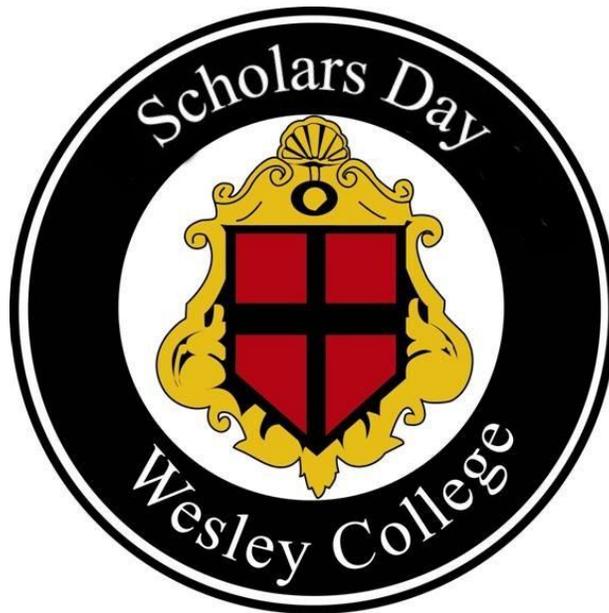


# Scholars Day

## ABSTRACTS

Wesley College  
Dover, Delaware



April 12, 2017

## Schedule of Events

Wells Auditorium (Slaybaugh Hall 107)

1:00 – 1:15 p.m.

Welcome & Opening Remarks

Dr. Jeffrey Gibson

Provost & Vice President for Academic Affairs of Wesley College

Session I

1:25-2:05 p.m.

Oral Presentations

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

Remarks from President Robert E. Clark II

President of Wesley College

Remarks from Dr. Malcolm D'Souza

Professor of Chemistry and Associate Dean of Interdisciplinary/Collaborative Sponsored Research

Oral Presentations in

Slaybaugh Hall 103, Slaybaugh Hall 104, Cannon Hall 7, Cannon Hall 109, 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 in the College Center

Reception & Ceremony in College Center 206

**Session I: Oral Presentations**

**1:25-2:05 p.m.**

**Panel 1: Cannon Hall 7**

**Moderator: Alban Urbanas**

**Assessor: Bill Kroen**

*Evaluation Of The Effects Of Sulfonyl And Sulfamoyl Chloride On Aquatic Bacteria*  
Ariel Bilbrough

*Using The Web & Social Media To Showcase STEM Undergraduate Research Programs At Wesley College*  
Andreanna Jeffries

**Panel 2: Cannon Hall 110**

**Moderator: Rebecca Miller**

**Assessor: Amy Strickland**

*A Study In Traveling Abroad*  
Shannon Hollingsworth

*Daily Life In The Tang Dynasty*  
James Poole

**Panel 3: Slaybaugh Hall 104**

**Moderator: Cathy Nosel**

**Assessor: Tammy Paxton**

*Book Club Data Mining-A Comparison Of Linear Regression And Binary Discrete Choice Models*  
Ai Xu, Adrienne Bautista

*A Study Of Organic Food Consumers' Knowledge, Attitudes And Behavior*  
James 'Beau' William, Zach Gaudlip, Lily Engel

**Panel 4: Cannon Hall 109**  
**Moderator: Jack Barnhardt**  
**Assessor: Elizabeth Marchioni**

*Are Adolescent Girls Who Use Oral Contraceptives At An Increased Risk Of Ovarian Cancer,  
Compared To Adolescents Who Do Not Use Oral Contraceptives?*  
Teledalase Ogundipe

*Diversity And Multicultural Events On College Campus: Importance, Challenges & Strategies  
For Hosting*  
Rose Bondoe, Monisola Olowere, Teledalase Ogundipe

**Panel 5: Slaybaugh Hall 103**  
**Moderator: Saharat Pongsree**  
**Assessor: Gwen Pursell**

*Comparing Investment Strategies*  
Ronny Adzadu, Rashad Kilgore, and Derrick Schleich

**Session II: Oral Presentations**  
**2:15 – 2:55 p.m.**

**Panel 1: Cannon Hall 7**  
**Moderator: Christine McDermott**  
**Assessor: KellyAnn Miller**

*Comparison Of Wetland Restoration Techniques By Vegetation Composition And Soil  
Properties*  
John Dougherty

*Development Of Rivers And Streams: A Historical Analysis*  
Jose Santana

**Panel 2: Cannon Hall 110**  
**Moderator: Danielle Archambault**  
**Assessor: Stephanie Holyfield**

*What's Your Problem?: The Effect Of Trait Aggression And Exposure To Violent Media On  
Perceptions Of Violence*  
Courtney Gross

*Milton's Lucifer In America*  
Sarah Lynch

**Panel 3: Slaybaugh Hall 104**  
**Moderator: Richard Mahee**  
**Assessor: Ethan Hawkley**

*The Legal History Of Marriage, Part 1*  
Briana Milliner, Colin Correia, Alaina Weisberg, Stephanie Dobyys, Benjamin Campbell,  
Austin Kind, Maddison Cypher

*The Legal History Of Marriage, Part 2*  
Briana Milliner, Colin Correia, Alaina Weisberg, Stephanie Dobyys, Benjamin Campbell,  
Austin Kind, Maddison Cypher

**Panel 4: Cannon Hall 109**  
**Moderator: Victor Greto**  
**Assessor: Alex Spaul**

*Grace O'Malley The Pirate Queen*  
Julianna Tedder

*Margaret Sanger: Strong Woman*  
Betty Lee, Julianna Tedder, Joy Coleman

**Session II: Musical Performances**  
**2:15 – 2:55 p.m.**

**Panel 5: Bennett Chapel**  
**Moderator: David Laganella**  
**Assessor: James Wilson**

*The Knights In Shining Spandex Tone Painting*  
Emily Bentz

*Alex*  
Alexa Cherico

*Nothing Gold Can Stay*  
Alexa Cherico and Wesley College Choir

**Session II: Poster Presentations**

**2:15 – 2:55 p.m.**

*Poster 01: The Effectiveness Of Treatment Methods On Patients With Low Back Pain From Physical Therapist's Perspective*

Matthew Horton

*Poster 02: Impact Of The Position Of The Chloro-Substituent In Chloroformate Reactivity*

Jeremy Wirick

*Poster 03: Solving Mysteries Through Chemistry*

Aditya Bajaj

*Poster 04: The Effect Of Dramatic Sea Level Rise On Tree Ring Anatomy Of Deceased Atlantic White Cedars*

Olivia Gulledge

*Poster 05: What Are The Effects Of Asthma On Athletes?*

Elisabeth Lindstrom

*Poster 06: African-American Emerging Adults And Mental Status*

Kaylynn Hall

*Poster 07: CRISPR/Cas9 Gene Editing In Saccharomyces Cerevisiae*

Kristen M. Pisarcik

*Poster 08: Pet Therapy And Its Effects On Children With Autism Spectrum Disorder*

Alyssa Pierce

*Poster 09: The Effects Of Cognition Impairment: Improving An Elderly Patient's Cognition Through Brain Stimulation*

Samantha Land

*Poster 10: Who Is More Susceptible To Sexual Violence: Athletes Or Non-Athletes?*

Mariah Payne

*Poster 11: Inventory Platform Manages Chemical Risks, Addresses Chemical Accountability, And Measures Cost-Effectiveness*

Lily Neff

*Poster 12: Use Of Polynomial Regression Techniques To Predict Solvent Mechanisms For Benzoyl Cyanide*

Edward A. Brandenburg

*Poster 13: Root Cause Analysis: Discharge Teaching*

Natalie Trujillo, Kaitlin Brennan, Cho Dalton, Sarah Miller, Devin Mackay

*Poster 14: Could Wesley College's Cannon Hall Benefit From Switching To All Green Office Supplies?*

Brooke Thompson

*Poster 15: Florence Nightingale*

Katie Glidden, Lacey Long, Keshia Crowley, Matthew Sheats, Katherine King, Cowan Cummings

*Poster 16: An Investigation Of Squirrels Use Of Olfaction Versus Vision In Foraging*

Matthew Horton, Josephine Veeria, Darrisha Small, Elaine Smith

*Poster 17: Differences In Parenting Styles Across Ethnic Groups*

Doitsu A. Aguilar

*Poster 18: Spatial Analysis Using GIS To Find An Ideal Neighborhood For Purchasing A Home*

Christina Hubert

*Poster 19: Accountability In Nursing Students*

Shanee Devane

*Poster 20: Obesity Trends In Three States*

Momina Toseef, Edward A. Brandenburg, Robert F. Dina

*Poster 21: Pet Assisted Therapy And The Future*

Alexa Venuto

*Poster 22: Analysis Of Air Quality And Asthma In Relation To Locations Of Coal-Fired Power Plants Of The Northeast*

Katelynn Fry, Joseph Howard

*Poster 23: The Relationship Between Media Use And Multitasking And Psychological Correlates: Ego-Control, Ego-Resiliency, Anxiety, And Loneliness*

Allison Perugini

*Poster 24: Avian Foraging: Place And Preferences*

Destiny Hollis, Savannah Bruce, Corey Johnson, Sharnice Wallace, Fawn Watkinson

*Poster 25\*: The Midnight Roast*

Betty Lee, Kelsey Fitzpatrick, Edward A. Brandenburg, Kenneth Ciccoli, Austin Luna

*\*Poster 25 is in the Faculty Lounge*

**Session III: Oral Presentations**

**3:05-3:45 p.m.**

**Panel 1: Cannon Hall 7**  
**Moderator: Albee Mendoza**  
**Assessor: Lynn Everett**

*Comparative Statistical Analysis Approach For Four Alkyl Chloroformates*  
Robert F. Dina

*Risk Factors Associated With Type II Diabetes Among Wesley College Students*  
Destiny Hollis

**Panel 2: Cannon Hall 110**  
**Moderator: Mary Jenson**  
**Assessor: Rebecca Benson**

*Coraline: Symbolism, Psychoanalysis, And Feminism*  
Teledalase Ogundipe

*Stepping Into The Driver's Seat: Narrative Freedom In Role Playing Video Games*  
Terrance Olivo

**Panel 3: Slaybaugh Hall 104**  
**Moderator: Paul Olsen**  
**Assessor: Brantley Craig**

*The National Football League And It's Marriage To Television*  
Ryan Sanders

*Prison Nursery Programs*  
Elizabeth Schlecker

**Panel 4: Cannon Hall 109**  
**Moderator: Barbara Abbott**  
**Assessor: Gwen Pursell**

*Mathematical Analysis Of Solar Energy In Delaware*  
Christina Hubert

*Central Americans Migrate To Escape Never Ending Hardships*  
Nicole Bader

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

**Panel 5: Faculty Lounge**  
**Moderator: Erin Perchiniak**  
**Assessor: Joshua Nobiling**

*Selected Digital Paintings*  
Emily Temple

*Universes by. Mr. Gist*  
Elijah Gist

*The Duality of Self*  
Azana-Tatjana Cralwey

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

**Panel 1: Cannon Hall 7**  
**Moderator: Erin Perchiniak**  
**Assessor: Angela D'Antonio**

*Ficoll Induces Aggregation Of Bovine Serum Albumin And Phycoerythrin*  
Kanisha Blake

*Wesley College Depression Screening*  
Erin Townsley

**Panel 2: Cannon Hall 110**  
**Moderator: Mary Jenson**  
**Assessor: Nancy Rubino**

*Tesla's International Marketing Expansion Challenge*  
William Mileski

*The History Of Now: Documenting Recent American History*

Shannon Hollingsworth

**Panel 3: Slaybaugh Hall 104**

**Moderator: Paul Olsen**

**Assessor: Brantley Craig**

*American Chinese Cuisine VS Authentic Chinese Cuisine*

Dru Sottnick

*China Through American Eyes—How Different Are These Countries?*

Rhiannon Dillon

**Panel 4: Cannon Hall 109**

**Moderator: Barbara Abbott**

**Assessor: Rebecca Miller**

*It's More Than A Game*

Adriane Fraser

**Session IV: Art Demonstrations**

**3:55 – 4:35 p.m.**

**Panel 5: Faculty Lounge**

**Moderator: Elizabeth Marchioni**

**Assessor: Joshua Nobiling**

*Speak: A Spoken Word Showcase*

Kevin Johnson, Dominic McAnulty, Evan Le'Mon, Patrick Schlosser, Gail Trotter, Corey Lyons, Tahir Carr, Azana Tatiana

**Session IV: Poster Presentations**

**3:55-4:35 p.m.**

*Poster 26: Using Quartz To Catalog Environmental Microbial Isolates Classified*

*Using The Biology*

Lily Neff

*Poster 27: Melanoma In The First State Did Not Only Claim Bob Marley's Life*

Austin Luna, Mabel D'Souza

*Poster 28: Depression Screening 2016*

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

*Poster 29: Digitization Of Historic St. Jones River Maps*

Olivia Gulledge

*Poster 30: RNA-Seq-Based Transcriptome Analysis To Study Differentially Expressed Salt Tolerant Genes In Spartina Alterniflora And Phragmites Australis*

Josephine Veeria

*Poster 31: Psychological Effects Of Female Genital Mutilation*

Samantha McDonald

*Poster 32: Similarities And Differences Between Postpartum Depression And Postpartum Psychosis And The Available Treatments*

Kezban Yilmaz

*Poster 33: Association Of Vogt-Koyanagi-Harada And Rheumatoid Arthritis: Two Types Of Disease And Their Possible Connection With One Another*

Jersey DeMesa

*Poster 34: Nest Distribution In Birds*

Alexis Moore, Amy Clark, Emily Wagner, Tahir Carr, Inayah Whitaker

*Poster 35: Top Ranked Hospital Hotpot In The US*

Dinh Ngo

*Poster 36: Analyzing The Relationship Between Mean Performance Times In Running Events And Demographic Information*

Anthony Calcutta, Robert Coakley, Aleya Cummings

*Poster 37: Personal Finance With FRED*

Austin Luna, Ariel Bilbrough, Michael Skivers, Robert F. Dina

*Poster 38: Obesity*

John Dougherty, Morgan Gannon, Brooke Thompson, Dinh Ngo

*Poster 39: Wesley College's Transformation To A MSI*

Allison Schwandt, Destiny Hollis, Francis Jackson, Mikayla Caldwell

*Poster 40: Nest Predation And Birds; The Effect Of Egg Number*

Caitlyn Gerwaski, Brittany Klase, Maggie Zwiebel, Lucie Sainte, Ashley Kistler

*Poster 41: Food Value And Foraging Preferences In Gray Squirrels (Sciurus Caroliensis)*  
Shantae Taylor, Chaoying Feng, Angela Barnett, Jenna Gruwell, Kanisha Blake

*Poster 42: Spatial Analysis Of Ideal Farming Location*  
Joseph Howard

*Poster 43: Increasing The STEM Presence On The Wesley Website*  
Andreanna Jeffries

*Poster 44: Incorporating Statistics To Probe Solvent Mechanisms*  
Austin Lonski

*Poster 45: Madeline Leininger: Transcultural Nursing*  
Megan Otteni, Molly Fox, Brianna Fogelmann, Rancel Jolley

*Poster 46: Determining The Standard Operating Procedure (SOP) For The Use  
Of A Rotary Evaporator In The Undergraduate Organic Chemistry Lab*  
Alexander Jean-Francois, Rachel Piper

*Poster 47: Mild Traumatic Brain Injuries And Risk For Chronic Traumatic  
Encephalopathy Among Athletes And The Military*  
Yasmine Allen

*Poster 48: The Stigma Of Mental Illness In American*  
Diondre Hamm

## **ABSTRACTS**

*Evaluation of the Effects of Sulfonyl and Sulfamoyl Chloride on Aquatic Bacteria*  
Ariel Bilbrough  
Mentor: Dr. Kevin Shuman

Methanesulfonyl (1) and methylsulfamoyl (2) chlorides are commonly used as precursors in the pharmaceutical industry as antibiotics that inhibit E1 activating enzymes and act as kinase inhibitors for hyperproliferative diseases. If not disposed of properly, these sulfonyl and sulfamoyl-containing antibiotics could end up in bodies of water allowing for the selection of antibiotic-resistant microbes. To determine how compounds 1 and 2 alter microbial communities in aquatic ecosystems, water samples were collected from the St. Jones River (Dover, DE) and used to inoculate media with and without compound 1 or 2. A reduction in growth was observed in the plates containing either compound. Microbes that grew in the presence of these compounds were isolated and

identified. Identifying microbes capable of degrading these compounds could lead to the development of bioremediation strategies for their removal from the environment.

*Using the Web & Social Media to Showcase STEM Undergraduate Research Programs at Wesley College*

Andreanna Jeffries

Mentor: Dr. Malcolm D'Souza

Exposure is the key step in recruiting prospective Science, Technology, Engineering, and Mathematics (STEM) students. Wesley College is a tuition-driven institution where recruitment is necessary for survival. In the past, STEM recruitment has not been a priority. However, communication and marketing efforts are ever-changing and new avenues of resources are vital to increasing the STEM presence. The purpose of this research is to see if new approaches to convey info about STEM at Wesley will increase the amount of prospective STEM students that will apply to Wesley. This presentation will inform us of what avenue of resources we should be using when recruiting STEM students.

*A Study in Traveling Abroad*

Shannon Hollingsworth

Mentor: Ethan Hawkley

My project evaluates the value of foreign travel in the context of intellectual pursuits, specifically for students who participated in a recent trip to China in conjunction with a course on the history of Modern China. While in China, the students experienced the cultural differences and had the opportunity to see the historical sites that they studied in class. I surveyed the students about the perceptions and expectations prior to visiting China and how those were changed after the trip to assess the impact of the travel experience. Evaluating the difference between the students' expectations and their post-experience impression demonstrates the value of study abroad on a student's education.

*Daily Life in the Tang Dynasty*

James Poole

Mentor: Ethan Hawkley

The Tang Dynasty has a great influence in Chinese history. It is remembered as one of China's greatest dynasties. The Tang Dynasty's emphasis on art, culture, commerce, and multi-cultural elements produced an empire of lavishness and grandeur. This presentation will focus on the daily life of the Tang Dynasty by analyzing its food, fashion, city life, and religion. Audience members will get a glimpse on what it was like to live during one of the most luxurious and famed dynasties in Chinese history. Students interested in history from different cultures can gain valuable knowledge from studying the everyday experiences of people in the past.

Book Club Data Mining-A comparison of linear regression and binary discrete choice models.

Ai Xu, Adrianne Bautista

Mentors: Dr. Frank Fiedler, Dr. Yu Tian

"Database marketing" and "big data" mining have been the latest trend in understanding consumers' want and providing insights for better marketing strategies. The authors use publicly available datasets from a book club and employ linear regression and discrete choice modeling techniques in SAS to identify the key drivers of consumer purchase decisions. The variables contain basic demographic information and past purchase decisions from 1,600 consumers in the club. Results of the two models are compared. Identified key variables are used to calculate the probability of purchase of a book, "The Art History of Florence", for each consumer in

a hold-out sample of 2,300 consumers. And with a conservative cutoff probability, the authors compute the “hit rate” for each model to learn the advantages and limitations of the two models. The authors also provide recommendations to how such analysis could be streamlined for future use by businesses.

A study of organic food consumers’ knowledge, attitudes and behavior  
Presenters: James 'Beau' William, Zach Gaudlip, Lily Engel  
Mentor: Dr. Yu Tian

With an estimated \$44 billion sales in 2016, the organic product industry has enjoyed double digit growth rate in the past few years. As the undoubtedly fastest growing sector in the U. S. food industry, organic product is attracting the attention of industry analysts, the farming community and academic researchers. What is not perfectly clear is the consumer attitude towards the industry, their understanding of the significance of the impact of organic farming and their purchase behavior. The authors have designed a survey (approved by Wesley College IRB) to better understand the demographics of organic product consumers, where and how they shop, and their willingness to pay for these products. This research will shed light on the consumer mentality and behavior and hopefully help the farming and retail sectors of these products with a more effective marketing strategy.

*Capstone Paper: Are Adolescent Girls Who Use Oral Contraceptives at an Increased Risk of Ovarian Cancer, Compared to Adolescents Who do not Use Oral Contraceptives?*  
Teledalase Ogundipe  
Mentor: Jerry Mench

The purpose of this retrospective and prospective study is to attempt to answer this question: Are adolescent girls who use oral contraceptives at increased risk of ovarian cancer compared to adolescent girls who do not use oral contraceptives? In addition to oral contraceptives, this study examines several factors that can make adolescents more susceptible to ovarian cancer: HPV, obesity, BRCA1 and BRCA2 genetic mutation, and WWOX CNV-67048. Research findings from fourteen research studies were analyzed and included in this study. This presentation will provide evidence that the use of oral contraceptive alone doesn't increase the risk of a female's risk of developing ovarian cancer. Through this presentation, audiences will learn about the actual risk factors of ovarian cancer and how exactly these factors interact with the use of oral contraceptive with respect to the length of use.

*Diversity and Multicultural Events on College Campus: Importance, Challenges & Strategies for Hosting*  
Rose Bondoe, Monisola Olowere, Teledalase Ogundipe  
Mentor: Dr. Agashi Nwogbaga

Cultural diversity and awareness are significant factors in the experiences of students in college and beyond. In a country as culturally diverse as the United States and as colleges and universities are becoming increasingly more diverse, it is imperative that the promotion of different cultures becomes regular part of an institution's tradition and protocol. This presentation will discuss the several advantages of such events. Some of them are enhancing global awareness, improving cultural appreciation and enlightenment, and promoting cultural understanding and tolerance. Challenges for hosting such events as well as the strategies for successfully handling such challenges will be highlighted. The 2016 African Pageant that was hosted at Wesley College by the African Students Association and Multicultural Student Union will be used as an example. It will showcase how cultural events can promote an academic environment that accepts all people of all cultural backgrounds through entertainment, participation and collaboration.

*Comparing Investment Strategies*  
Ronny Adzadu, Rashad Kilgore, Derrick Schleich  
Mentor: Dr. Kraiwinee Bunyaratevej

Since the beginning of stock trading, investors and traders have been trying to find the secret to making the most money with the least amount of risk. The information that we evaluated for this paper will determine what style of trading and research will work the best. The study will consist of four portfolios. The first will be the Dow 30, which we be the benchmark of all the portfolios. The second portfolio will be randomly selected stock. The third portfolio we will be using is the fundamental analysis. The main part of fundamental analysis is crunching the numbers of the company's financial statements. With the last portfolio, we will be using the technical analysis. The main factor that technical analysis looks at is the price movements in the market. Technical analysis looks to understand the market by learning and studying the market at a whole and not individual companies.

*Comparison of Wetland Restoration Techniques by Vegetation Composition and Soil Properties*  
John Dougherty  
Mentor: Dr. Stephanie Stotts

Valuable wetlands in Delaware were historically converted to farmlands, but poor production has prompted numerous wetland restoration projects throughout the state. However, a standard protocol for wetland restoration has yet to be adopted with some projects relying on natural revegetation and others using plantings. This project compares the soil properties of five naturally vegetated and five planted wetlands in Kent County, Delaware. All the wetlands were restored 15 years ago using similar methods. Excitation-Emission Matrix spectroscopy was used to analyze the soil for fluorescence, humification, and breakdown of the dissolved organic matter. Bulk density of the soil and surrounding tree species were also observed. Through statistical analysis of the data, no difference was found between humification, fluorescence and tree composition. This data indicates that planting wetlands in the restoration process does not provide a long term advantage.

*Development of Rivers and Streams: A Historical Analysis*  
Jose Santana  
Mentor: Dr. Stephanie Stotts

Rivers and streams are one of the most significant forces shaping the Earth. Delaware's streams and rivers have undergone dramatic alterations through filling and dredging which has disturbed the natural flow of waterways sometimes resulting in periodic flooding. This research identified areas that may be prone to flooding due to their elevation and proximity to an altered stream channel by combining historic maps and existing land use and elevation data in a Geographic Information System (GIS). This project resulted in two maps, one showing developed areas that may be at elevated risk of flooding and another showing agricultural and open areas that should not be developed due to the potential risk of flooding. These results should be considered by policy makers and land developers who are pursuing development in Delaware.

*What's Your Problem?: The Effect of Trait Aggression and Exposure to Violent Media on Perceptions of Violence*  
Courtney Gross  
Mentors: Dr. Albee Mendoza

Research has shown that 75% of youth-focused media contains violence (Levermore & Salisbury, 2009). However, little research has been conducted regarding the perceptions of violence (i.e., the degree to

which an individual identifies an act as aggressive or violent) and the variables that influence these perceptions. It is important to study the perceptions of violence because perceptions regulate behavioral and cognitive responses. Thus, the current study examines the effects of exposure to violent media and trait aggression on perceptions of violence using a between-subjects, experimental design. Participants will be randomly assigned to watch a violent or nonviolent video clip, and then complete a measure of trait aggression and a provocation stories task. Results and implications will be discussed. Learning objectives will include [a] understanding the factors that influence the perceptions of violence, [b] demonstrating an undergraduate thesis from conceptualization to presentation, and [c] discussing procedures of data collection

*Milton's Lucifer in America*  
Sarah Lynch  
Mentor: Dr. Brantley Craig

John Milton's portrayal of Lucifer in his epic poem "Paradise Lost" strays from its biblical derivative and is a pivotal point for how all people view the seemingly diabolical character. Milton's alternate depiction of Lucifer is the reason why the character has remained so prevalent throughout history and especially today in modern America. The different perspective on Lucifer Paradise Lost offers has been, and continues to be, incredibly appealing to Americans because he is the embodiment of so many attitudes and ideologies that they have upheld since the nation's birth, such as autonomy, independence, and change by means of rebellion.

*The Legal History of Marriage*  
Briana Milliner, Colin Correia, Alaina Weisberg, Stephanie Dobyns, Benjamin Campbell, Austin Kind,  
Maddison Cypher  
Mentor: Charlisa Edelin

Through the course of history, marriage has been the key foundation that solidifies the true nature of family and society. Laws have governed the elements of marriage since the dawn of mankind. The historical view of marriage has been tested over time to appropriately apply to those who wish to engage in a valid marriage. Through the powers vested in the U.S. court system, marriages have become applicable to all constituents regardless of gender or race. We will discuss the history of marriage starting with: 1) Loving v. Virginia (Marriage is a Fundamental Right – making interracial marriage legal); we will then discuss 2) Bowers v. Hardwick and Lawrence v. Texas (Homosexuality is not a Crime); following that discussion we will explore 3) Baehr v. Lewin, Goodridge v. Dept. of Public Health, the California litigation and other cases leading up to same sex marriage (The Road to Freedom); and finally 4) the cases that changed the state of marriage in America, U.S. v. Windsor and Obergefell v. Hodges (Freedom!)

*Grace O'Malley the Pirate Queen*  
Julianna Tedder  
Mentor: Dr. Linda DeRoche

Grace O'Malley is the definition of a strong woman. A fierce noblewoman and pirate who worked out of the west coast of Ireland, she spent most of her life on the sea and played a major role in the Irish resistance against the English. Her story, however, has been virtually omitted from history books, unlike those of her male counterparts. Through the examination of several secondary sources, I have pieced together the story of Grace O'Malley. My presentation, moreover, places O'Malley's achievements within the context of the gender expectations of her time to demonstrate the barriers that unconventional women face. My presentation will thereby demonstrate that strong women do indeed exist in history and that O'Malley embodies the qualities of

many such unconventional women. The history books may neglect women of achievement, but such women have certainly left their mark on the world.

*Margaret Sanger: Strong Woman*  
Betty Lee, Julianna Tedder, Joy Coleman  
Mentor: Dr. Linda DeRoche

Margaret Sanger opened the first birth control clinic in 1916. One hundred years later, her creation is still a source of debate in the United States Congress. From the beginning, women's health care has always been controversial. In the first ten days of operation, however, Sanger's makeshift birth control clinic saw over five hundred women, clearly demonstrating its need. Although a large number of women continue to rely on what that clinic became, America continues to question the value of Planned Parenthood regardless of its need. Using both primary and secondary sources, I have researched the life of Margaret Sanger, the strong woman who spearheaded and sustained the women's health movement. I have also used Sanger's life as a way to consider gender in America. I will share my research on the life of Margaret Sanger and her legacy through an oral presentation supported with a PowerPoint.

*The Knights in Shining Spandex Tone Painting*  
Emily Bentz  
Mentor: Dr. David Laganella

The composer will describe her process of writing a 2-movement tone painting of her novel, "The Knights in Shining Spandex." The first movement demonstrates the theme of the overall novel, and the second movement demonstrates the innocence of the romance in the novel.

*Alex*  
Alexa Cherico  
Mentor: Dr. David Laganella

My presentation will include two performances of pieces I composed over the last two semesters. One of which is a composition I wrote that is named after my friend who died in September. Alex is the title of the piece. Alex died from cancer when he was twenty one years of age and he had a rare genetic disease that caused him to get cancer repeatedly. The piece is written for Clarinet solo with a piano accompaniment. It is a relatively short piece that is 50 measures long. It will be performed by myself on clarinet and Randi Robinson on piano. The second piece I've written will be performed by the Wesley College Choir. The lyrics I used for this composition were originally written by Robert Frost in his poem entitled Nothing Gold can Stay. The first time I heard this piece, I was watching *The Outsiders*, a movie made in 1985. Whenever I think of poetry, it is the first poem I remember. When I was given the assignment to write a choir piece using the lyrics from a poem, it was the first one that came to my mind. The piece is seventeen measures long and requires voice parts for soprano, alto, tenor, and bass.

*Nothing Gold Can Stay*  
Alexa Cherico, Wesley College Choir  
Mentor: Dr. David Laganella

Nothing Gold Can Stay is a choir piece that is another part of my composition process. The piece will be performed by the Wesley College choir and Bennett Chapel will be the performance space.

*The Effectiveness of Treatment Methods on Patients with Low Back Pain from Physical Therapist's Perspective*

Matthew Horton

Mentor: Amy Strickland

This study was an investigation of the effectiveness of low back pain (LBP) treatment methods as perceived by the physical therapist. Many studies focus on quantitative research that analyzes the effectiveness of LBP treatment from the perspective and outcomes of the patients. There tends to be a lack of evidence as to how the physical therapist views the effectiveness of his treatment of LBP patients. A primary goal of the study was to recognize a gap in the research and analyze the perspectives of physical therapists in regards to their efficiency and effectiveness in treating low back pain. Knowing physical therapists' perspectives improves patient outcomes and therefore leads to a reduction in healthcare costs and the prevalence of LBP complications.

*Impact of the position of the chloro-substituent in chloroformate reactivity*

Jeremy Wirick

Mentor: Dr. Malcolm D'Souza

4-Chlorobutyl chloroformate ( $\text{ClCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OCOCl}$ ) is an alkaloid precursor for fungal inhibitors and microbiocides. This undergraduate project specifically evaluates the impact of the chloro-substituent (in position 4) in comparison to its alkyl parent, n-butyl chloroformate. Employing the acid-base and conductometric titration methods, we followed the pseudo first-order kinetics of 4-chlorobutyl chloroformate and n-butyl chloroformate at 25.0 °C in a wide variety of pure and binary aqueous organic mixtures. Using the two-term Grunwald-Winstein equation, the mechanism of the reactions was determined and the solvolytic addition-elimination mechanism was found to be dominant.

*Solving Mysteries through Chemistry*

Aditya Bajaj

Mentor: Dr. Malcolm D'Souza

Solving Mysteries through Chemistry was the theme for the 2016 DE-ACS Section annual family science adventure program in Delaware. Each year approximately 350 kids from grades 3-8 participate. Undergraduates enrolled in the Organic Chemistry II course at Wesley College participate in this day-long event for additional class-credit. The undergraduates formulate experiments/demonstrations/hands-on activities, understand content and safety, and learn to budget time and money. To go with this year's theme, the Wesley students designed the following inquiry-based experiments: Secret Message with Frixion Pen; Secret Message with Lemon Juice; Strawberry DNA Extraction; Candy Chromatography; Pen Chromatography; Powder Analysis; and Fingerprinting. The Wesley participants gained valuable experience in their ability to demonstrate scientific principles through this interactive program.

*The Effect of Dramatic Sea Level Rise on Tree Ring Anatomy of Deceased Atlantic White Cedars*

Olivia Gullede

Mentor: Dr. Stephanie Stotts

Over 80% of Delaware's 11,000 acres of freshwater tidal wetlands will likely be lost to inundation from the sea by 2100 with the remaining acres impacted by salt water intrusion and rising water tables. Historic dredging St. Jones River in Dover, DE caused a rapid increase in salinity, resulting in saltwater intrusion of freshwater tidal wetlands which killed many economically and ecologically important Atlantic white cedar (AWC). This study

assesses the impact of rising salinity on AWC, by examining the annual rings from 11 standing dead specimens. All samples were processed and sanded with 80 to 400 grit sandpaper. Rings were dot dated and skeleton plots were generated based on ring widths which were then measured with a linear encoder and run through two programs to rid the data of confounding patterns. The resulting chronology indicates that increasing salinity has a significant detrimental impact to Atlantic white cedar.

*What are the Effects of Asthma on Athletes?*

Elisabeth Lindstrom

Mentor: Dr. Barbara Abbott

Asthma is a chronic disorder that affects up to 300 million people worldwide. Exercise or sports-induced asthma is a health risk among athletes and especially elite athletes. Exercise induced asthma is defined as a narrowing of airways in the lungs that is triggered by strenuous exercise. It is believed that at least 15-25% of athletes show signs and symptoms of asthma and exercise induced asthma. The symptoms of exercise induced asthma include shortness of breath, wheezing and coughing during or after exercise. Exercise induced asthma may commonly go underdiagnosed and also may not be controlled. With treatment, outdoor, physical and daily activities can be controlled and not hindered.

*African-American Emerging Adults and Mental Status*

Kaylynn Hall

Mentor: Dr. Julie Fisher

Mental health is just as important as physical health. Unfortunately, this concept does not receive enough recognition from the African-American population. The suicide rate of Caucasian people has consistently been lower than that of African-Americans and suicide remains the third leading cause of death for African-American youth aged 15 to 24 years. Emerging adulthood, defined as the period of life between ages 18 and 25, is thought to be a time of identity exploration during which there is increased vulnerability for various types of risky behaviors, including suicide attempts.

*CRISPR/Cas9 gene editing in *Saccharomyces cerevisiae**

Kristen M. Pisarcik

Mentors: Natalia Rivera-Torres, Eric B. Kmiec

The field of gene editing has been rapidly advanced by the development of the CRISPR/Cas9 system. Genetic engineers have redesigned and purposed the CRISPR/Cas9 system to be able to knockout eukaryotic gene function in a precise and highly efficient manner. We are adapting this strategy for use in *Saccharomyces cerevisiae* to disrupt integrated chromosomal genes that are responsible for the colony color (i.e. ADE2). The system is also being developed as an educational tool to instruct undergraduate students in the molecular basis of gene editing. Genetically engineered chromogenic plasmids, Cas9 containing plasmids, and ADE2 guide-RNA (gRNA) plasmids have all been transformed into *S. cerevisiae* and changes in phenotypic expression, viability, and extent gene editing activity are being evaluated. The optimization of these innovative experiments and the establishment of a robust experimental system will lead to the design of a laboratory exercise suitable for inclusion in an undergraduate genetics curriculum.

*Pet Therapy and Its Effects On Children With Autism Spectrum Disorder*

Alyssa Pierce

Mentors: Sue Hudson, Patricia Gallo

Children with Autism Spectrum Disorder (ASD) struggle both at school and at home, and the stress brought on by these struggles impact the children, as well as their families. Research found in academic databases has cited

that pet therapy for children with Autism Spectrum Disorder may help improve social skills, increase motor skills, and assist with learning disabilities, which are common issues in children with ASD. Pet therapy has the potential to assist children with ASD to grow into adults who are more independent while allowing them to function in society. The purpose of this paper is to bring awareness to the benefits of pet therapy for ASD children and their families. All research for this paper is secondary research through academic databases. While more research is needed before pet therapy is deemed a true treatment for this disorder, it has no negative effects on the children or on their families.

*The Effects of Cognition Impairment: Improving an Elderly Patient's Cognition Through Brain Stimulation*  
Samantha Land

Mentors: Sue Hudson, Patricia Gallo

Brain cognition is the brain's ability to process information through its hemispheres allowing the hemispheres to communicate with each other to facilitate thinking, understanding, and motor skills as well as holding memory. Brain impairment consists of a person having complications concentrating, remembering, learning, and decision making, and levels of impairment can range anywhere from simple issues such as temporary memory loss to serious unalterable speech impairments. The purpose of this paper is to inform about the importance of early prevention through starting treatment early and continuing throughout life to increase long term benefits. Currently, there are studies, as well as therapies, that can decrease the rate of cognitive decline in the elderly. Age is the primary cause of brain cognition impairment, which will lead to Dementia and Alzheimer's disease. All research for this paper is secondary research conducted through academic databases. Cognitive decline will never fully disappear, but the numbers of those suffering with cognition impairment will decrease as more awareness is brought forth.

*Who is More Susceptible to Sexual Violence: Athletes or Non-Athletes?*

Mariah Payne

Mentor: Dr. Barbara Abbott

In this study, the incidence of sexual violence on college campuses will be investigated. The focus for this paper will be comparing the incidence of sexual violence among athletes and non-athletes. Sexual violence (also known as sexual assault) includes rape, fondling, incest, or statutory rape. College age persons are especially at risk for sexual assault victimization. No matter the increased awareness and action to prevent and intervene, sexual assault has remained a problem on college campuses for several decades. This study will be conducted via survey. The survey will be conducted in the student center by random selection. The results of this study allow colleges to understand the prevalence of sexual violence on campus in order to take steps to further prevent it.

*Inventory platform manages chemical risks, addresses chemical accountability, and measures cost-effectiveness*

Lily Neff

Mentors: Dr. Malcolm D'Souza, Kristopher Roeske

In order to develop best practices for chemical laboratory safety and for chemical management accountability, the freely-available online platform, Quartzly, was integrated within the department's existing storage and handling protocols. In addition, Quartzly facilitated the digital tracking and dispersal of our hazardous waste inventory. System implementation facilitated stronger teamwork and an improved collaborative culture between the department faculty, the laboratory manager, and the undergraduate laboratory assistants. Furthermore, besides the incorporation of an improved safety and documentation consciousness, greater productivity and efficiency to monitor chemicals and their associated contaminants were witnessed. This will help to reduce our environmental footprint. In addition to the chemical and social benefits, there was a financial

benefit; specifically, there was an annual savings balance of \$12,381.53 (August 2015 to August 2016) on a total billing invoice amount of \$48,878.78.

*Use of polynomial regression techniques to predict solvent mechanisms for benzoyl cyanide*

Edward Brandenburg  
Mentor: Dr. Malcolm D'Souza

Cyanide is an active leaving group and millipedes use benzoyl-cyanide as an efficient avian deterrent. A prior study followed its kinetics at varying temperatures in several aqueous organic mixtures. Since the leaving group is involved in the rate-determining step of SN2 process, we became sceptical with the SN2 proposal. Using Arrhenius plots, we first obtained the rates of reaction in 39 solvents at 25 °C. To elucidate the reaction transition state, the two-term Grunwald-Winstein equation was utilized. In 32 solvents, we obtained values which support an addition-elimination mechanism. For the seven ionizing mixtures, the two-term G-W analysis resulted in values that support that the dissociative SN1 process is dominant.

*Root Cause Analysis: Discharge Teaching*

Natalie Trujillo, Kaitlin Brennan, Cho Dalton, Sarah Miller, Devin Mackay  
Mentor: Dr. Nancy Rubino

Discharge planning and teaching is a responsibility of nurses. Its purpose is to educate patients and their families to manage their own care and to achieve their optimal health. Evidenced-based research has found discharge teaching to effectively lower rates of readmission and improve the health of patients (Andrus, Dubois, Jansen, Kuttner, Lansberry, & Lukowski, 2003) Barriers such as the people involved, the processes and regulations, management support, and the environment all impact the success of discharge teaching (Graham, Gallagher & Bothe, 2013). The purpose of this root cause analysis was to identify barriers that may hinder the care of patients. Based on observations, interviews, and evidenced-based research, these barriers were identified and a Plan, Do, Study, Act model was projected for a facility. Based on these findings, the biggest barrier for poor discharge teaching was a lack of discharge information provided to the staff and subsequently, to the patients. This presentation will inform the audience about the importance of identifying necessary education needed prior to leaving a hospital setting.

*Could Wesley College's Cannon Hall Benefit from Switching to all Green Office Supplies?*

Brooke Thompson  
Mentor: Dr. Stephanie Stotts

Many academic institutions are taking steps to create sustainable campus environments. These changes range from implementing campus wide-recycling to simple community gardens. However, would the transition to using greener office supplies be financial feasible? Green products, although more expensive, allow for economic development while conserving for future generations. Cannon Hall's previously purchased office supplies were compared to that of the greener options from Office Depot, Staples, W.B. Mason (for printer paper), and Quill. Results show that changing to purchase greener office supplies would be more costly. The greener options are often more expensive than what Wesley currently pays. Some products have no available sustainable alternatives. The availability of quality providers of green office supplies and the increased expense make the transition from virgin to eco-friendly products unlikely. Environmentally responsible purchasing is vital, but the cost benefit analysis does not support the move to greener procurement.

*Florence Nightingale*

Katie Glidden, Lacey Long, Keshia Crowley, Matthew Sheats, Katherine King, Cowan Cummings  
Mentor: Darla Davidson

The purpose of this poster presentation is to discuss Florence Nightingale's Environmental Theory and how it applies to the nursing profession today. Nightingale's Environmental Theory in nursing stresses the importance of providing an optimal environment to assist clients in maintaining or regaining health. Through Nightingale's research she found that unclean environments caused infection and impeded healing. The outcome of this literature review is significant because it exposes how Nightingale's practices are still being applied in modern-day nursing.

*An Investigation of Squirrels Use of Olfaction Versus Vision in Foraging*  
Matthew Horton, Josephine Veeria, Darrisha Small, Elaine Smith  
Mentor: Dr. Kathleen Curran

This study was conducted to determine whether squirrels rely more on their sense of smell or vision when locating food sources. To test this hypothesis, four treatments of peanuts were used. One half of the peanuts were wrapped with saran wrap to block the smell, one half of the peanuts were buried by leaves so they cannot be seen. The four treatments are unwrapped and exposed, unwrapped and covered, wrapped and exposed, and wrapped and covered. Peanuts were placed in a wooded location along a 25 meter transect. Each of the four peanut treatments were randomly placed in smaller transects that were spaced at one meter intervals perpendicular to the main transect. The study duration resulted in: 14 wrapped and buried peanuts were taken; 17 unwrapped and open peanuts were taken; 20 wrapped and open peanuts were taken; and the unwrapped and buried peanuts were the highest with 23 nuts.

*Differences in Parenting Styles Across Ethnic Groups*  
Doitsu A. Aguilar  
Mentor: Dr. Gwen R. Pursell

The goal of this presentation is to review research on parenting in order to address the question: do parenting styles differ across ethnic groups? The parenting styles that will be discussed include authoritative, authoritarian, permissive, and neglectful parenting. This project will highlight several research studies that have compared parenting styles across European Americans, first-generation Hispanic Americans, and second-generation Hispanic Americans. This project will also consider associations between parenting styles and several outcome variables for each ethnic group. Outcome variables will include school performance, delinquent behavior, and socio-emotional competence, etc. This presentation is significant in that it will highlight both positive and negative outcomes associated with each parenting style and whether these outcomes differ as a function of ethnicity.

*Spatial Analysis using GIS to find an Ideal Neighborhood for Purchasing a Home*  
Christina Hubert  
Mentor: Dr. Stephanie Stotts

Determining where to buy a home can be a significant decision, and different people have varying preferences regarding their desired community. In this project I used Geographic Information Systems (GIS) to help a friend identify the neighborhoods she should focus on in her quest to purchase a home. To accomplish this goal, I collected layers for air quality, education level, household values, and average age range. Using queries I selected and intersected areas with Air Quality Index (AQI) of 30 - 35, an average education level of high school or greater, a median house/condo value of \$150,000 - \$200,000 and a median resident age between 30 - 40 years. The result is a map of Delaware with all neighborhoods that met the requirements.

*Accountability in Nursing Students*  
Shanee Devane  
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Mentor: Darla Davidson

Accountability is described as a core part of being a professional nurse and it aligns with public trust. In this literature review it was found that professional nursing accountability did not have a consistent definition or any research with graduate nursing students. The purpose of this study and literature review was to help nursing students understand that accountability requires them to be responsible for their own judgment and actions. This poster presentation was designed to help provide nursing students with a reliable definition of professional nursing accountability.

*Obesity Trends in Three States*

Momina Toseef, Edward A. Brandenburg, Robert F. Dina

Mentor: Dr. Stephanie Stotts

In the United States, the obesity epidemic has been present in many different states, including Pennsylvania, Delaware, and Wisconsin. Known factors that have influence on obesity trends are population density, fast food density, temperature, and age range. This project will take an in depth look at these factors as they relate to the counties of the mentioned states. These four factors may play a symbiotic relationship with the obesity rate of Pennsylvanians, Delawareans, and Wisconsinites. This project will utilize digitized maps in ARC Map using Geographical Information Systems to gather the data and visualize the trends in these three states. Correlations between any of these variables and obesity within the counties will be represented.

*Pet Assisted Therapy and the Future*

Alexa Venuto

Mentor: Dr. Gwen R. Pursell

With hopes to find more uses for Animal Assisted Therapy (AAT), the goal of this project is to make people aware of the current and future use of AAT. Specifically, this project will define AAT, discuss who benefits from AAT, and present the research outcomes associated with AAT. Animal Therapy is a fairly new area of treatment that has been associated with reduction of stress for people with physical, emotional, and/or behavioral disabilities. Specifically, research has found that AAT can be used as an effective therapy for people suffering from physical pain, emotional distress (e.g., anxiety, aggression, PTSD), schizophrenia, cerebral palsy, dementia, and cancer. Moreover, this innovative therapy is mostly beneficial in distracting patients from physical or emotional pain, improving social skills, and making a person more self-aware. The project will focus on the current and future uses of AAT such as for victims of abuse.

*Analysis of Air Quality and Asthma In Relation to Locations of Coal-Fired Power Plants of the Northeast*

Katelynn Fry, Joseph Howard

Mentor: Dr. Stephanie Stotts

Due to coal-fired power plants, the Northeast has some of the worst air quality in the nation which has been linked to asthma symptoms. Ozone is one of the most common air pollutants released by power plants and is a known trigger of asthma, as it irritates the lungs and alveoli that function as important components of the respiratory system. This project uses Geographic Information System to assess ozone levels, locations of coal-fired power plants and their relation to asthma hospitalization rates, for the Northeast in an attempt to draw conclusions about the relationships between these variables. The results of this research will have important implications regarding the impact of coal-fired power plants on air quality and environmental health.

*The Relationship Between Media Use and Multitasking and Psychological Correlates: Ego-control, Ego-resiliency, Anxiety, and Loneliness*

Allison Perugini

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Mentors: Dr. Angela D'Antonio, Victor Greto, Dr. Jack Barnhardt

Media use and media multitasking are increasingly prevalent as our changing environment promotes constant technological advancements and fosters accelerated time pressures. This study examined the relationship between media and technology use and multitasking among college students and several psychological correlates including ego-control, ego-resiliency, anxiety and loneliness. Five questionnaires were utilized, consisting of a demographic questionnaire, Student Technology and Media Use Survey, Ego-Control and Ego-Resiliency Scale, UCLA Loneliness Scale, and the State-Trait Anxiety Inventory for Adults. Participants were 204 Wesley College students gathered from a convenience sample. Significant results indicate overall media use and multitasking were negatively correlated with ego-control. Specifically among students who multitask frequently, ego-resiliency and loneliness were strongly negatively correlated. This suggests a concerning relationship between media consumption and impulsivity, resiliency, and feelings of loneliness. Future research should continue to explore these relationships and potential effects of media use and multitasking.

*Avian Foraging: Place and Preferences*

Destiny Hollis, Savannah Bruce, Corey Johnson, Sharnice Wallace, Fawn Watkinson  
Mentor: Dr. Kathleen Curran

Plants and animals avoid competition with one another using a variety of mechanisms, and birds are no exception. We hypothesize that bird species will avoid competition by foraging at different heights, and focusing on different types of bird food. This experiment will use bird feeders constructed from one gallon milk containers. Each feeder will have two feeding stations containing either sunflower seeds or mixed bird food at two ft. from the ground and six ft. Feeders will be placed at five different locations. Each feeder will be observed for a minimum of two hours. Observations will include bird type, forage heights, and feed type. We expect different birds to spend majority of their time at a certain height and bird feed type in order to avoid competition.

*The Midnight Roast*

Betty Lee, Kelsey Fitzpatrick, Edward Brandenburg, Kenneth Ciccoli, Austin Luna  
Mentor: Tamala Paxton

The Midnight Roast is a student-run, entrepreneurial organization that has recently been founded at Wesley College. The coffee shop is located in the basement of the College Center and is managed through a collaboration between student volunteers and workers who run the shop during its hours of operation. It is a non-profit student organization where the proceeds are solely donated to local charities and organizations. In January, the total proceeds were \$575.25 and it was donated entirely to the Dover Interfaith Mission for Housing. In February, all proceeds will be donated entirely to Habitat for Humanity. The Midnight Roast has presented scholastic entrepreneurial activities and immersion techniques, which have equipped the students involved with a variety experiences that will shape their future career path. This includes budget management, inventory, actual refurbishment, and other experiences that were pivotal in the foundation of The Midnight Roast. For this presentation, The Midnight Roast will be open for business. We will be running the shop as we always do, so faculty and students who are not here during evening hours may see the space. We will also have a poster presentation explaining the process of creation to look at while other presenters use the shop.

*Comparative Statistical Analysis Approach for Four Alkyl Chloroformates*

Robert Dina  
Mentor: Dr. Malcolm D'Souza

Primary alkyl chloroformates (ROCOCl) are organic compounds used as derivatization agents in gas chromatography (GC) and in the synthesis of various useful carbonates and amino acids. Variation in the R group leads to overall differences in the function of the chloroformate. Mechanistic studies of four of the primary alkyl chloroformates were completed to show a trend in the different R groups. Grunwald-Winstein equation is used to study the mechanistic behavior in chloroformates. The four alkyl chloroformates compared in this study are Ethyl Chloroformate, Propyl Chloroformate and Nonyl Chloroformate and Decyl Chloroformate. Rate of reaction can be determined with acid-base titrations with a lacmoid-acetone mixture as the indicator. Rate is calculated using the pseudo first-order reaction and the Grunwald-Winstein equation calculates the ratio of bond being made over bond being broken (l/m ratio). The l/m ratio determinant of mechanistic behavior.

*Risk Factors Associated with Type II Diabetes among Wesley College Students*

Destiny Hollis

Mentor: Dr. Lynn Everett

Diabetes mellitus is a group of diseases characterized by hyperglycemia. There are three major types; Type I, Type 2 (T2D), and gestational diabetes. T2D accounts for 90% to 95% of the diabetic population. The prevalence of T2D in the United States has increased over the last 3 decades. This is a major concern especially among college students who show a high prevalence of T2D, and underestimate their risk for developing T2D. The aim of this study was to determine the risk factors for T2D among Wesley College students with a survey instrument developed by the American Diabetes Association. The risk assessment was distributed to 200 Wesley College undergraduate students from various majors. Results showed that 5% of the participants identified as being at an increased risk for having T2D. Weight status and lack of physical activity were the highest ranked risk factors at 74.5% and 25.5%.

*Coraline: Symbolism, Psychoanalysis, and Feminism*

Teledalase Ogundipe

Mentor: Susan Bobby Reddington

This research discusses the novel *Coraline* by Neil Gaiman, through the critical theory lenses of symbolism, psychoanalysis, and feminism. First I focus on the gothic theme, button-eyes, mirrors, the “other world”, the other mother, and the symbolism of food in the novella. Next, I examine the psychological motivations of the characters in the novella using the Freudian approach, which involves the analysis of the psychodevelopment and emphasis on phallic symbols, and the Lacanian approach, which involves the analysis of the psyche of the characters, as well as the imaginary, symbolic, and the real. Lastly, I apply feminist criticism to analyze the female protagonist, her real mother, and the other mother. In summary, this research discusses the female lead character's challenges she faced as she developed as a teenager.

*Stepping into the Driver's Seat: Narrative Freedom in Role Playing Video Games*

Terrance Olivo

Mentor: Susan Bobby Reddington

English classes across America teach us to analyze and interpret narratives in several different forms: poetry, short stories, novels, even television shows and films. One narrative form that these classes never talk about is

the video game. This is because many people do not realize the enormous story telling potential of video games. These are fully developed visual and written narratives that go largely ignored by scholars. There is even an entire genre of games that are designed to give control of the story to the player by granting them the ability to make choices that directly affect the narrative. This ability to make choices creates a completely new story telling medium that needs to be explored and examined.

*The National Football League and Its Marriage to Television*

Ryan Sanders

Mentor: Victor Greto

This paper looks at the relationship that the National Football League (NFL) and television networks have. The research conducted was to prove and show that much of the NFL's success has come from the wallets of television networks in the form of billion dollar television and media deals. Because of the billion dollar television and media deals that the NFL currently has with networks, it has become a sporting giant.

*Prison Nursery Programs*

Elizabeth Schlecker

Mentor: Charlisa Edelin

Prison nursery programs are only present in *a number of states here* in the United States, like New York and Nebraska. These programs are extremely controversial because many people have a hard time picturing babies behind bars, many believe the mothers are not fit parents, and many do not believe tax dollars should go towards these programs. However, many people do not think about the benefits the child receives from staying with their mothers during infancy. For this research study, I will be using case law and legal journals. This presentation will explain the benefits of having prison nursery programs and clarify the misunderstanding about these programs.

*Mathematical Analysis of Solar Energy in Delaware*

Christina Hubert

Mentor: Dr. Agashi Nwogbaga

This work presents a critical analysis of solar energy as an important renewable energy resource in Delaware. As Delaware strives to increase its renewable energy output in keeping with the Renewable Energy Portfolio Standards Act of 2005 (Title 26 of the Delaware Code) that mandates 25% renewable energy in Delaware by 2025-2026, a critical analysis of solar energy as a key renewal energy resource in Delaware is important. Mathematics plays key roles in solar energy generation, distribution and evaluation, and is therefore used in this analysis. This oral presentation will communicate the idea of using solar energy as an energy source to reduce the dependence on fossil fuels, especially as fossil fuels are being consumed rapidly and the world is increasingly being forced to look at alternative modes of energy production. In addition, various uses and benefits of solar energy will be discussed.

*Central Americans Migrate to Escape Never Ending Hardships*

Nicole Bader

Mentor: Vilma Lazo-Butera

Millions of individuals from Central America's Northern Triangle including children have left their homes in recent years. El Salvador, Guatemala, and Honduras have the largest migration rate in all Central America. The gang violence and organized crime have a control on the countries. Since the Civil War in the 1980s, crime has continued to spike. The gang violence has made everyday life unsafe especially in El Salvador which is recognized as one of the most dangerous countries. The violence has created limited opportunities for the

people. Consequently, millions of individuals are escaping the hardships by migrating to the United States in search of a better life.

*SPEAK: A Spoken Word Showcase*

Kevin Johnson, Dominic McAnulty, Evan Le'Mon, Patrick Schlosser, Gail Trotter, Corey Lyons, Tahir Carr, Azana Tatiana

Mentor: Susan Redington Bobby

Artists from SPEAK come together to present original poetry in the spoken word style. For this performance, each poem is an original story inspired by happenings in the life of each individual poet. The artists will be performing Spoken Word poetry as they have done all over campus for the last four years. As always, the artists hope the audience will listen to the art and take away what they will from the performance.

*Selected Digital Paintings*

Emily Temple

Independent Work (No Mentor)

These are a few of the paintings I have completed in the past year of independent work. While my techniques have varied from painting to painting, I have consistently worked in Clip Studio Paint, a digital art program, and painted using a Wacom Bamboo tablet, which attaches via USB connection to a laptop and allows me to paint directly on the screen with a stylus and pressure sensitivity. I have been experimenting with texture and shading, and have worked to develop skills in semi-realistic illustration of a range of subjects including people, animals, and machinery.

*Ficoll Induces Aggregation of Bovine Serum Albumin and Phycoerythrin*

Kanisha Blake

Mentors: Dr. Hacene Boukari, Dr. Malcom D'Souza

Proteins typically function in crowded intracellular environments. Macromolecular crowding can affect the protein structure, shape, conformational stability, binding of small molecules, enzymatic activity, protein-protein interactions, and aggregation. In this study we have used Ficoll, which is a neutral, highly branched, water-soluble polysaccharide, to investigate the effect of macromolecular crowding on two different types of proteins: Bovine Serum Albumin (BSA) and B-phycoerythrin (PE). BSA is serum albumin protein that is derived from cows, whereas PE is a fluorescent protein that is isolated from cyanobacteria and eukaryotic bacteria. Fluorescence correlation spectroscopy (FCS) is a method used to observe the aggregation between the two proteins. The purpose of this research is to demonstrate how the FCS method can be used to determine BSA-BSA or PE-PE interactions. This study is important to elucidate the behavior of these particular proteins in the Ficoll environment, providing insight into their behavior in cellular systems.

*Wesley College Depression Screening*

Erin Townsley

Mentor: Rebecca Benson

Depression is a potentially crippling mood disorder that affects 300 million people across the world. In October, 2016, in Dover, Delaware, 357 Wesley College students participated in a convenience study of depression and related factors using the National Depression Day Screening Tools and additional questions created by members

of the NR324 Nursing Research class. The purpose of the study was to raise awareness of mental health issues among students and to collect information regarding risk factors. Educational and resource materials were distributed to students who participated. Findings indicated the percentage of students who may be at risk for depression, other mood disorder, posttraumatic stress disorder, and/or anxiety disorder. Findings revealed that 28.57% of Wesley College students scored above a nine on the HANDS Depression Screening Tool and 28.29% of participants scored a seven or above on the Carroll-Davidson Generalized Anxiety Disorder Screen. Depression and anxiety correlated highly with alcohol consumption and sleeping fewer than eight hours nightly. This screening found that 28.29% of participants scored seven or higher on the other Mood Disorder Questionnaire and 27.45% of participants scored two or more points on the Modified Spring Post Traumatic Stress Disorder Screen.

*Tesla's international marketing expansion challenge*

William Mileski

Mentor: Dr. Kathleen Jacobs

When a company reaches a certain size it often looks forward to expanding its business outside of its home country. Important in such expansion is conducting detailed marketing analysis before entering another country, not afterwards. This presentation will share research conducted in cultural, economic, and competitive market analysis for Tesla before it should enter a new international market. The incentive for conducting this analysis was international marketing problems encountered by Apple and Google. Apple's major issue was the cost of its smartphones which lost ground to its Chinese competitors Huawei and Xiaomi. Google faced challenges with the Chinese government over censorship. Other American companies, in the past, have made similar mistakes by not analyzing the international markets in which they wanted to enter. What was the end result? Lost profits in international markets. The purpose of this presentation is to demonstrate how implementing market analysis can prevent the foregoing problems.

*The History of Now: Documenting Recent American History*

Shannon Hollingsworth

Mentor: Dr. Stephanie Holyfield

This project pertains to recent public demonstrations and political unrest in the United States, including the Women's March in Washington, D.C. and the Muslim Ban Protests in American airports. The intention of the project is to document and preserve information from this pivotal point in American society through the documentation of oral history and the collection of material culture. The project includes both student and adult perspective on current topics that are cause for both division and unification of American voters.

*American Chinese cuisine VS Authentic Chinese cuisine*

Dru Sottnick

Mentor: Ethan Hawkley

I will be presenting the difference between the Chinese food we consume in America and the Chinese food consumed in China. In preparation I will be visiting three major cities in China--Beijing, Xi'an, and Shanghai--and documenting my experiences with the food there. Information for this project was gathered via photography and from first hand experience. I will then compare those foods to my experiences with "Chinese" food in the United States.

*China through American eyes—how different are these countries?*

Rhiannon Dillon

Mentor: Ethan Haekley

This presentation will be based on my experience on the China trip during this spring break, minor research, and what I have learned during my HI 314 course this semester. It will mainly focus on the "culture shock" aspect of the trip. It will highlight differences between the American and Chinese cultures with respect to the education system, relationships, religion and social norms. I will be keeping a journal for the HI 314 course itself to keep my findings accurate and reliable. It is important for people (especially Americans in today's society) to understand that not all countries have the same ideals as the United States. Many people do not get the chance to explore the world. So, this presentation will give a little peek to what life is like in China according to my personal experience.

*It's More Than A Game*

Adriane Fraser

Mentor: Ron Douglas

In this oral presentation, segments of a documentary will be shown. Then, a discussion about the filming process and the main character will ensue. At its final version, the documentary is 16 minutes long despite being the 50 hours of footage. The location for the project was Western Branch High School in Chesapeake, Virginia and Washington D.C. The video segments will consist of footage from games and practices as well as interviews. The focus of the documentary is a high school basketball coach. He was chosen as the subject of the documentary because of his dedication to the sport and his players.

*Using Quaryzy to Catalog Environmental Microbial Isolates Classified using the Biology*

Lily Neff

Mentor: Dr. Kevin E. Shuman

The Biology Microbial Identification System is being used to rapidly identify the unknown environmental isolates stored in Cannon Hall. GEN III MicroPlates were used for the phenotypic identification of these aerobic and anaerobic bacteria. A catalogue, with the identified species and corresponding information, is being created and uploaded onto Quaryzy, the online database implemented in the undergraduate laboratories. The importance of creating this catalogue is that it will be used to identify what organisms we have in stock for use in research and microbiology-based instructional labs. Aseptic techniques are used to culture the environmental isolates after multiple decades of inactivity. Both aerobic and anaerobic techniques are used to foster the growth of these microorganisms after long-term storage.

*Melanoma in the First State Did Not Only Claim Bob Marley's Life*

Austin Luna, Mabel D'Souza

Mentor: Dr. Malcolm D'Souza, Dr. Fady Gerges

Melanoma is regarded as the deadliest among skin cancers. The famous musician and singer-songwriter, Bob Marley, resided in Delaware for part of his life. In fact, he succumbed to melanoma under his toenail at the age of 36. Thankfully, in the past decade, significant advances in the characterization of melanoma at the molecular and genetic level has emerged. These advances have implications for treatment. Unfortunately, the incidence and prevalence of melanoma increased throughout the United States, and particularly in Delaware.

Taylor O'Donnell, Rodneisha Scott, Angelina Scott, Shelby Schirmer  
Mentor: Rebecca Benson

Wesley College Junior Nursing Students performed a Depression Screening on October 19th, 2016 in the college center. This was a random selection study where students were asked to voluntarily participate. In this 2016 screening, there were a total of 357 participants. A general depression questionnaire was used along with a list of questions modified by the nursing students of 2018. The purpose of this study was to obtain information on how many students experience Depression and other mood disorders, including anxiety and PTSD. This study also determined what factors could contribute to the student's depression. After results were obtained, they were compared to results from previous years and the similarities were analyzed. This screening proved to be relevant to college students based on age group, activities commonly participated in and the high incidence of depression in college students.

*Digitization of Historic St. Jones River Maps*

Olivia Gullede  
Mentor: Dr. Stephanie Stotts

A series of alterations to the St. Jones River in Dover, DE was completed in the early 1930s. These dredging projects straightened the river which unintentionally increased the tidal range, causing a rapid increase in salinity along some sections of the channel. Historic maps of the original channel are available, but they are not in a digital format that would allow for spatial analysis. The goal of this project is to create a digital version of the historic maps of the St. Jones River that can be overlaid with other data in Geographic Information System software. The historic maps did not contain permanent ground control points so they were recreated by hand. The digitized map of the historic path of the St. Jones River will be useful in projects exploring the impact of sea level rise on coastal communities.

*RNA-Seq-Based Transcriptome Analysis to Study Differentially Expressed Salt Tolerant Genes in *Spartina alterniflora* and *Phragmites australis**

Josephine Veeria,  
Mentors: Mollee Dworkin, Lathadevi Chintapenta, Venkateswara Sripathi, Gulnihal Ozbay, Venu (Kal) Kalavacharla

Marsh grasses are primary producers that support biodiversity and function as ecosystem engineers. Blackbird creek, located in Townsend, DE was once heavily populated by the marsh grass, *Spartina alterniflora*, and is currently invaded by the common reed, *Phragmites australis*. Both marsh grasses are salt-tolerant. The goal of this study is to determine if *P. australis* displays similar salt tolerance mechanisms as *S. alterniflora*. Leaf and root samples were collected from these grasses, during August, 2014. Plant tissues were washed, frozen in liquid nitrogen, and then stored at -80°C. RNA was isolated from the leaves and roots and RNA-sequencing was performed. RNA-sequencing data from *S. alterniflora* and *P. australis* were mapped to the *Oryza sativa* v7 reference genome. PCR was then performed to validate the salinity-responsive gene expressions. Results from this study will help understand how plants respond to salinity stress and other environmental changes.

*Psychological Effects of Female Genital Mutilation*

Samantha McDonald  
Mentors: Sue Hudson, Patricia Gallo

Female Genital Mutilation (FGM) is a dangerous procedure conducted on girls as young as seven in a number of countries throughout the world, most specifically in Africa. Research articles and case studies, found through

academic databases, discuss the increasing numbers of FGM cases and the negative effects it can have on these girls as they transition to womanhood. These ongoing studies bring awareness to the situation and help researchers understand why this practice is still in existence, considering it has no medical benefits. Programs and support groups have been established to help these women cope with the lasting psychological and physical effects of FGM. Hopefully, this trend will decrease, and medical professionals can continue to get aid for any woman who has experienced FGM.

*Similarities and Differences Between Postpartum Depression and Postpartum Psychosis and the Available Treatments*

Kezban Yilmaz

Mentors: Sue Hudson, Patricia Gallo

This research was carried out to raise awareness about postpartum depression (PD) and postpartum psychosis (PPP). PD is very common in women who have already been through a form of depression before conception of a baby. PPP is not as common as PD and needs a vigorous treatment program compared to what PD patients need. PPP is more likely to occur if the patient has a form of bipolar disorder (BD). Research, conducted through academic databases, highlights the need for treatment of these mental illnesses, including treatments such as electroconvulsive therapy and drug therapy. Further research notes that on preventative measure involves screening at monthly check-ups. Every postpartum case is different; therefore, the way the mental illness is handled will change according to the woman and her needs.

*Association of Vogt-Koyanagi-Harada and Rheumatoid Arthritis: Two Types of Disease and Their Possible Connection With One Another*

Jersey DeMesa

Mentor: Sue Hudson, Patricia Gallo

This paper explores three published articles that report the connections between two rare diseases: Rheumatoid arthritis (RA) and Vogt-Koyanagi-Harada (VKH) disease. RA is a type of joint condition that can affect other organs, such as the eyes. Vogt-Koyanagi-Harada disease is an ocular disease that can cause separation of the retina, as well manifestation in other parts of the body. This paper presents some evidence-based literature of the similarities in etiology, clinical features, as well as the medical care of these two rare diseases. Though a general conclusion on the legitimacy of this association cannot be made, researchers around the world are currently researching for better understanding and potential treatments for these illnesses.

*Nest Distribution in Birds*

Alexis Moore, Amy Clark, Emily Wagner, Tahir Carr, Inayah Whitaker

Mentor: Dr. Kathleen Curran

Bird's eggs are often consumed by predators, which leads to a loss of reproductive success of the parents. There are many factors that can lead to a decrease in nest predation, including camouflaging eggs, placing fewer eggs per nest, and nest placement in the environment. In this experiment we will test whether a nest is more vulnerable to predation if it is placed in the vicinity of other nests. We will use artificial nests with eggs made from modeling clay. Each egg will be 2cm long and molded to resemble natural eggs. We hypothesize that the eggs that are more camouflaged, single-spaced and in hidden nests (in shrubs rather than trees), would survive longer than those that are in nests that are clumped together.

*Top Ranked Hospital Hotpot in the US*

Dinh Ngo

Mentor: Dr. Stephanie Stotts

More than 90,000 patients a day are admitted to U.S. hospitals. If you are one of them, it is in your best interest to know where the best hospitals are located. This project uses rankings of over 4,000 hospitals to construct a top ranked hospital hotspot map for the United States using spatial analysis and Geographic Information System software. Two maps were produced, one based on the raw data and one normalized by population. The results provide a visual display of top hospitals that is easy to interpret.

*Analyzing the Relationship between Mean Performance Times in Running Events and Demographic Information*

Anthony Calcutta, Robert Coakley, Aleya Cummings  
Mentor: Dr. Derald Wentzien, Christine McDermott

People compete in runs or marathons for many different reasons. Many races have participants from a wide variety of residencies and ages. The goal of the project was to see if there a relationship between the mean performance times in running events and demographic information such as gender and age for local (Delaware) runners running in races ranging from 5k to marathon distances. Common wisdom suggests that as we age our bones and muscles start to deteriorate. To perform the study we compiled race data from running events and created scatter diagrams. We found that both the male and female peak performances occurred in their early 20s. Both males and females remained competitive in their 30s and 40s with only slight increases in their average pace per mile for all distances. A significant declined in performance occurred for both males and females in their 50s and 60s for all race lengths. Lastly, the males performed slightly better than female runners.

*Personal Finance with FRED*

Austin Luna, Ariel Bilbrough, Michael Skivers, Robert Dina  
Mentor: Dr. Frank Fiedler

During the 60s and 70s, Americans had saved 10% of income or more, on average. Over the last 50 years, the personal savings rate as a percentage of income have declined steadily to about 3% in 2007 with a small uptick since. But median household income has stagnated for about two decades. Could we afford not to save for retirement? We look at historical Federal Reserve Economic Data (FRED®) to model retirement savings. In particular, we use historical stock market, bond, and inflation data to model the current value of retirement accounts in various scenarios if we had entered the workforce about 40 years ago when 401(k) plans were introduced. This is essentially a future value calculation with fluctuating return rates and cash inflows. We discuss how different choices may have a large impact on retirement income from a 401(k).

*Obesity*

John Dougherty, Morgan Gannon, Brooke Thompson, Dinh Ngo  
Mentor: Dr. Frank Fiedler

The obesity rate in the United States has been increasing in size to a potentially dangerous rate. This presentation will try to determine if the strength of the correlation between obesity and physical inactivity rates using County Health Rankings (CHR) data. This data will be analyzed using SAS for these two variables over a 9 year period. By analyzing multiple years, a more in depth look can be seen into how physical inactivity has aided in the increase in the obesity rates. This presentation will hopefully aid in the knowledge that physical activity no matter the intensity can help fight the obesity problem.

*Wesley College's Transformation to a MSI*

Allison Schwandt, Destiny Hollis, Francis Jackson, Mikayla Caldwell  
Mentor: Dr. Frank Fiedler

Minority Serving Institutions (MSI) enroll about 20 percent of the college student population in the United States. Wesley College has been a MSI for past two decades,. We use the Integrated Postsecondary Education Data System (IPEDS) to study the transformation of the Wesley College student population composition from 1987 to date. We compare Wesley College data to that of similar institutions across the nation based on mission, size, and endowment. We discuss the Wesley College story and the comparison group for this time period when colleges and universities tried to diversify their student body.

*Nest Predation and Birds; The Effect of Egg Number*

Caitlyn Gerwaski, Brittany Klase, Maggie Zwiebel, Lucie Sainte, Ashley Kistler  
Mentor: Dr. Kathleen Curran

In this experiment we will examine the effect of egg number and predation rates. Eggs and nestlings are often consumed by predators, and wild life experts are interested in finding the factors that can affect the likelihood of the nest getting raided. In this experiment, we will compare predation rates on nests containing five eggs to nests with a single egg using artificial nests and eggs.

*Food Value and Foraging Preferences in Gray Squirrels (Sciurus caroliensis)*

Shantae Taylor, Chaoying Feng, Angela Barnett, Jenna Gruwell, Kanisha Blake  
Mentor: Dr. Kathleen Curran

Gray squirrels (*Sciurus caroliensis*) are scatter-hoarders, they discover food and save it for future use. Burying food requires energy, and we predict that squirrels should be able to distinguish between foods of different quality, and they will select and store items that will provide them with more calories. To test our hypothesis squirrels that are located on Wesley College campus will be presented with unroasted peanuts which differ in size with one or two nuts in its shell, or walnuts that have been altered in weight. The animals will be observed from a building in close proximity and their selections will be recorded. Squirrels have two senses they rely on to judge food quality- vision (size) and touch (weight). We predict that if squirrels can distinguish between nuts of varying quality they will select the larger peanuts and the heavier walnuts.

*Spatial Analysis of Ideal Farming Location*

Joseph Howard  
Mentor: Dr. Stephanie Stotts

Agriculture is an important industry because it supports the growing global population. Many factors contribute to farm productivity including, temperature, elevation, and water availability. The purpose of this project is to find locations for a potential farm that are within a 250 mile radius from Dover, DE, are not at risk of inundation from the rising sea, and have sufficient ground water available for irrigation. Geographic Information System software will be used to query and overlay land use cover datasets, ground water datasets, and ground elevation. The result is a map showing all potential farm sites that meet the selection criteria.

*Increasing the STEM Presence on the Wesley Website*

Andreanna Jeffries  
Mentors: Jessica Cook, Dr. Malcolm D'Souza

To recruit prospective students, we have to showcase the STEM Program. At this point in time the way that information is depicted has changed over the years, now it's time for us to find a new source since communication and marketing efforts are always changing. The purpose of this research is to see if new methods of communicating information about STEM at Wesley will increase the number of prospective/current students who are seeking a STEM degree at Wesley. To showcase the Undergraduate Research Programs that

are available through Wesley College, intern profiles will be made to showcase all 26 students who participated in an Undergraduate Research Internship during the summer of 2016. Out of the five places that the intern profiles were placed on, it seems to be that Instagram and Facebook are the two social media sites that get the most likes and shares.

*Incorporating Statistics to Probe Solvent Mechanisms*

Austin Lonski

Mentor: Dr. Malcolm D'Souza

Aryl chloroformates form efficient protecting groups and other complex analogs. 3-(Trifluoromethyl)phenyl chloroformate is specifically used to synthesize tetrahydro- $\beta$ -carboline derivatives that target fatty acid amide hydrolase. In this project, we first determine the kinetics of 3-(trifluoromethyl)phenyl chloroformate. Acid-base and conductometric titrations were used to follow its kinetics in several pure and mixed solvent systems. The resultant kinetic data was compared to the rate data of the parent compound, phenyl chloroformate, along with a substituted derivative, 4-methoxycarbonyl phenyl chloroformate. This was done to evaluate the inductive capability of the three fluorine's in 3-(trifluoromethyl)phenyl chloroformate. This project was funded by the Delaware INBRE program, with grants from the National Institute of General Medical Science's NIGMS (8 P20 GM103446-16) from the National Institute of Health, the National Science Foundation S-STEM DUE grant 135554, and the State of Delaware DEDO Program.

*Madeline Leininger: Transcultural Nursing*

Megan Otteni, Molly Fox, Brianna Fogelmann, Rancel Jolley

Mentor: Darla Davidson

The purpose of this poster presentation is to discuss Madeline Leininger's Transcultural Nursing Theory and how it applies to the nursing profession today. Transcultural nursing involves providing culturally sensitive care to assist clients in regaining or maintaining their well-being. The client's beliefs, values, and lifestyle are all applied so the client gets the care they desire and deserve. The goal of Leininger's theory is to bridge the gap between nursing care and culture. Through research, Leininger found culture is individualized and must be worked into the treatment plan to achieve the client's goals of well-being. The outcome of this literature review is significant because it provides the guidelines for nurses to provide individualized, holistic, and more effective care to clients. This poster presentation will help disseminate this information so more people can be aware of the need to provide culturally sensitive care.

*Determining the Standard Operating Procedure (SOP) for the Use of a Rotary Evaporator in the Undergraduate Organic Chemistry Lab*

Alexander Jean-Francois, Rachel Piper

Mentor: Dr. Malcolm D'Souza, Kristopher Roeske

"A rotary evaporator is the instrument of choice in the modern undergraduate organic chemistry laboratory. However, typical costs range from \$1,500 to upwards of \$10,000 (each). Recently through eBay, we purchased two foreign (from China) rotary evaporators for just \$1,000. Our immediate goal is to incorporate these two devices into the sophomore organic chemistry labs. Unfortunately, these manuals were written in Mandarin. Our first step was to download an i-Phone translation app that made the instructions (for set-up and use) understandable. We now plan to incorporate chemistry lecture points. This type of device is more advanced than some of the older techniques that Wesley students are familiar with. The two rotary evaporators should broaden student knowledge in scientific instrumentation that will be useful for some students in future careers and in graduate STEM education. "

*Mild Traumatic Brain Injuries and Risk for Chronic Traumatic Encephalopathy Among Athletes and the Military*

Yasmine Allen

Mentor: Dr. Gwen R. Pursell

Mild Traumatic Brain Injuries (MTBIs) are believed to contribute to cognitive impairment. Recent studies examining progressive neurodegenerative disorders have found the effects of MTBIs and repetitive blows to the head put athletes at risk for Chronic Traumatic Encephalopathy (CTE). Since these findings have surfaced, physicians have been able to incorporate this information into their work with MTBIs and other athletes involved in boxing, hockey, soccer, and wrestling. This project will discuss the symptoms of, intervention and prevention of, and long term outcomes associated with MTBIs. In addition, this project will address the unique risk of MTBIs associated with high-contact sports as well as highlighting the importance of educating parents and coaches about the significance of sports injuries related to the brain. Finally, the relation of MTBIs to CTE will be discussed as well as the implications of brain injury for other high-risk occupations such as the military.

*The Stigma of Mental Illness in American*

Diondre Hamm

Mentor: Dr. Gwen R. Pursell

The purpose of this presentation is to recognize the stigma associated with mental illness. This presentation will address four questions: 1) what is mental illness, 2) which mental illnesses are most likely to be associated with stigma, 3) what symptoms put an individual at risk for being stigmatized, and 4) what are some coping strategies that individuals can use to manage feelings associated with stigma? This presentation will also consider the importance of educating society about mental illness and raising awareness of mental illness in order to decrease stigma.

*Universes by. Mr. Gist*

Elijah Gist

Mentor: Joshua Nobiling

My artwork is my way of living out my daydreams. I use it as an outlet to give imperfections to what would be considered perfect. For example, in a cartoon, a character is usually only seen wearing one outfit from episode to episode. This may lead viewers to believe that the cartoon world is perfect, predictable, and never-changing, or at least that is what I thought when I was a kid. So, I always wanted to see the cartoons I used to watch in more flawed or more different ways – both in terms of story and visually. In viewing my artwork, attendees will be able to see the universe I made over my few years as an artist. They will see objects like space ships as well as characters, with most of them my own. In addition, there will be some comic strips. My artwork is influenced by artists like Jamie Hewlett, Eiichiro Oda, Pendleton Ward, and many others

*The Duality of Self*

Azana-Tatjana Cralwey

Mentor: Joshua Nobiling

This piece was created for a painting competition sponsored by the NAACP and the New Jersey Afro-Academic Cultural Technological Science Olympics. I would like to share it with the Wesley College community. The Duality of Self is a painting that represents African-American culture. The two main features of the painting are the two women and the background. One woman is wearing beads on her head, white fur on her back, and tribal markings on her face to symbolize her exposure to pure African culture. The other woman

is wearing a simple black dress and long black hair to symbolize her exposure to pure American culture. In the background, the things surrounding the women are images of poverty, slavery, royalty, nature, and other themes that involve the entire history of Africa.

**Reception in Honor of All Scholars Day Participants**  
**4:45-6:00 p.m.**  
**College Center 206**

**Mentors**

Barbara Abbott	Stephanie Holyfield
Jack Barnhardt	Sue Hudson (DTTC)
Rebecca Benson	Kathleen Jacobs
Susan Reddington Bobby	Venu (Kal) Kalavacharla (DSU)
Hacene Boukari (DSU)	Eric B. Kmiec (DSU)
Kraiwinee Bunyaratavej	David Laganella
Lathadevi Chintapenta	Vilma Lazo-Butera
Jessica Cook	Christine McDermott
Brantley Craig	Jerry Mench
Kathleen Curran	Albee Mendoza
Angela D'Antonio	Joshua Nobiling
Darla Davidson	Agashi Nwogbaga
Linda DeRoche	Gulnihal Ozbay
Ron Douglas	Tammy Paxton
Malcolm D'Souza	Gwen Pursell
Mollee Dworkin	Natalia Rivera-Torres
Charlisa Edelin	Kristopher Roeske
Lynn Everett	Nancy Rubino
Frank Fiedler	Kevin Shuman
Julie Fisher	Venkateswara Sripathi (DSU)
Patricia Gallo (DTTC)	Stephanie Stotts
Fady Gerges, MD	Amy Strickland
Victor Greto	Yu Tian
Ethan Hawkley	Derald Wentzien

**Moderators**

Alban Urbanas	Rebecca Miller
Albee Mendoza	Mary Jenson
Erin Perchiniak	Jack Barnhardt
Cathy Nosel	Paul Olsen

Victor Greto  
David Laganella  
Danielle Archambault  
Saharat Pongsree

Barbara Abbott  
Richard Mahee  
Christine McDermott

### Assessors

Bill Kroen  
Lynn Everett  
Stephanie Holyfield  
Nancy Rubino  
Ethan Hawkley  
Elizabeth Marchioni  
Rebecca Miller  
Joshua Nobiling  
Gwen Pursell

KellyAnn Miller  
Amy Strickland  
Rebecca Benson  
Tammy Paxton  
Brantley Craig  
Alex Spaul  
James Wilson  
Angela D'Antonio

### Volunteers

Erick	Acevedo	Ndeye	Diame
Lisa	Agyeman	Marquita	Dickerson-Frisby
Sharis	Allen	Da'Vonne	Duncan
Luis	Arteaga	Vincent	Ebron
Jennifer	Bangle	La'Conya	Eley
Sondra	Bennett	Kaitlin	Forestieri
Jaedynn	Bentz	Tania	Frazier
Savannah	Bixler	Kelsey	Fromal
Rose	Bondoe	Imoni	Gee
Chardae	Booker-Hayes	Sonia	Gonzalez
Emily	Bridegam	Lauren	Gray
Daniel	Brooks	Sharron	Gross
Alexis	Bynum	Christine	Harrison
Xuwei	Cai	Daquay	Harris-Winbush
Kylie	Callaway	Jalisa	Henderson
Olivia	Chouinard	Shanee	Hill
Nina	Ciccaglione-Acevedo	Alexis	Holland
Paul	Clemons	Tymira	Holman
Lexus	Commodore	Christina	Hubert
Archael	Daniels	Raven	Hynson
Milaine	Desir	Jill	Johnston
Randy	Jolley	Imanni	Ortiz
Janae	Jones	Waldemar	Poppe
Ayowunmi	Kuforiji	Waldemar	Poppe
Kylea	Lankford	Mikayla	Richardson
Judith	Lawson	Angely	Sanchez
Hasan	Leonard-Hakim	Angely	Sanchez

Kylie	Liberty	Cynthia	Scott
Taijah	Lincoln	Najee	Segar
Ashley	Luna	Lorne	Shaw
Elizabeth F	Martin	Joshua	Short
Chelsea	McCall	Kyndal	Showell
Makenzie	McIntyre	Rodney	Snider
Cappadonna	Miller	Dacey	Spinner
Delante	Moore	Michael	Strittmatter
Nicole	Munz	Michelle	Tetteh
Katherine	Nettles	Brandon	Thomas
Bria	Newman	Alexis	Waugh
Jeanine	Olivares	Deonika	White
Bradford	Olivo	NaQuan	Wilds
Erin	O'Neill	Derrick	Williams
Madison	O'Neill	Kristin	Wissler
		Dania	Wootson

### Special Thanks

Dr. Jeffrey Gibson  
 Dr. Malcolm D'Souza  
 April Mahoney  
 Tina Heesh-Mosley  
 Emily Wood  
 Jessica Cook  
 Kristopher Roeske  
 Sierra Hayes  
 Anh Gibson  
 Wesley College SGA

Past Years' Chairs & Members of Scholars Day Committee who blazed the trail for us.

Information Technology Department  
 Facility Management Department

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

Colby Pardee, Mellissa Bronson,  
 Eddie Kidwell, Eric Ballard,  
 Jasmine Hayes, Peyton Snay,  
 Keith Coleman, Ronnie Wooddus,  
 Colin Potts, Austin Bohenko

BI 407 Research Students, Psi Chi Members and Selected Members of Alpha Chi who reviewed abstracts.

### Scholars Day Committee

Dr. Agashi Nwogbaga (Chair)  
 Dr. Albee Mendoza  
 Prof. Charlisa Edelin

Dr. Yu Tian  
 Prof. Vilma Lazo-Butera  
 Dr. Gwen R. Pursell

**Thanks also** to the national Council on Undergraduate Research (CUR) for showcasing this Scholars Day at [http://www.cur.org/conferences\\_and\\_events/special\\_offerings/urw/2017/events/#Wesley](http://www.cur.org/conferences_and_events/special_offerings/urw/2017/events/#Wesley)



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