WILSON COLLEGE

14th Annual Barsy-Colgan Student Research Day

Celebrating the Creative and Scholarly Achievements of Wilson Students

April 28, 2023

This year, Student Research Day will honor two Wilson women and a Wilson spouse. Louise Barsy Colgan, Class of 1980 is the daughter of Helen Yeager "HiY" Barsy, Class of 1944, who passed in 2019. Helen had a degree in Chemistry from Wilson and became a teacher, earning her master's degree and later serving as a community volunteer.

Louise earned a degree in Art History at Wilson. After graduation, Louise pursued graduate work at Cornell University in architectural preservation. Louise is a material culture artist with her bobbin lace work. She is a published author on the craft and has her own studio, Colgan Lace. Husband Sean is an astronomer with NASA. Much like the intricately woven fibers of his wife's work, Sean's career has focused on the complicated patterns of star-forming regions, supernovae, and galactic centers.

As many of you know, each year students may apply for grants for the research they anticipate in their senior year for presentation on Student Research Day. To memorialize Helen Barsy's lifelong love of learning, and to promote student academic research, Louise and Sean Colgan are generously endowing these grants and underwriting the **"Barsy-Colgan Student Research Day."**

The Colgans hope their support encourages students to passionately pursue their interests and to follow the patterns of the universe's minute, and immense, handiwork.

14th Annual Barsy-Colgan Student Research Day

Welcome to the fourteenth annual Barsy-Colgan Student Research Day. Since I arrived at Wilson College in 2014, Student Research Day continues to be my favorite day of the academic year. The research presented, both undergraduate and graduate, is the culmination of the academic experience at Wilson College. Everything students have learned at Wilson — writing papers, debating issues, conducting field-work, researching topics, creating art, making lab discoveries — come together in these capstone presentations.

At Wilson, students are exposed to a broad-based curriculum that links the sciences, arts, humanities, and social sciences. They learn to think critically, ask questions, review literature, gather and synthesize information, solve complex problems, and communicate their findings effectively. Research is where students put their academic training into action.

Today we see the benefits of the liberal arts on full display. Research at Wilson is most often a student-initiated process driven by individual intellectual curiosity and interest. Students conduct original research and explore their findings under the guidance of faculty advisers who also serve as mentors, encouraging students to contribute to scholarly discussions in their fields. This student-faculty collaboration is a hallmark of the Wilson experience.

This year we have more than 70 students representing multiple disciplines presenting research covering a variety of topics. While the concurrent schedule makes it impossible to see all our presenters, I encourage you to explore your intellectual curiosities by attending as many presentations as possible.

Elissa Heil, Ph.D.
Vice President for Academic Affairs, Dean of the Faculty

SCHEDULE OF EVENTS

Library Learning Commons: Oral Presentations

9:00 – 9:50 a.m. **Welcome Address – Elissa Heil**, Vice President for Academic Affairs, Dean of the Faculty

Nicholas Mattson '23 (p.2) Atmospheric Modelling of St. Louis — Clean and Sustainable Energy

Bailey Miller '23 (p.3) Vehicle Carbon Emissions and Their Correlation to the Climate

10:00–10:45 a.m. **Odessa Kalathas '23** (p.4) Fathers, Sons, Fatherlands, Sonlands: Paternal Bonds in The Henriad

Madeline Neway '23 (p.5) A Foreign State of Being: Women and (Non)communication in Shakespeare

Julia Johnson '23 (p.6) A Eulogy for the Funeral I Won't Attend

11:00–11:20 a.m. **Anaida Fahradyan '23: Honors** (p.7) Armenian Experiences of Refugee Resettlement in the Context of the Nagorno-Karabakh War (2020 to Present)

Latin 102 Display and Poster Session - 12:00 - 1:30 p.m.

Latin display located in the Library — middle floor (display case in back)

Posters displayed in the front lobbies of the Library and Brooks Science Center from the following classes as well as individual posters:

BIO 207 — Vertebrate Physiology

BIO 306 — Immunology

BIO 398 — Design and Methods of Scientific Research

CHM 398 — Design and Methods of Scientific Research

CJ 310 — Transforming Communities

LAT 102 — Elementary Latin II

Brooks Science Center Auditorium: Oral Presentations

9:00–10:00 a.m. **Welcome Address – Wesley R. Fugate,** President

Melissa West '23 (p.8) How Does Empathy Differ Between Those with Disabilities and Those Without a Disability?

Rachel Staley '23 (p.9) Attributes Associated with Perceptions of Conventional Attractiveness

10:10–11:00 a.m. **Timothy Royal '23** (p.10) Does Parental Education and Involvement Influence Academic Success in College?

Kara Rosander '23 (p.11) Comparative Study of the Effects of Precipitation on Microplastics in the Conocoheague Creek

Alexis Alleman '23 (p.12) A study of Musculoskeletal Symptoms Experienced by Lyme Disease Patients

11:10–12:00 p.m. **Kelly Lepouski '23** (p.13) Effects of Combination Treatments of Epigenetic Inhibitors (Belinostat and 5-Azacytidine) on Human Glioblastoma Cells

Ryder Wallace '23 (p.14) Multifactor Analysis of The Spread of Deer Tick (Ixodes scapularis) Borne Diseases in Pennsylvania

Camryn Mountz '23 (p.15) Gypsy Moths (Lymantria Dispar) Ovipatory in Michaux State Forest based on Tree Species and Age

12:00–1:30 p.m. Break

1:30–1:50 p.m. **Mia Harris '23: Honors** (p.16) The Impact of Social Stigmas, and the Academic Performance of Female Athletes

1:55–2:15 p.m. **Simone Karustis '23: Honors** (p.17) Moderation of Educational Stressors by Trauma and Parenting Styles and Their Effects on Comorbid Anxiety and Depression

2:20–2:40 p.m. **Meghann Sullivan '23: Honors** (p.18) Effects of Substance Use on Life Satisfaction for Veterans With and Without PTSD

2:45–3:10 p.m. **Rose Runyan '23: Honors** (p.19) Development of a method for rapid boldness scoring of individual swift fox (Vulpes velox) during husbandry visits and assessment of its applications across varying populations

Disert Scholar

3:15–3:45 p.m. **Morgan Wineburg '23** (p.1) Effects of the Beta Blocker Propranolol on Human Glioblastoma Migration and Cytotoxicity.

DISERT SCHOLAR PRESENTATION

Morgan Wineburg '23

Major: Biochemistry

Minor/Certification: Healthcare & Medical Humanities

Athletics: Women's Soccer

Faculty Adviser
Kathryn Sarachan, Assistant Professor of Chemistry
Brad Engle, Associate Professor of Biology

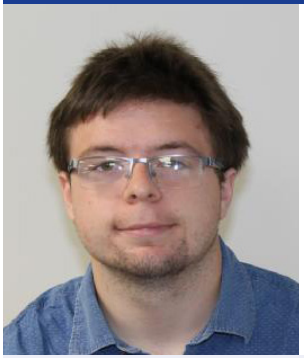
Effects of the Beta Blocker Propranolol on Human Glioblastoma Migration and Cytotoxicity

Approximately 250,000 people in the world are diagnosed with glioblastoma annually and 200,000 die from the disease. It is the deadliest form of brain cancer, with the average age of incidence peaking at 75-84 years. One important factor in the clinical outcomes of cancer is migration. Glioblastoma has a high rate of migration causing the cancer to become metastatic quickly.

Studies have shown that beta blockers, specifically propranolol, can attenuate the migration of various pancreatic and cervical cancer cells. This study will assess the ability of propranolol to arrest migration in glioblastoma cell cultures. The experimental groups were treated with 150, 200, and 250 μM propranolol, respectively. Cell cultures were incubated at 37 °C for three hours to allow for cell adhesion to the inserts then treated with propranolol for 24 hours.

Each treatment was replicated twelve times. A cell migration assay was used to quantify the degree to which treated and untreated glioblastoma cells penetrated the 8.0μm barrier. Propranolol significantly ($p=1.884 \times 10^{-6}$) inhibited the migration of glioblastoma cells irrespective of treatment groups. In addition, an MTT assay was done to assess propranolol-induced cytotoxicity at concentrations of 100, 150, 200, 250, and 300 μM. Cell viability was significantly lower in the higher-concentration treatment groups compared to the groups containing 100 μM and 150 μM propranolol.

ORAL RESEARCH PRESENTATION



Nicholas Mattson ’23

Major: Mathematics
Athletics: Men's Soccer
Activities: Wilson College Government

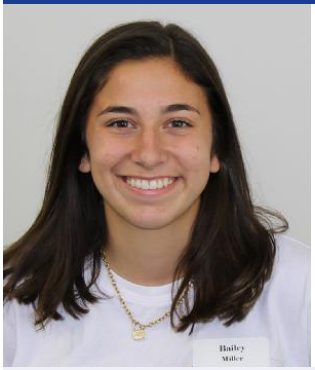
Adviser
Alexander Munson, Associate Professor of Mathematics

Atmospheric Modelling of St. Louis — Clean and Sustainable Energy

Using the mathematics of harmonic oscillation, a mathematical model of the monthly median temperature of the city of St. Louis, Mo., between the year 2018 and the year 2020, is achieved. The concepts behind the model are analyzed and presented. A parametric statistical test was conducted using the inverse Chi-square test.

The test revealed no statistically significant differences between the actual monthly median temperature and the ones projected by the model. Recommendations on public policy related to energy subsidies are given. The study also gives forward guidance to European energy policy given the current geopolitical tensions in Eastern Europe.

ORAL RESEARCH PRESENTATION



Bailey Miller ’23

Major: Environmental Science
Athletics: Women's Soccer
Activities: Environmental Club and Wilson Athletic Association

Adviser
Chris Mayer, Adjunct Professor of Environmental Studies and Director of Fulton Center for Sustainability Studies

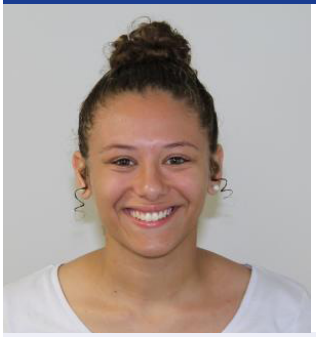
Vehicle Carbon Emissions and Their Correlation to the Climate

Society is constantly reminded of the warming of our climate as it has been increasing over the years. This warming is theorized to be caused by greenhouse gases, such as carbon dioxide, trapping heat and gradually warming our atmosphere. In March of 2022, the carbon levels in our atmosphere were at 418.11 ppm. In March of 2023, that number increased to 420.62 ppm.

Carbon dioxide levels have notably increased since the Industrial Revolution, influencing our atmospheric temperatures to fluctuate each year. Carbon dioxide levels have been correlated to hotter summers and colder winters, and this has all been blamed on human activity, such as our global modes of transportation.

Motor vehicle companies have made advances in creating more sustainable vehicles that have lower carbon emissions. This leads to the question of how much humans have really influenced the global climate and how much of this global warming is simply a natural fluctuation of atmospheric temperatures.

ORAL RESEARCH PRESENTATION



Odessa Kalathas ’23

Major: English and Literary Studies
Minor/Certification: Women's Studies
Athletics: Women's Lacrosse
Activities: Resident Assistant, WCGA Officer, and Lacrosse Captain

Adviser
Michael Cornelius, Professor of English

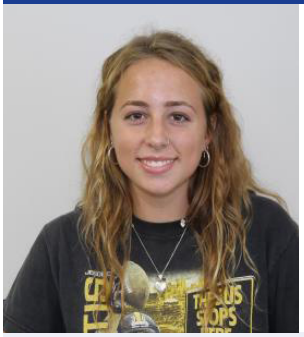
Fathers, Sons, Fatherlands, Sonlands: Paternal Bonds in The Henriad

Henry IV and Prince Hal’s relationship in William Shakespeare’s The Henriad is reflective of the developing turmoil in the nation-state. Henry IV takes power illegitimately, forcing the nation-state into unrest as it descends into political instability and rebellion. During this time Henry IV and Hal’s relationship is rockiest, forcing the two to turn to their false father and son figures, respectively, Falstaff and Hotspur.

With Falstaff and other comrades, Prince Hal outwardly pursues a lifestyle of scandalous behavior that displeases his actual father greatly. The two dispute throughout The Henriad over these frustrations, but ultimately reconcile once Prince Hal begins to publicly demonstrate the role he must play for the sake of the realm. After their reconciliation, as Henry IV dies, Prince Hal becomes Henry V, shifting the nation-state back into the influence/power of law and order.

Using spatial theory, I will demonstrate that Shakespeare uses the tension in the father-son relationship to reflect tension in the nation-state as a whole, emphasizing the outsized role monarchs play as the symbol of the state, a tension that is only resolved through Henry V acting on the advice his father provides, reflecting the two finally coming together to restore stability to the land.

ORAL RESEARCH PRESENTATION



Madeline Neway ’24

Major: English and Literary Studies

Adviser
Michael Cornelius, Professor of English

A Foreign State of Being: Women and (Non) communication in Shakespeare

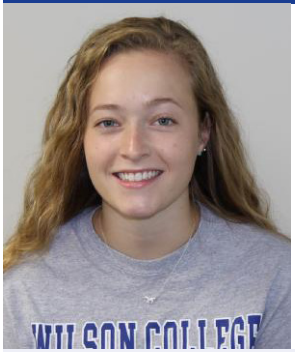
The ideal woman by the standard of social theory in Shakespeare’s era can be identified by her chastity, obedience, and silence. Condemned to the domestic sphere, she is conditioned to be a submissive and silent being. Entirely unable to communicate her desires and needs, she is dehumanized by her lack of speech, manipulated into being a prop by which men can juxtapose themselves against to emphasize their humanity, vitality, and power.

In turn, women’s learned incommunicativeness shifts the way they are perceived by men, transforming them into foreign and alien creatures. It is through this predicament that the silenced woman relinquishes her identity.

In this presentation, I will examine the plight of the silenced woman by focusing on three different Shakespearean women: Lady Mortimer in King Henry IV, Part 1; Princess Katharine in King Henry V; and Hero in Much Ado About Nothing. In these works, Shakespeare uses the idea of the silenced woman to equate womanhood to foreignness; as a result, he seems to suggest that womanhood itself is a foreign state (of being).

By using methods extracted from feminist linguistic studies, I will demonstrate that the silenced/foreign woman loses her sense of identity due to her inability to communicate. Speaking to the larger issue of female censorship and forced subordination, these Shakespearean women demonstrate that when a woman loses the ability to converse, she loses herself.

ORAL RESEARCH PRESENTATION



Julia Johnson ’23

Major: Equine Journalism, Equine Studies with a Management Concentration, and English with a Creative Writing Concentration
Athletics: Captain of IHSA Hunt Seat Team
Clubs and Extracurriculars: Employee at Wilson College Equestrian Center

Adviser
Matthew McBride, Assistant Professor of English

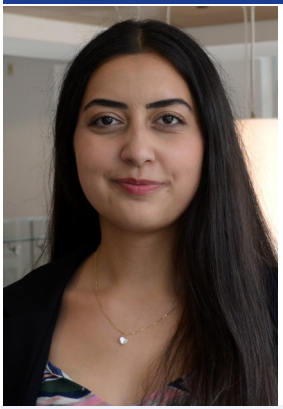
A Eulogy for the Funeral I Won’t Attend

"A Eulogy for the Funeral I Won't Attend" is a collection of poems that explores the journey that is finding yourself after heartbreak. The book is a mirror that reflects the most mortifying and unfettered aspects of grief as an attempt to cultivate a new sense of self-adoration.

For the author, the creation of this book encouraged healing, while fighting the urge to be misanthropic after being deeply hurt. Similar in style to Rupi Kaur, Dawn Lanuza, and Samantha King, with touches of inspiration from Samara Vivette and C.A. Conrad, this collection aims to reach individuals who are suffering from loss of love and looking for reassurance that they’re not alone.

Covering themes of heartbreak, trauma, healing, and empowerment, this book is a poetic documentation of a long-road beginning in anguish and leading to recovery.

HONORS ORAL RESEARCH PRESENTATION



Anaida Fahradyan ’23

Major: Business Management and History and Political Science

Minor: Spanish

Activities: Class of 2023 President, Muhibbah Club President, Omicron Delta Kappa National Leadership Society Wilson College Circle President, Resident Assistant (RA), Campus Activity Board Director, WCGA Academic Affairs Chairperson, Admissions Tour Guide, ASC Subject Tutor, Pi Gamma Mu International Honor Society in Social Sciences.

Adviser
Ela Rossmiller, Assistant Professor of Political Science

Armenian Experiences of Refugee Resettlement in the Context of the Nagorno-Karabakh War (2020-Present)

This research explores experiences of Armenian refugees who have fled their homes in Nagorno-Karabakh due to the war initiated by Azerbaijan in 2020.

There are studies that indicate that the refugee population is receiving support from humanitarian and support groups, but my literature review suggests that this support may be lacking in a few critical areas that would dramatically influence the quality of life.

How has this displacement, both internal and external, influenced the lives of refugees that fled Nagorno-Karabakh over the years? How are the resources available to them as refugees contributing to their adjustment to a new life? What steps can be taken to prevent humanitarian crises, such as the Nagorno-Karabakh’s refugee displacement?

To investigate these questions, I use interviews in order to record and capture personal experiences that could provide insight into the issue. The interviews begin to reveal that the support for the refugees is waning without any support for the refugees to begin anew. Future research will need to identify the issues with this proposed solution and to keep track of evolving needs as the Nagorno-Karabakh War continues.

ORAL RESEARCH PRESENTATION

Melissa West ’23

Major: Psychology
Clubs and Extracurriculars: Psychology Club and Diaper Depot

Adviser
Alexandra Toms, Instructor of Psychology

How Does Empathy Differ Between Those with Disabilities and Those Without a Disability?

There are many differences between those who have disabilities and those who do not. This study was to see the significant difference in empathy between those with disabilities and those without disabilities.

There have been contradictory findings within previous research on the relationship between empathy and disabilities. This is why more studies need to be done. There were 26 participants in the study who were Wilson College Students. This study asked the participants if they had a disability or not and if they had a friend or family member that had a disability.

This study hypothesized that those with disabilities would have more empathy than those that did not have a disability. The study also examined whether knowing others with a disability affected empathy levels. There were no statistically significant findings with these questions. A limitation of this study is the small sample size, and there is a need to have more students at Wilson participate. In addition, it would be beneficial to ask the general public for subsequent research.

ORAL RESEARCH PRESENTATION

Rachel Staley ’23

Major: Psychology and Criminal Justice
Minor: Sociology
Clubs and Extracurriculars: President of Psychology Club

Adviser
Brittany Harman, Assistant Professor of Psychology

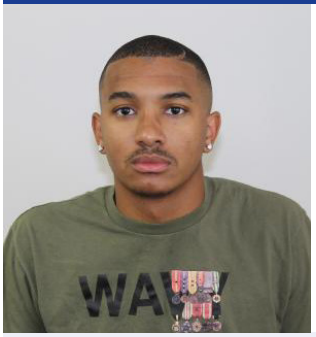
Attributes Associated with Perceptions of Conventional Attractiveness

The present study investigates how level of attraction is related to attribute perception. Specifically, we first conducted a Facebook pilot study to gather photos rated as highly attractive or highly unattractive for both males and females, giving us four photograph groups: High Attractive Males, Low Attractive Males, High Attractive Females, and Low Attractive Females. Based upon the literature review, there are cultural, biological, and evolutionary roots that determine how humans perceive others if they see them as attractive. The primary theory being investigated is the ‘pretty privilege’ phenomenon, and other theories from the literature review include the halo and horns effect, as well as evolutionary theory. Based upon these theories and similar studies within the literature review, the present study was hypothesized to produce similar results.

The specific hypothesis was that the photos rated most highly in attraction will be perceived to have positive attributes (i.e., This person is intelligent), and conversely, that photos rated the lowest in attraction will be perceived more negatively (i.e., This person is not intelligent). Five ANOVAS were conducted on each attribute variable: Hardworking, Trustworthy, Commonality, Altruism, and Intelligence. Differences were examined between the four photograph groups. Results revealed that there were no significant differences between the four photograph groups on the Hardworking variable. However, for the variable of Trustworthiness, Low Attractive Males were rated significantly lower than Low Attractive Females and High Attractive Females. For the variable of Commonality, Low Attractive Males once again were rated significantly lower than High Attractive Females. Furthermore, for the Altruism variable, Low Attractive Males were rated significantly lower than Low Attractive Females and High Attractive Females. Finally, for the Intelligence variable, Low Attractive Males were rated as significantly lower than Low Attractive Females and High Attractive Females, consistent with all the previous results.

Overall, the results paint a clear picture: Low Attractive Males are rated as significantly less trustworthy, altruistic, and intelligent than Low Attractive and High Attractive Females, and participants felt they had less in common with Low Attractive Males than they did with High Attractive Females. Implications of such findings will be discussed in-depth from cultural, biological, and evolutionary perspectives.

ORAL RESEARCH PRESENTATION



Timothy Royal ’23

Major: Psychology
Athletics: Men's Basketball
Clubs and Extracurriculars: Psychology Club and Black Student Union

Adviser
Brittany Harman, Assistant Professor of Psychology

Does Parental Education and Involvement Influence Academic Success in College?

This study was designed to investigate the relationship between parental education, involvement, and academic success among college students.

It was predicted that parental education level and parental involvement would be positively related to academic performance. Twenty-seven undergraduate students at Wilson College completed a survey in which they provided demographic information (e.g., gender, race/ethnicity, household income level), GPA, and completed a parental involvement scale.

There were no significant correlations between parental education, parental involvement, and academic success variables. Results did reveal, however, that first-generation college students perceived their primary caregivers as significantly less active in determining their needs and concerns related to their college education than non-first-generation college students. Various interpretations of this result will be discussed.

ORAL RESEARCH PRESENTATION

Kara Rosander ’23

Major: Biology
Activities: Work Study at Fulton Farm

Advisers
Deborah Austin, Professor of Chemistry
Sherri Buerdsell, Visiting Assistant Professor of Biology

Comparative Study of the Effects of Precipitation on Microplastics in the Conocoheague Creek

Water pollution is a significant global issue. It is estimated that 14,000 people die each day from water pollution worldwide. Pollutants can enter the air, soil, or water and change their physical, chemical, and biological characteristics, which can cause harm to humans and aquatic life.

Microplastics are plastic particles that are less than 0.5 mm, and these can enter water sources, specifically the creek, by surface water runoff after heavy rain, wastewater (treated and untreated), industrial effluent, degraded plastic waste, and atmospheric deposition. Microplastics pollute the environment and waterways because they take up to thousands of years to chemically degrade. In the environment, they can act as vectors for harmful containments like heavy metals, pharmaceuticals, and bacteria. The small size of microplastics allows them to be ingested easily. The Conococheague Creek is the source of drinking water for Chambersburg.

This study investigated whether the introduction of microplastics into the Conococheague Creek is correlated with precipitation. Two sites along the Conococheague Creek were selected-one upstream from Wilson College and one downstream. Although the results show no statistical significance between precipitation and microplastic concentration, a significant difference was identified between fibers and both films and fragments ($p<0.025$).

ORAL RESEARCH PRESENTATION

Alexis Alleman ’23

Major: Biology
Minor: Chemistry
Athletics: Field Hockey

Advisers
Deborah Austin, Professor of Chemistry
Kathryn Sarachan, Assistant Professor of Chemistry

A Study of Musculoskeletal Symptoms Experienced by Lyme Disease Patients

According to the CDC, Lyme disease is the number one tick-borne vector disease in the United States, with approximately 20 to 30 thousand people diagnosed per year.

Most cases of Lyme disease go undiagnosed for a period of time because the symptoms are associated with other conditions, such as general aging and arthritis. Early diagnosis is important because treatment is more effective in early stages of the disease; therefore, it is important to develop new tools that can help physicians identify the presence of Lyme disease sooner.

The purpose of this study was to observe whether there is a relationship between musculoskeletal symptoms and the pain thresholds of patients diagnosed with Lyme disease. An IRB-approved anonymous survey was distributed by a physician who is known to specialize in treating Lyme disease.

Survey results were analyzed to determine what musculoskeletal symptoms were experienced as well as the pain threshold severity. Using NCSS, it was determined that there is insufficient statistical significance to begin developing an evaluation tool for musculoskeletal symptoms and pain thresholds that could be used by physicians as an indicator to test for Lyme disease before ruling out other diagnoses. A much larger data set would need to be collected to determine the potential of an evaluation tool.

ORAL RESEARCH PRESENTATION

Kelly Lepouski ’23

Major: Biology
Minor: Chemistry
Athletics: Lacrosse

Advisers
Brad Engle, Associate Professor of Biology
Kathryn Sarachan, Assistant Professor of Chemistry

Effects of Combination Treatments of Epigenetic Inhibitors (Belinostat and 5-Azacytidine) on Human Glioblastoma Cells

Many cancers, including glioblastoma (GB), are difficult to treat, have low survival rates and high recurrence rates, and develop resistance to conventional treatments. Genetic and epigenetic factors play a role in these undesired outcomes.

Recent research has identified epigenetic factors, including DNA methylation, histone modification, and small noncoding RNAs (miRNAs), that are altered in many cancers. Some of these changes in the cancer epigenome can be reversed with epigenetic inhibitors, such as histone deacetylase inhibitors (HDACi) and DNA methyltransferase inhibitors (DNMTi), leading to new therapeutic approaches. The use of single inhibitors has shown limited clinical success; however, combination therapies have shown more positive results.

This study tested the cytotoxicity of belinostat (an HDACi) and 5-azacytidine (a DNMTi) alone and in combination on human glioblastoma cells. Glioblastoma cells were plated in 96-well plates containing 10,000 cells per well, and the % cell viability was determined using an MTT assay. Dose-response curves were generated (0 to 10 μM concentrations) using six different treatment conditions: no treatment, media, DMSO, HDACi alone, DNMTi alone, and HDACi and DNMTi combined. Belinostat and 5-azacitidine were both shown to be cytotoxic to GB cells in a dose-dependent manner. Belinostat was more effective than 5-azacitidine. A synergistic effect was also observed when the drugs were used in combination. Combination therapy using both belinostat and 5-azacytidine could represent a promising treatment for glioblastoma in the future.

ORAL RESEARCH PRESENTATION

Ryder Wallace ’23

Major: Biology
Minor: Chemistry and Business Management
Athletics: Men's Soccer

Advisers
Jeffrey Bardwell, Visiting Assistant Professor of Biology
Brad Engle, Associate Professor of Biology

Multifactor Analysis of the Spread of Deer Tick (Ixodes scapularis) Borne Diseases in Pennsylvania

Deer ticks (Ixodes scapularis, Class Arachnida) are ectoparasites found throughout the eastern and midwestern regions of the United States and responsible for 95% of vector-borne diseases in the country. I. scapularis prefer feeding on the white-tailed deer (Odocoileus virginianus) and the white-footed mouse (Peromyscus leucopus) but sometimes parasitize humans.

I. scapularis carry an array of diseases such as Lyme Disease, Babesiosis, and Anaplasmosis. This study uses Lyme Disease data to generate historical and future linear regression models, which can then be used to identify future trends for Babesiosis and Anaplasmosis in Pennsylvania. Unlike Lyme Disease, these two diseases are both prevalent in New England and currently spreading south.

Using county-level data, this study aims to understand the conditions that could lead to the spread of Babesiosis and Anaplasmosis across three Pennsylvania counties: Northumberland, Snyder, and Union. Independent variables include I. scapularis populations, human populations, temperature levels, precipitation levels, and currently reported locations for all three diseases in Pennsylvania. The dependent variable is normalized disease presence (frequency of collected potential disease vectored ticks/county population). Using R library packages dplyr, magrittr, stats, and tidyr, a linear regression model shows statistical significance for population (t-statistic: 2.348, p-value = 0.0312) and intercept (t-statistic: - 2.347, p-value = 0.0313) for Union County.

This predictive model can be used to create a county-level choropleth map to document twenty-year historic trends of Lyme Disease and forecast future prevalence of Babesiosis and Anaplasmosis in Northumberland, Snyder, and Union counties. This model creation can be used by other researchers, civilians, and people at risk of Lyme Disease, Anaplasmosis, or Babesiosis to warn about potential locations susceptible to the spread of these diseases.

ORAL RESEARCH PRESENTATION

Camryn Mountz ’23

Major: Biology

Advisers
Jeffrey Bardwell, Visiting Assistant Professor of Biology
Sherri Buerdsell, Visiting Assistant Professor of Biology

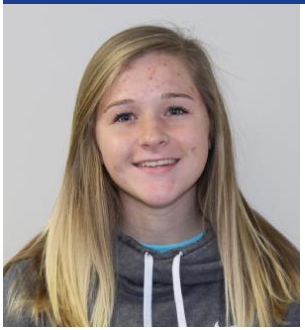
Gypsy Moths (Lymantria Dispar) Ovipatory in Michaux State Forest based on Tree Species and Age

Gypsy moths (Lymantria dispar) are an invasive species that defoliate forests across North America. The USDA estimated that industry, agriculture, and land management stakeholders spend $26 billion annually trying to control invasive species across the country.

Gypsy moths complete holometabolous stages with an annual life cycle whose larvae feed on hardwood vegetation and possess few North American predators or parasites to control their spread. Gypsy moths threaten many native trees along the east coast, causing mass defoliation which decreases tree species biodiversity. Approximately 150 different species of trees have been identified to be susceptible to gypsy moths, the main target being Oak species.

This study seeks to observe the relationship between the presence and number of egg mass and tree maturity and species within Michaux State Forest, Franklin County, Pennsylvania. Preliminary results indicate Gypsy moths prefer depositing egg masses on adult Chestnut Oaks.

HONORS ORAL RESEARCH PRESENTATION



Mia Harris ’23

Major: Psychology
Athletics: Women's Soccer
Clubs and Extracurriculars: Psychology Club

Adviser
Brittany Harman, Assistant Professor of Psychology

The Impact of Social Stigmas, and the Academic Performance of Female Athletes

In this study, I observed if stereotype threat impacts student athletes' abilities in an academic setting. The participants consisted of students who are currently enrolled at Wilson College, are a member of an athletic team at Wilson College, and are above the age of 18.

This study consisted of the student-athletes taking a mock SAT exam, which included 10 math and 10 reading questions. The participants were split into experimental and control groups. The experimental group was presented with the stereotype threat that traditional college students perform better on the exam than student-athletes, while the control was just administered the exam.

The results of this study showed no statistical difference between the control and experimental groups on math scores, reading scores, or combined scores. In conclusion, there was no statistical significance found between student-athletes and stereotype threat.

HONORS ORAL RESEARCH PRESENTATION

Simone Karustis ’23

Major: Psychology
Minor: Sociology
Athletics: Women's Soccer
Clubs and Extracurriculars: Psychology Club

Adviser
Alexandra Toms, Instructor of Psychology

Moderation of Educational Stressors by Trauma and Parenting Styles and Their Effects on Comorbid Anxiety and Depression

This study examined the effects of educational experiences on anxiety and depression when influenced by traumatic life events and parenting styles.

Participants (N=52) were Wilson College students, 48 females and four males, averaging an age of 24.25. Participants completed a series of online surveys, including the Perceived Parenting Style Survey (PPSS), Perception of Academic Stress Scale (PASS), Depression Anxiety Stress Scale (DASS-21), and Life Events Checklist for DSM-5 (LEC-5). Two separate moderation tests were run to examine whether educational stressors predicted depression and anxiety and whether trauma or parenting styles moderated that relationship.

There was a significant linear regression with educational stress and depression and anxiety. However, neither trauma nor parenting styles served as moderators. Upon further reflection on the study, we hypothesized a second model that both parenting styles and depression and anxiety predict current levels of educational stress. A multiple regression was run to test the new model, which was significant.

These findings imply that rather than educational stressors causing depression and anxiety, existing symptoms of disorders exacerbate the stress and pressures of educational settings, and parenting styles affect the ways students handle these stressors.

HONORS ORAL RESEARCH PRESENTATION

Meghann Sullivan ’23

Major: Psychology/Equine Facilitated Therapeutics
Activities: Omicron Delta Kappa

Adviser
Alexandra Toms, Instructor of Psychology

Effects of Substance Use on Life Satisfaction for Veterans With and Without PTSD

There has been prior research on veterans and the implications of PTSD and substance use; however, there has been minimal data outlining the effects of these two common variables on life satisfaction for the veteran population.

This study targeted the veteran population which resulted in 44 participants, 25 male and 19 female, ranging from ages 21 to 86. The population was predominately White and showed a largely even spread of data concerning military branch. Participants completed surveys on substance use and life satisfaction, as well as demographic data consisting of PTSD diagnosis, military branch, age, gender, and ethnicity in order to determine if there was statistical significance.

There was a significant negative correlation between substance use and life satisfaction $r(42) = -.41$, $p = <0.05$. This indicates that as substance use increases, a veteran’s life satisfaction decreases. There was no significant difference between substance use scores between veterans with PTSD ($M=10.79$, $SD=5.97$) and veterans without PTSD ($M=7.72$, $SD=6.73$) or life satisfaction scores between veterans with PTSD ($M=22.72$, $SD=5.80$) and veterans without PTSD ($M=21.84$, $SD=7.37$).

Due to limited participation, further research would be needed to determine if a larger participant pool would show data congruent with past research since the data shown was approaching statistical significance. An ANOVA was also run between PTSD and substance abuse for life satisfaction, which showed no statistical significance between life satisfaction and substance abuse $p = 0.46$ or life satisfaction and PTSD diagnosis $p = 0.72$. Again further research is required as the data sets were unbalanced and may not show accurate representation.

HONORS ORAL RESEARCH PRESENTATION

Rose Runyan ’23

Major: Biology
Minor: Animal Studies and Conservation Studies
Activities: Intern at the Center for Conservation Genomics at the National Zoo and Conservation Biology Institute

Advisers
Deborah Austin, Professor of Chemistry
Sherri Buerdsell, Assistant Professor of Biology
Research done in collaboration with National Zoo Conservation Biology Institute, Kimberly R. Todd, Nucharin Songsasen, and Hila Shamon

Development of a Method for Rapid Boldness Scoring of Individual Swift Fox (Vulpes velox) During Husbandry Visits and Assessment of Its Applications Across Varying Populations

The swift fox (Vulpes velox) is a canid species that inhabits the northern Great Plains region of the United States and Canada and faces continuous threats from population expansion and growth. Subsequently, the Fort Belknap Department of Fish and Wildlife and the Smithsonian Institution launched a five-year reintroduction plan in 2020 to translocate individuals from established populations in Colorado and Wyoming to the Fort Belknap Reservation in northern Montana. The aim is to create a self-sustaining population that will expand and connect with fragmented northern and contiguous southern populations across the species’ range. During this time, research is being conducted to understand how bold personality affects individual fitness with implications for population-level dynamics.

This study aims to create a method for evaluating individual swift fox boldness levels prior to release in the form of a survey that may be completed by technicians in the field. The survey was created based on behavioral observations of videographic data collected during the 2021 translocation provided by the Smithsonian, and utilizes the Likert scale and multiple-choice style questions for easy scoring. However, because the videographic data processed focused solely on a Wyoming release cohort, concern arose for the applicability of this survey across source populations. Therefore, the second part of this study utilizes videographic data from both Colorado- and Wyoming- sourced foxes to compare activity budgets between source populations.

Contrary to the initial hypothesis, data analysis has revealed significant differences in the activity budgets between these two populations, which may have implications for their fitness post-release. This study will provide a broad-based methodological tool to assist ongoing research in swift fox recovery.

POSTER RESEARCH PRESENTATION

Morgan Kelly ’24

Closing the Loop; On-Farm Organic Waste Composting at Wilson College

Adviser
Chris Mayer, Adjunct Professor of Environmental Studies and Director of Fulton Center for Sustainability Studies

This poster will illuminate the food waste crisis in America, the emissions caused by food in landfills, and the disruption to our earth’s natural cycles. Furthermore, an introspective analysis of composting on several levels, including large scale at Volvo CE in Shippensburg and how they accomplish being a landfill-free facility, our efforts here at Wilson College, and what can be done at home from small urban homes to more rural atmospheres. This poster will be a comprehensive look at composting on various levels with approachable and achievable solutions to this country’s immense food waste.

Main Points:

- Food waste in America, levels of waste (agriculture, logistical, industrial, and personal)
- Different types of composting, soil health importance, and definition of what a balanced soil looks like. (Perhaps a brief overview of different types of soil)
- Effects on landfills and the environment (industrial food needs/demands, methane/CO2 emissions, disturbance to lifecycles of food (taking more and returning less back to the earth)
- Manufacturing level of composting – pull stats from Volvo, initiatives for the zero waste efforts, models, agreements, and the plan in action.
- Wilson composting – hidden potential, benefit to the farm and local agriculture, amount of waste saved from landfills.
- At-home techniques for composting – breakdown into different living situations (apartment/home in urban areas, home with yard/land, personal farmland)

POSTER RESEARCH PRESENTATION

Allyson Reese ’24

Application of the Well Diffusion Method to Determine the Inhibition of Streptococcus Equi Growth by Five Types of Equine Bedding

Advisers
Deborah Austin, Professor of Chemistry
Sherri Buerdsell, Visiting Assistant Professor of Biology

Streptococcus equi causes one of the most infectious diseases that affect all classes of equids, including horses, donkeys, mules, and ponies. Commonly known as strangles, S. equi is transferred to equines through contaminated equipment, bedding, and direct contact with an infected equine. Although most horses do recover from strangles, it is also possible for horses to die from asphyxiation due to swelling around the horse’s airway. To minimize the occurrence of strangles, good facility management practices should be maintained, including, but not limited to, quarantining new equines, stall cleaning, and equipment cleaning.

The proposed research focuses on equine bedding to determine whether specific types of equine bedding will inhibit the growth of the S. equi. Mueller-Hinton agar plates will be inoculated with S. equi. Wells will be made, and small particles will fill these wells. After incubation, the zone of inhibition will be measured. Empty wells will be used as negative controls and penicillin disks will be used as positive controls. Five types of bedding will be tested including Pinus echinata (southern yellow pine shavings), Linum usitatissimum (flax), Juniperus virginiana (eastern red cedar), Hordeum vulgare (barley straw), and shredded newspaper. One-way ANOVA will be used to compare different bedding types measuring the zones of inhibition.

The results will determine which equine bedding best inhibits S. equi, allowing equine owners the ability to select the best bedding for their facility needs.

POSTER RESEARCH PRESENTATION

Lydia Story ’24

The Effectiveness of Sulfur-Containing Compounds on the Inhibition of Growth of Streptococcus Pyogenes

Advisers
Deborah Austin, Professor of Chemistry
Jeffrey Bardwell, Visiting Assistant Professor of Biology

This study will focus on identifying chemical compounds that can be used as an alternative to traditional antibiotics to treat strep throat infections. Antibiotics often cause undesired side effects or are not effective against continually mutating microbes. To potentially combat this, allicin (diallyl thiosulfinate), dimethyl sulfoxide (DMSO), diallyl disulfide, allyl methyl sulfide, and diallyl sulfide will be tested as inhibitory agents against the Group A Streptococcus (GAS) strain Streptococcus pyogenes, the bacteria responsible for strep throat infections. The antibacterial properties of these compounds will be tested to determine if a certain functional group is necessary for effectiveness against Streptococcus pyogenes. A Kirby-Bauer disk diffusion assays using various concentrations of each compound in the solvent-deionized water will be performed. The five compounds will be tested first at a broad concentration range and replicated five times. The range will then be narrowed to reflect what concentrations were effective and tested again to find the minimum inhibitory concentration (MIC). The antibiotic penicillin will be used as a positive control and deionized water (the solvent) as a negative control to ensure the accuracy of the results. Measurement of the zones of inhibition will be used to determine the MIC.

Results will show which functional group(s) are linked to antibacterial properties and, therefore, potential candidates for antibiotics. Additionally, the MICs will be compared to determine the most effective potential antibacterial compound. A t-test will be done to determine if results are statistically significant, using an alpha value of 0.05. Future studies will need to be performed in vivo (living models) to ensure the effective concentrations will be safe to use as a human antibiotic.

POSTER RESEARCH PRESENTATION

Chloe Antalek ’24

The Effects of Vitamins, Supplements, and Other Naturopathic Therapies on the Outcomes of Duchenne Muscular Dystrophy Patients

Advisers
Brad Engle, Associate Professor of Biology
Kathryn Sarachan, Assistant Professor of Chemistry

Duchenne Muscular Dystrophy is a muscle wasting disease caused by mutations to the dystrophin gene. There is currently no cure, although new exon-skipping antisense therapies may benefit a small number of patients, and gene therapies that help build micro-dystrophin are being developed. Steroid treatment continues to be used as the standard of care to help slow the progression of the disease.

While research correlating various genotypes/mutations with Duchenne outcomes is currently being done, research into other factors that may improve outcomes, such as nutritional supplements and naturopathic therapies, is limited. Supplements and naturopathic therapies can be easily obtained compared to other medications and drugs, therefore making them a readily available option and allowing for them to potentially help lessen the inflammation that contributes to devastating outcomes for Duchenne.

Data registries are a useful way to obtain existing patient data and can provide information on phenotypic variation among patients. The Duchenne Registry (ClinicalTrial.gov identifier: NCT01574053), which was started by Parent Project Muscular Dystrophy (PPMD), collects patient-reported data which includes a “nutrition and supplements” registry module detailing patients’ intake of vitamins and supplements and their use of naturopathic therapies.

This study will attempt to establish a correlation between vitamin, supplement, and naturopathic therapies and the Duchenne outcomes of loss of ambulation, cardiac function, and pulmonary function.

POSTER RESEARCH PRESENTATION

Abby Sentz ’24

Sarcoptic Mange Susceptibility in Juveniles and Adult Red Fox by Camera Trapping

Advisers
Deborah Austin, Professor of Chemistry
Sherri Buerdsell, Visiting Assistant Professor of Biology

Sarcoptic mange (Sarcoptes scabiei) is a highly contagious parasitic disease that is commonly found in mammal species. In North America, Sarcoptic mange is mostly reported in fox species, coyotes, species of wolves, black bears, porcupines, rabbits, squirrels, and raccoons.

In this research, camera trapping will be used to determine the relative incidence of Sarcoptic mange in juvenile and adult red foxes (Vulpes vulpes). Motion-sensitive cameras will be placed in 10 sites in Adams and Franklin Counties for two weeks to determine the most active site for data collection. These sites will be along farmlands, national parks, and forests, with dens present in some placement locations. Motion-detecting cameras will be on 24 hours a day, taking three pictures at once when the cameras detect any motion. Then these photos will be used to observe the coat`s conditions carefully to determine if they have sarcoptic mange.

The observation of this parasitic disease will be observed between the spring and fall of 2023. It is hypothesized that juvenile red foxes would have a higher incidence of sarcoptic mange than adults. Even the effects of temperature and humidity could have an impact on mange incidence in juveniles and adult red foxes.

The importance of this observational study is if the incidence of mange is greater in juveniles, than in adults, there would be a greater decline in the overall population. This may alter the predator-to-prey relationships, leading to a decline in other species of population.

POSTER RESEARCH PRESENTATION

Connor Bowers ’24

Analysis of Chlorphenamine as an Alternative Treatment for Meniere's Disease

Advisers
Jeffrey Bardwell, Visiting Assistant Professor of Biology
Kathryn Sarachan, Assistant Professor of Chemistry

Meniere’s disease is a debilitating malady caused by endolymphatic hydrops, a build-up of fluid within the inner ear, which leads to a variety of symptoms, including vertigo (dizziness), tinnitus (ringing in the ear), and hearing loss, which worsen with time. Meniere's has no true cure, causing individuals to rely on medications to alleviate symptoms.

This study aims to focus on an alternative treatment for symptoms associated with Meniere’s disease caused by endolymphatic hydrops. Antihistamines have long been used to treat allergies and Meniere’s disease. They allow for a reduction in the fluid buildup and help to dry out the ear. Many antihistamines have been used, but treatment with chlorphenamine (Chlor-Trimeton, Chlor-Tabs, or Aller-Chlor) has not been documented.

This study will examine the effect of chlorphenamine on desmopressin-induced endolymphatic hydrops within the inner ear of the murine animal model. Radiographs, behavioral observations, and dissection of the inner ear will be used to examine the hypothesis that administration of chlorphenamine will lead to smaller endolymphatic hydrops and fewer symptoms of Meniere’s disease compared to control animals receiving a placebo. This study will determine if further research into the use of chlorphenamine as an alternative treatment for Meniere’s disease is warranted.

POSTER RESEARCH PRESENTATION

LAT 102 - Elementary Latin II

Unexpected Matches

Adviser
Bonnie Rock-McCutcheon, Assistant Professor of History and Ancient World Studies

Students in the Spring 2023 Latin 102 class have curated a new display of the Wilson College Antiquities Collection in the JSM Library in which they played matchmaker; they have chosen authentic Latin texts, translated them,and paired them with artifacts from the Antiquities Collection. Juxtaposing text with object brings new meaning to both; hopefully you will view these texts and artifacts with new eyes after visiting the new installation.

Group Members

Geneva Robinette '23
Emily Young '23
Emily Barclay '23
Annmarie Batey '23
Hannah Berrier '24
Gavin Bigelow '26
Aidan Clark '25
Bryan DeCarlo '23
Lauren Dontell '26
Marissa Eisenhauer '24
Emily Garner '25
Pheonix Gilbert '23
Hunter Griebel '24
Jasmie Gruver '25
Shalyn Miller '23
Paige Reynolds '23
Lydia Story '24

POSTER RESEARCH PRESENTATION

Criminal Justice 310 - Group 1

A War on Drugs or a War on People? How Over-Policing of Drugs in the U.S. Affects Racial Minority Communities

Adviser
Julie Raulli, Professor of Sociology

The War on Drugs is a government-led program aimed at ending illegal drug use that began in the 1970s. Since its inception, the War on Drugs has been a driving force behind mass incarceration and racial disparities in the United States resulting in disproportionate arrests and harsh minimum sentences for people of color. Due to over-policing in communities of color, individuals who come in contact with the police are more likely to experience abuse at the hands of officers who are inexperienced or lack training.

The War on Drugs has caused millions to be subjected to unnecessary criminalization and lifelong criminal records that can disrupt or eliminate access to resources that racial minorities already struggle to maintain. Due to over-policing and its consequences, it is critical to examine alternatives to improve the quality of life for racial minorities in the United States.

Group Members

Anaida Fahradyan '23
Darren Green '24
Daeshaun Johnson '23
Hennessy Strine '25

POSTER RESEARCH PRESENTATION

Criminal Justice 310 - Group 2

Criminalizing Homelessness: Considering Consequences and Alternatives

Adviser
Julie Raulli, Professor of Sociology

Homelessness is a social problem that can stem from a variety of causes. Poverty, addiction, poor mental health, and other factors create instability that can result in the loss of a home. As a result, police are left to enforce laws and policies that make it difficult for homeless people to exist in the world without risk of imprisonment, fines, and being driven out of their encampments.

With overcrowded or nonexistent shelters, jails are often where the homeless end up. Living with mental health and substance abuse issues and without adequate housing persist for these individuals when police criminalize homelessness. It is necessary to consider alternatives to policing homelessness and to reallocate funds from policing to programs that promote human rights and dignity for homeless people.

Group Members

Samantha Hensley '23
Haden Hoff '24
Rachel Staley '23
Melissa West '23

POSTER RESEARCH PRESENTATION

Criminal Justice 310 - Group 3

How Do We Get Them Out? Investigating Alternatives to Policing Youth and Adult Gang Members

Adviser
Julie Raulli, Professor of Sociology

Current controversy and social movements have led to questioning the effectiveness of traditional policing in various realms of criminal activity, including gangs. Calls for alternatives to policing in the world of gangs have concentrated on youth-focused programs that get young people more positively involved in their communities as a way to prevent gang involvement.

This research investigates the effectiveness of youth-focused alternatives to policing gangs and makes comparisons to more adult-oriented alternatives.

Group Members

Drew Alldredge '24
Destiny Clouser '23
Catarina Keifman '23
Nija Simmons '24

POSTER RESEARCH PRESENTATION

Criminal Justice 310 - Group 4

Are Police Doing More Harm Than Good? Reducing the Criminalization of People with Mental Illness Prior to Incarceration

Adviser
Julie Raulli, Professor of Sociology

Police are often called to handle mental health situations but may not be the most beneficial resource. They are ill-equipped to manage these cases, since they are limited to transporting individuals with mental health difficulties to hospital facilities, arresting those individuals, or attempting to mediate the matter informally.

Police lack formal mental health training, and the training they do receive is confrontational in nature. The role that police have in situations involving mental illness has been shown to be extremely negative, as evidenced by high numbers of victims of police shootings and incarcerated people who have mental health issues. Police are trained to see every situation as potentially lethal, which contributes to the problem.

More funding for mental health treatment, reducing the stigma of mental illness, and more appropriate services to call when these situations occur can reduce criminalization and harm to people with mental health disorders.

Group Members

Haiden Brookens '24
Teaghan Ewing '24
Amanda Smida '23
Alyssa Wenger '23

BIO 306: Immunology

Adviser
Kathryn Sarachan, Assistant Professor of Chemistry

Join the students enrolled in Bio 306, Immunology, in an interactive forum and engage with them as you learn about various types of immunological disorders. Posters will reflect a comprehensive presentation of knowledge that the students gathered as they researched specific disorders. This student-centered, active learning experience incorporates a scientific poster presentation fostering learning of Immunology as well as communication of their chosen topic.

Students successfully mined primary literature to collect information ranging from epidemiological data on incidence and population trends, any suspected correlations to genetics as well as inheritable factors to current and trending diagnostic and therapeutic approaches to the disorder.

An overlying goal of the poster project was to substantially enhance the depth of understanding of the biology of immunology as well as provide a forum for an educational opportunity to convey facts and concepts about immunological disorders to the broader community.

BIO 306 Individual Poster Topics and Class Members

STUDENT	TOPIC
Connor Bowers '24	*The Correlation Between Adrenal Insufficiency and Premature Ovarian Failure Derived from Autoimmune Addison's Disease*
Rachel Coulter '25	*The Comparative Effects of Vaping and Cigarette Use on the Active and Innate Immune Responses*
Mary Gantt '23	*The Effect of Lifestyle and Occupation on the Autoimmune Disorder Atopic Dermatitis (Eczema)*
Natalie Petty	*The Immune Response to Gluten-Induced Gut Permeability May Influence Depression*
Allyson Reese '24	*Inhibition of Interleukin 36 as a Possible Treatment for Psoriasis*
Kara Rosander '23	*The Effect of a Fermented Food Diet on Gut Microbiota and Immunity*
Jacob Slifka '23	*Chimeric Antigen Receptor T-cell Therapy: Tackling the Challenge of Treating Pancreatic Cancer and Other HighMorality Solid Cancers*
Lydia Story '24	*The Use of Immunotherapy to Minimize the Effects of Immune-Mediated Rheumatoid Arthritis*
Megan Van Scoyoc '23	*Voclosporin and Its Effects On Lupus Nephritis*

POSTER RESEARCH PRESENTATION

BIO 207: Vertebrate Physiology

Adviser
Brad Engle, Associate Professor of Biology

Join the students enrolled in BIO 207: Vertebrate Physiology for an interactive forum and engage with them as you learn about various physiological parameters, responses and adaptations in animals and humans.

Posters will reflect a comprehensive presentation of knowledge that the students gathered as they researched specific physiological mechanisms of the vertebrate organism under varied conditions. This student-centered, active learning experience incorporates the scientific poster presentation to develop a better understanding of physiological principles and facilitate communication about their chosen topic.

Students successfully reviewed the primary literature to collect information about physiological effects, as well as underlying physiological mechanisms and responses to changing environmental conditions, both short and long-term.

An overarching goal of the poster project was to substantially enhance the depth of understanding of physiology, as well as provide a forum for an educational opportunity to convey facts and concepts about physiological mechanisms to the broader community.

BIO 207 Individual Poster Topics and Class Members

STUDENT	TOPIC
Samantha Graff '25	*Physiological Effects of Various Head and Neck Positions in Equines During Exercise*
Michaela Lee '25	*How Chameleons Use Chromatophores and Guanine Crystals in Metachrosis*
Adrian Lugo '25	*The Physiological Effects of Global Climate Change on Polar Bears (Ursus maritimus)*
Katelyn Reiff '25	*The Physiological Effects of Canine Parvovirus Treatments*
Kara Rosander '23	*Physiological Risks on Microplastic Ingestion by Fish in Freshwater and Marine Ecosystems*
Abby Sentz '24	*Sarcoptic Mange: Epidermal Effects in Red Foxes (Vulpes vulpes)*
Kaeten Sipes '25	*Physiology of Echolocation in Bats*
Makenna Snodgrass '23	*The Physiological Effects of Early vs. Late Spay/Neuter Procedures in Canines*
Cassidy Sowers '26	*How Evolution Affected Gastrointestinal Physiology from Eohippus to Equus*
Hailey Steele '25	*The Physiological Association Between Exercise and Leukocyte Telomere Length*
Rosemarie Weidenhoft '25	*Physiological Differences in Wild vs. Captive Animals*
Kylie Wright '26	*The Pathophysiological Affects of Dirofilaria immitis on the Cardiovascular System in Canines and Felines*

We would like to thank the members of the Barsy-Colgan Student Research Day Committee. Without you, this wonderful day showcasing our students and their research would not be possible.

Thank you for all your hard work.

Kathryn Sarachan
Assistant Professor of Chemistry

Ela Rossmiller
Assistant Professor of Political Science

Adam DelMarcelle
Assistant Professor of Graphic Design

Brittany Harman
Assistant Professor of Psychology

Denise Sandell
Director of Library Services

Melodie Hoff
Administrative Assistant to the Vice President, Academic Affairs

Ronda Ranalli
Administrative Coordinator, Academic Affairs

Dianna Heim
Director, Strategic Relationship Development

Darrach Dolan
Content Developer/Managing Editor

Wilson College Barsy-Colgan Student Research Day highlights the research, scholarship, creative activities, and achievements of students and their faculty mentors.

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