
Malcolm	D'Souza*	Gulnihal	Ozbay (DSU)
Frank	Fiedler*	Tamala	Paxton
Fady	Gerges (Green Clinics)	Gwen	Pursell
Varleisha	Gibbs	Eileen	Scanlon
Ethan	Hawkley	Dianitza	Runser
Ryan	Hubble	Stephanie	Stotts*
Mary	Jenson	Dawnn	Thomas
Venu	Kalavacharla (DSU)	Yu	Tian*
Lathadevi	Karuna Chintapenta (DSU)	Chelsey	Vest
David	Laganella*	Derald	Wentzien*
Vilma	Lazo-Butera	Jamie	Whitman-Smithe
Marcella	Legath	James	Wilson*
Christine	McDermott	MaryAnn	Yaeger (DTTC)
Margaret	McElligott		

Presenters

Kaitlyn	Adams	Janae	Jones
Yasmine	Allen	Shawn	Kauffman
Luis	Arteaga	Brianna	Krebs
Nicole	Bader	Ayowunmi	Kuforiji
Aditya	Bajaj	Kylea	Lankford
De'Mari	Barnett	Betty	Lee
William	Barton	Kai	Lee
Lauren	Benedetto	Casie	Lewis
Scott	Borsum	Austin	Lonski

Shellby	Bowman	Savanah	Love
Jillian	Bradley	Molly	MacMillan
Bryane	Bratten	Melanie	Maffei
Jordan	Brockwell	Osama	Mahmoud
Alena	Brown	Marisa	Marchegiano
Lauren	Bukowski	Danielle	Marshall
Anthony	Calcutta	Christina	McTheny
Whitney	Capitano	Kaitlyn	Mears
Ryan	Cassidy	Samuel	Meck
Alexa	Cherico	Bradford	Melvin
Taryn	Cornish	Stephanie	Mendez
Azana-Tatjana	Crawley	Althea	Mignone
Aleya	Cummings	Matthew	Montano
Destiny	Davis	Brandi	Moore
Trevor	Derr	Lily	Neff
Marquita	Dickerson-Frisby	Katelyn	Null
Rhiannon	Dillon	Taylor	O'Donnell
Matthew	Dina	Bhumika	Patel
Courtney	Dorsey	Marissa	Perez
Noah	Drayton	James	Poole
Christian	Earle	LaToya	Prioleau
Elizabeth	Englert	Ariana	Rizzo
Jayson	Feld	Destynee	Roberts
Kaitlin	Forestieri	Kassandra	Rodriguez
Anna	Frangia	Yuly	Rodriguez
Katelynn	Fry	Christina	Roe
Sarah	Fryer	Kayla	Ryan
Samantha	Fulton	Shergeel	Saleem
Melanie	Fuoco	Clanage	Samuel
Morgan	Gannon	Jacob	Sasso
Seibatu	Gaojia	Eileen	Scanlon
Ashley	George	Shelby	Schirmer
Cole	Grider	Angelina	Scott
Jenna	Gruwell	Rodneisha	Scott
Olivia	Gulledge	Shelby	Segars
Kaylynn	Hall	Kyndal	Showell

Sydney	Hall	Michael	Skivers
Asia	Harmon	Nyair	Stanford
Jessica	Hayes	Matthew	Stone
Elizabeth	Hazlett	Whitney	Summerall
Joseph	Hee	Rylee	Thompson
Teric	Henry	Olubukola	Tifase
Adrienne	Holliday	Tykeria	Tolson
Kalani	Hollman	Momina	Toseef
Sarah	Holt	Omasan	Uyebi
Erica	Horton	Josephine	Veeria
Ben	Janocha	Alana	Walker
Alexander	Jean-Francois	Jeremy	Wirick
Brelyn	Jones	Julia	Young

Moderators

Rebecca	Benson	Joshua	Nobiling
Bob	Contino	Paul	Olsen
Ron	Douglas	Ben	Pingel
William	Kroen	Mandi	Tierney
David	Laganella	Alban	Urbanas
Elizabeth	Marchioni	Sharon	Wong

Assessors

Brantley	Craig	Joshua	Nobiling
Kathleen	Curran	Tamala	Paxton
Julie	Fisher	Erin	Perchiniak
Ethan	Hawkley	Gwen	Pursell
Jordan	Kinsey	Rebecca	Schroding
Donald	Lonski	Stephanie	Stotts
		James	Wilson

Volunteers

Emily	Anderson	Judell	Haug
Aisuluu	Alford	Kaila	Hindt
Sahar	Aljunaidi	Rocher	Hopkins
Nahlah	Alsogaih	Nicole	Hulick
Kristen	Arias	Kwasatiriah	Jones
William	Arthur	Ria Tony	Kannampuzha
Sarah	Bailey	Eleanor	Knapp
Da'Shalyn	Barnes	Casie	Lewis
Jessica	Behornar	Cambria	Luschen
Elizabeth	Boyles	Sheilla	Magarov
Brynae	Bratten	Siah	McCarthy
Whitney	Capitano	Shelley	Mead
Darian	Carroll	Caitlin	Mensah
Dakota	Carter	Jacob	Mitchell
Ariel	Checa	Gloria	Momanyi
Jason	Chen	Lauren	O'Sullivan
Aline	Check-Guzman	Courtney	Padgett
Toni	Cook	Kelly	Palmer
Cowan	Cummings	Mikayla	Richardson
Amanda	Deputy	Veronica	Roberts
Radhika	Dhamecha	Jabahri	Seymore
Da'Vonne	Duncan	Tiara	Shehee-Carter
			Smallwood-
Abdul	Fadipe	Savanna	Corcoran
Kylie	Ferry	Chanelle	Spotwood
Adam	Flores	Thomas	Suarez
Ashtyn	Foster	Whitney	Summerall
Chyna	Foster	Myles	Toppin
Jordan	Fox	Omasan	Uyebi
Sharron	Gross	Deonika	White
Sharee	Halstead	Laurin	Wilder
Tykeirra	Harris	Dania	Wootson
		Brittany	Yeo

Special Thanks

President Bob Clark II
Dr. Jeffrey Gibson (VPAA/Provost)
Dr. Malcolm D'Souza

April Mahoney
Tina Heesh-Mosley
Emily Wood
Jessica Cook
Kristopher Roeske
Sierra Hayes
Anh Gibson
Wesley College SGA

Information Technology Department
Facility Management Department

*Charlton School Students for Their
Contributions to the Art Gallery:*

Mellissa Bronson
Michael Sine
Jenifer Bergold
Jacob Burall
Zaviere Roberts
Patrick Sealund
Matthew Guest
Tyree Dye
Karlina Colbert-Zeman
Austin Bohenko
Tommy Gangemi
Eddie Kidwell
Dylan Groff
Naseem Stanford

Special Thanks to Past Years' Members of Scholars Day Committee who blazed the trail for us.

Scholars Day 2007 (April 11, 2007).

*This was the first Scholars Day. It was
in the academic Year 2006-2007.*

Scholars Day Task Force Members:

Dr. Bruce Allison (Co-Chair)
Dr. Jeffrey Gibson (Co-Chair)
Dr. Jessica James
Dr. Karen Panunto
Dr. H. Earl Roberts

Scholars Day 2009 (April 15, 2009).

Dr. Jack Barnhardt (Chair)
Dr. Keka Biswas
Dr. Frank Fiedler
Dr. Jessica James
Dr. Karen Panunto

Scholars Day 2011 (April 13, 2011).

Prof. Susan Bobby
Dr. Angela D'Antonio
Dr. Lynn Everett
Dr. Frank Fiedler (Chair)
Dr. Tery Griffin
Dr. Ying Zhang

Scholars Day 2008 (April 2, 2008).

Dr. Jeffrey Gibson (Chair)
Dr. Jack Barnhardt
Dr. Frank Fiedler
Dr. Jessica James
Dr. Karen Panunto
Dr. H. Earl Roberts
Dr. Jamie Whitman-Smithe

Scholars Day 2010 (April 14, 2010).

Dr. Jack Barnhardt (Chair)
Dr. Keka Biswas
Dr. Kraiwinee (Nok) Bunyaratavej
Dr. Linda De Roche
Dr. Frank Fiedler
Dr. Tery Griffin

Scholars Day 2012 (April 12, 2012).

Dr. Angela D'Antonio
Dr. Lynn Everett
Dr. Frank Fiedler (Chair)
Dr. Kathleen Jacobs
Prof. Richard Kashmar
Dr. Alban Urbanas

Scholars Day 2013 (April 18, 2013).

Dr. Kathleen Curran
Prof. Richard Kashmar
Prof. Elizabeth Marchioni
Prof. Jerry Mench
Dr. Valerie Perez
Dr. Alban Urbanas (Chair)

Scholars Day 2015 (April 16, 2015).

Dr. Kraiwinee (Nok) Bunyaratvej (Co-Chair)
Dr. Derald Wentzien (Co-Chair)
Dr. Brantley Craig
Dr. Stephanie Stotts
Prof. Margie McElligott
Prof. Zachary Adams

Scholars Day 2017 (April 12, 2017).

Dr. Agashi Nwogbaga (Chair)
Dr. Yu Tian
Dr. Albee Mendoza
Prof. Vilma Lazo-Butera
Prof. Charlisa Edelin
Dr. Gwen R. Pursell

Scholars Day 2014 (April 15, 2014).

Dr. Valerie Perez (Co-Chair)
Prof. Elizabeth Marchioni (Co-Chair)
Dr. Kraiwinee Bunyaratavej
Dr. Kathleen Curran
Prof. Jerry Mench
Dr. Derald Wentzien

Scholars Day 2016 (April 14, 2016).

Dr. Brantley Craig (Chair)
Prof. Charlisa Edelin
Prof. Sarah Hardesty
Prof. Margie McElligott
Dr. Gwen Pursell
Dr. Stephanie Stotts

Scholars Day 2018 (April 19, 2018).

Dr. Agashi Nwogbaga (Chair)
Dr. Yu Tian
Dr. Albee Mendoza
Prof. Vilma Lazo-Butera
Prof. Darla Davidson
Dr. KellyAnn Miller

Thanks to the National Council on Undergraduate Research (CUR) for showcasing this Scholars Day at https://www.cur.org/conferences_and_events/special_offerings/urw/undergraduate_research_week_events_2018/ as part of the 2018 national undergraduate research week events.

Thanks also to the national Council on Undergraduate Research (CUR) for showcasing our Scholars Day at http://www.cur.org/conferences_and_events/special_offerings/urw/2017/events/#Wesley as part of the 2017 national undergraduate research week events.



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