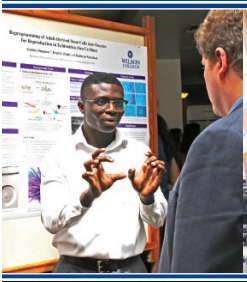
WILSON COLLEGE



15th Annual Barsy-Colgan Student Research Day

Celebrating the Creative and Scholarly Achievements of Wilson Students

April 19, 2024

15th Annual Barsy-Colgan Student Research Day

Welcome to the fifteenth 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 fieldwork, researching topics, creating art, making lab discoveries — comes 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 students representing multiple disciplines and presenting research covering a variety of topics. I encourage you to explore your intellectual curiosities by attending as many presentations as possible.

Sincerely,

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

SCHEDULE OF EVENTS

Harry R. Brooks Complex for Science, Mathematics and Technology Auditorium: Oral Presentations

10-10:10 a.m.	Welcome Address – **Wesley R. Fugate, Ph.D.**, *President*
10:10 – 10:25 a.m.	**Chloe Antalek '24** (p.6) The Effects of Vitamins, Supplements, and Other Naturopathic Therapies on the Outcomes of Duchenne Muscular Dystrophy Patients
10:30 – 11:20 a.m.	**Morgan Kelly '24** (p.7) Fostering Environmental Stewardship: A Natural Education Curriculum to Combat Nature Deficit Disorder in Children
	Allyson Reese '24 (p.8) Inhibition of Streptococcus equi Growth by Five Types of Equine Bedding
	Montana Scott '24 (p.9) Alcohol's Effect on College Students' Futures

Poster Session 11:00 - 1:00 p.m.

Posters displayed in the front lobby of the Brooks Science Center as described on pages 15-27.

Harry R. Brooks Complex for Science, Mathematics and Technology Auditorium: Oral Presentations

1:00 – 1:50 p.m.	**Sydney Caprara '24** (p.10) Increased Susceptibility to False Memories Among Individuals with ADHD
	Abby Sentz '24 (p.11) Sarcoptic Mange Susceptibility in Juveniles and Adult Red Fox (Vulpes vulpes) by Camera Trapping
	Abby Sentz '24 (p. 11) Bowhead Whales in the Arctic – How to Use the Past to Help Their Future
1:55 – 2:15 p.m.	**Connor Bowers '24: Honors Thesis** (p.12) Analyzing the Effect of Aldosterone on Symptoms of Vestibular Dysfunction in Mice
2:20 – 2:40 p.m.	**Haiden Brookens '24: Honors Thesis** (p.13) Perceptions of Criminality and Mental Illness in 2024
2:45 – 3:10 p.m.	**Teaghan Ewing '24: Honors Thesis** (p. 14) Do Differences in Racial Stereotype Salience Influence Perceptions of Criminality?

Disert Scholar

3:15 – 3:45 p.m.	**Lydia Story '24** (p.5) The Effectiveness of Sulfur-containing Compounds on the Inhibition of Growth of Streptococcus pyogenes

The Barsy-Colgan Student Research Day is supported by Louise Barsy Colgan, Class of 1980, and her husband Sean. Their generous philanthropy supports student academic research and ensures this important Wilson event continues. Each year, students may apply for grants for research they intend to complete in their senior year for presentation on Student Research Day. Louise and Sean have endowed those grants.

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.

Louise is the daughter of Helen Yeager "HiY" Barsy, Class of 1944, who passed away in 2019. Helen held 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, she 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.

DISERT SCHOLAR PRESENTATION

Lydia Story '24

Major: Chemistry and Biology

Activities: Omicron Delta Kappa Honors Society

Adviser

Deborah Austin, Professor of Chemistry

The Effectiveness of Sulfur-containing Compounds on the Inhibition of Growth of Streptococcus pyogenes

Story, Lydia*, Deborah Austin, and Jeffrey Bardwell. Wilson College, Chambersburg, PA 17201.

This study focused on identifying chemical compounds that can be used as an alternative to traditional antibiotics to treat strep throat infections caused by the Group A Streptococcus strain, *Streptococcus pyogenes*. Antibiotics often cause undesired side effects or are not effective against continually mutating microbes. To potentially combat this, allicin (diallyl thiosulfinate), dimethyl sulfoxide, diallyl disulfide, allyl methyl sulfide, and diallyl sulfide were tested as inhibitory agents. These compounds were evaluated to determine if certain functional group(s) were responsible for the effectiveness against *S. pyogenes*. Antimicrobial activity was assessed by a Kirby-Bauer disk diffusion assay, using each compound in the pure liquid form. Diallyl disulfide, allyl methyl sulfide, and diallyl sulfide were mixed respectively with dimethyl sulfoxide to observe the effects of these combinations. The antibiotic penicillin was used as a positive control, to ensure the accuracy of the results. Measurements of the diameter of the zones of inhibition were used to determine the antimicrobial effectiveness of the solutions. Statistical significance was determined by one-way ANOVA and post hoc Tukey HSD (confidence level: 95%, alpha value: 0.05) for compounds, mixtures, and compounds v. mixtures, respectively with p-values of <0.00001. Results of the Tukey HSD indicated that the disulfide bond may be necessary for antibacterial properties. Diallyl disulfide (allicin metabolite) was statistically the most effective compound (p-value <0.001), following penicillin (positive control). A mixture of allyl methyl sulfide and dimethyl sulfoxide was also statistically more effective than pure allyl methyl sulfide (p-value <0.001), suggesting an allicin molecule could be formed *in situ*. This research illustrates that compounds with disulfide bonds could serve as candidates for novel antibiotics against gram-positive bacteria. Future studies will need to be performed *in vivo* to ensure the disulfide compounds are safe for human consumption at effective concentrations.

ORAL RESEARCH PRESENTATION

Chloe Antalek '24

Major: Biology and Animal Studies
Minor/Certification: Psychology
Athletics: Women's Soccer 2021-2022

Adviser
Mary Beth Wert, Assistant Professor of Veterinary Nursing

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

Antalek, Chloe*, Brad Engle, and Marit Delghandi. Wilson College Chambersburg, PA 17201.

Duchenne muscular dystrophy is a muscle wasting disease caused by mutations to the dystrophin gene. Treatment options such as exon-skipping and gene therapy are available but limited to certain patients depending on age or mutation location. Steroid treatment continues to be used as the standard of care to help slow the progression of the disease. While research correlating various genotype/mutations with Duchenne outcomes is currently being done, research into other factors that may improve outcomes, such as nutritional supplements, is limited. Supplements are a readily available option and can potentially help lessen the inflammation that contributes to devastating outcomes for Duchenne. This study aimed to determine if certain supplements had an impact on the outcomes of ambulation and cardiac and pulmonary function. Data used in this research were obtained from Parent Project Muscular Dystrophy's Duchenne Registry (TDR) version dated 31OCT2023, which collects patient-reported data including a "Nutrition and Supplements" registry module detailing patients' intake of vitamins and supplements. The supplements analyzed in this research were vitamin E, coenzyme Q10, B 50 complex, magnesium, CBD (cannabidiol), vitamin beta carotene, melatonin, calcium, and vitamin D. Data were analyzed to determine if there was a benefit in cardiac function based on the left ventricle ejection fraction determined from an echocardiogram, which is used to measure the amount of oxygen-rich blood pumped out to the body. Histograms and Welch's two factor t-test (statistical software, R) indicated that there was no significant difference in cardiac function by patients taking the supplements (all supplements analyzed had a p-value > 0.05). Analysis on pulmonary function and ambulation status was difficult to effectively accomplish due to limited data.

ORAL RESEARCH PRESENTATION

Morgan Kelly '24

Major: Environmental Science
Minor/Certification: Biology
Activities: Single Parent Scholar and President of Environmental Club

Adviser
Christine Mayer, Assistant Professor of Integrated Sciences and Fulton Center for Sustainability Studies Director

Fostering Environmental Stewardship: A Natural Education Curriculum to Combat Nature Deficit Disorder in Children

This research project aims to address the growing concern of Nature Deficit Disorder (NDD) in children by developing and implementing a comprehensive natural education curriculum. Grounded in the principles of fostering curiosity, appreciation for the natural world, and promoting lifelong environmental stewardship, this curriculum spans over six weeks and covers topics ranging from basic plant and insect identification to understanding food sources, composting, animal habitats, and concluding with a reflection on the learning journey. Each week is carefully designed to achieve specific educational goals and learning objectives, utilizing hands-on activities such as guided nature walks, observation and journaling, crafting, and discussions. By integrating Leave No Trace and Go Gently concepts, children not only learn about the natural environment but also cultivate respect and responsibility towards it. This curriculum will be taught at Montessori Academy of Chambersburg to their pre-K to first-grade classroom. It aims to provide a teachable solution to NDD that instills a lifelong connection with nature and fosters future environmental stewardship.

ORAL RESEARCH PRESENTATION

Allyson Reese '24

Major: Biology

Minor/Certification: Equine Management

Athletics: Co-Captain of Western Equestrian Team

Activities: Equine Club

Adviser

Deborah Austin, Professor of Chemistry

Inhibition of Streptococcus equi Growth by Five Types of Equine Bedding

Reese Allyson*, Sherri Buerdsell, and Deborah Austin. Wilson College, Chambersburg, PA 17201.

Streptococcus equi causes strangles, one of the most infectious domestic equid diseases, that affects horses, donkeys, mules, and ponies. Five types of equine bedding were tested including *Pinus echinata* (southern yellow pine), *Linum usitatissimum* (flax), *Juniperus virginiana* (eastern red cedar), *Hordeum vulgare* (barley straw), and shredded newspaper. *S. equi* is vectored to equines through bedding, contaminated equipment, and through direct contact with an infected equine. Although most equines recover from strangles, some may die from asphyxiation due to swelling around the trachea. The focus of this research was on whether specific types of equine bedding would inhibit the growth of *S. equi*. Mueller-Hinton agar plates were inoculated with *S. equi.* Seven wells were made in each plate and small particles of each bedding were placed in individual wells. One well remained empty as a negative control, one well contained sterile deionized water as a negative control, and one penicillin disk was placed in the center of each plate as a positive control. Plates were incubated at 37°C for 24 hours and examined, and if zones of inhibition were present, they were measured. Using one-way ANOVA followed by Tukey's post-hoc test, it was determined that southern yellow pine ($p=0.000024$) and eastern red cedar ($p=0.000007$) were statistically significant in their ability to inhibit *S. equi* over the other three bedding types. The spread of *S. equi* could be reduced in equine facilities by using southern yellow pine, eastern red cedar, or a combination of both bedding types.

ORAL RESEARCH PRESENTATION

Montana Scott '24

Major: Psychology & Animal Studies

Adviser
Alexandra Toms, Assistant Professor of Psychology

Alcohol's Effect on College Students' Futures

In 1976, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) issued its first report on alcohol abuse about college students. The research found excessive drinking on college campuses and that it negatively impacts students' education. Research shows that multiple factors influence college drinking such as an individual's genetic susceptibility to the effects of alcohol, frequency of alcohol use during high school, parental attitudes about drinking while at college, gender differences, and class statuses. An area that has not been examined has been the role of family involvement in the students' education and students' frequency of alcohol use. This research administered a survey with questions to address alcohol's influence on family involvement and how this impacts the college years of a student.

ORAL RESEARCH PRESENTATION

Sydney Caprara '24

Major: Psychology

Activities: Crafty Companions

Adviser

Brittany Harman, Assistant Professor of Psychology

Increased Susceptibility to False Memories Among Individuals with ADHD

In the first study of its kind, Soliman and Elfar (2014) used the Deese-Roediger-McDermott (DRM) task to examine susceptibility to false memory between adults with and without ADHD. The results of this study showed that participants with ADHD produced significantly more false memories after the DRM task than the participants without ADHD. The purpose of this presentation is to present the results of an experimental replication attempt conducted to substantiate the original findings of Soliman and Elfar (2014). Implications and future directions of research will also be discussed.

ORAL RESEARCH PRESENTATION

Abby Sentz '24

Major: Biology

Minor/Certification: Conservation

Adviser

Kathryn Sarachan, Assistant Professor of Chemistry

Sarcoptic Mange Susceptibility in Juveniles and Adult Red Fox (Vulpes vulpes) by Camera Trapping

Sentz, Abby*, Sherri Buerdsell, and Brad Engle. Wilson College, Chambersburg, PA 17201.

Sarcoptic mange (Sarcoptie scabiei) is a highly contagious parasitic disease commonly found in over 100 mammal species worldwide. In North America, sarcoptic mange has been reported in fox species, coyotes, wolves, black bears, porcupines, rabbits, squirrels, and raccoons. It is essential to monitor this parasitic disease in the red fox (Vulpes vulpes) population due to the high transmission rate of the S. scabiei mite. Red fox individuals were evaluated using camera trapping to determine the relative incidence of sarcoptic mange in juvenile and adult red foxes (Vulpes vulpes). Motion-sensitive cameras were placed in six Adams County, PA locations for two months to determine the four most active sites for data collection. These sites were along farmland, national parks, creeks, and forests. The photos were then assessed for coat condition to determine if the red fox individual had sarcoptic mange. No symptoms of mange were observed in any fox individuals recorded. Chi-square analysis indicated that activity levels differed between seasons, with the highest activity occurring in the fall (spring: 8.63%, summer: 32.99%, fall: 49.75%, and winter: 8.63%). More fox activity occurred in areas that were close to humans (86.29%).

Bowhead Whales in the Arctic – How to Use the Past to Help Their Future

Sentz, Abby*, and Jennifer A. Jelincic. Smithsonian Mason School of Conservation, George Mason University, Sci-Tech Campus, Manassas, VA, 20110.

HONORS ORAL RESEARCH PRESENTATION

Connor Bowers '24

Major: Biology, pursuing honors in the discipline
Minor/Certification: Chemistry and Psychology
Athletics: Captain of Men's Soccer
Activities: WCGA President (2 years), WCGA Vice President (1 year), Class of 2024 President, SAAC Representative (2 years), Athletic Association Social Media Chair (2 years)

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

Analyzing the Effect of Aldosterone on Symptoms of Vestibular Dysfunction in Mice

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 the impact of aldosterone in leading to symptoms associated with Meniere's disease caused by endolymphatic hydrops. Aldosterone is a hormone that functions to retain fluid within individuals to help maintain homeostasis. Aldosterone in elevated amounts has been shown to lead to endolymphatic hydrops within the ear due to increased fluid retention. Behavioral tests and a behavioral ethogram will be used to examine the hypothesis that increased amounts of aldosterone given for a longer duration will lead to more severe symptoms of vestibular dysfunction than less amounts given for a shorter period. The data was tested for normalcy using histograms and a Shapiro-Wilkes test, and residuals normalcy examined with a quantile-quantile plot. These tests showed that the data was not normal, so either a robust parametric or nonparametric test would be required. Three single variable linear regression models were then used to determine that the amount of aldosterone given predicted the greatest variance on mouse balance with an r-squared value of 0.100, the duration of aldosterone administered had a mid-level impact with an r-squared value of .04, and mouse gender had the least effect on balance with an r-squared value of 0.003. Behavioral data and aldosterone blood level data will continue to be collected and analyzed using regression models throughout the remainder of this experiment. This study will determine if further research into the impact of aldosterone on vestibular dysfunction seen in Meniere's disease patients warrants further investigation.

HONORS ORAL RESEARCH PRESENTATION

Haiden Brookens '24

Major: Criminal Justice and Psychology, pursuing honors in the discipline

Athletics: Softball

Activities: WCGA Senate

Advisers

Brittany Harman, Assistant Professor of Psychology

John Elia, Associate Professor of Philosophy

Perceptions of Criminality and Mental Illness in 2024

Research by Star (1952; 1955) found evidence of the stigmatization of the mentally ill by showing that American laypeople perceived an association between mental health diagnoses and the potential for dangerous or criminal behavior. In the early 1960s, the results of Nunnally (1961) suggested that such associations were still being readily made. Forty years later, research by Link et al., (1999) indicated that there had been a substantial increase in participant beliefs that those with mental health conditions are frightening or violent. Paradoxically, the results of Phelan et al., (2000) showed that such perceptions had dramatically decreased. The purpose of this presentation is to present the findings from two complementary experiments designed to empirically investigate the nature and extent of the perceived relationship between mental health conditions and criminal behavior. Implications and future directions of research will also be discussed.

HONORS ORAL RESEARCH PRESENTATION

Teaghan Ewing '24

Major: Criminal Justice and Psychology, pursuing honors in the discipline

Athletics: Women's Soccer

Clubs and Extracurriculars: Psychology Club

Adviser
Alexandra Toms, Assistant Professor of Psychology

Do Differences in Racial Stereotype Salience Influence Perceptions of Criminality?

Research has shown a significant relationship between the race of an individual and the perceived danger that individual poses. The media and news also play a role in associating people of color with crime, causing a stereotype bias against people of color. This bias can cause White jurors to be more likely to find a person of color guilty of a crime than a White defendant. However, when race was made salient, this bias was not present because jurors would intentionally act not racist. This study examines whether there is a difference in perceived criminality between experimental vignettes describing a White individual compared to vignettes that describe an individual of color (i.e., Black or Hispanic). It was predicted that vignettes that describe an individual of color will have significantly higher criminality ratings than those that describe a White individual. However, when race is made salient, it is predicted that there will be no differences in perceived criminality between vignettes containing a White, Black, or Hispanic individual. A pilot study was conducted to receive feedback on the descriptions used in the subsequent experimental study. Participants in the experimental study were randomly assigned to either the racially salient or non-salient condition. After reading each vignette, participants in both groups rated the perceived criminality of the individual described in the vignette on a criminality rating scale. There was a significant interaction between race and salience on ratings of criminality. Interpretations and implications of the results will be discussed.

POSTER RESEARCH PRESENTATION

Hailey Steele ’25

The Effect of the Synthetic Dye, Red 40, on the DNA of Human Colon Cells

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

The artificial food dye that is most commonly consumed is Allura Red AC (Red 40). This chemical is used in processed food to enhance color and to entice the attention and desire of young consumers. Over the past few decades, the consumption of ultra processed foods has skyrocketed. Additionally, the number of colorectal cancer cases has increased. One contributing factor to the increase in colorectal cancer is a high fat diet, which includes processed foods. This diet is referred to as the “Western Diet.” A high fat diet causes inflammation within the colon and repeated inflammation leads to possible colorectal carcinogenesis over time. I hypothesize that Red 40 will have a measurable effect on the DNA of the colon cells. To test this hypothesis, human colon cells will be cultured and treated with varying amounts of Red 40. The impact of the dye will be determined by the Comet Assay, which will measure the level of DNA damage in the cells. These results will yield information regarding the threat of Red 40 to the health of the colon and perhaps begin to provide insight on preventative measures against the increasing cases of early onset colorectal cancer.

POSTER RESEARCH PRESENTATION

Kylie Wright '25

Efficacy of Low-Intensity Laser Therapy as an Alternative Treatment for Mastitis in Goats

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

Given the rising importance of dairy goats in the global agricultural landscape, it is imperative to explore alternative possibilities for more successful treatment methods for mastitis in goats. Mastitis not only compromises the health and welfare of individual animals but also poses significant economic burdens on dairy goat farmers. Studies on the use of lasers to treat mastitis in dairy cows have been carried out and research indicates a potential to reduce inflammation, promote tissue repair, and provide pain relief, offering a multifaceted approach to mastitis management in dairy cattle. Given that goats are a crucial part of the American dairy economy, alternatives for more successful treatment methods for mastitis in goats should be investigated. This study aims to assess the effectiveness of low-intensity laser therapy for treating mastitis in dairy goats. The study includes a control group treated solely with antibiotics, a second group subjected to low-intensity laser therapy alone, and a third group receiving a combination of both treatments. Success in treatment will be assessed through clinical observations, such as monitoring for reductions in udder swelling, pain, and abnormalities in milk appearance and production. The results of this study will contribute to the body of knowledge regarding the effectiveness of laser therapy as a standalone or complementary approach in mitigating clinical mastitis symptoms in goats. Given the significant economic and animal welfare implications of mastitis in the dairy goat industry, findings from this research have the potential to improve mastitis management strategies, ultimately enhancing the sustainability of dairy goat farming operations.

POSTER RESEARCH PRESENTATION

Adrian Lugo ’25

The Effects of Serotonin Transporter Gene Polymorphism (5-HTTLPR) Genotypes on Major Depressive Disorder Treatment

Advisers
Marit Delghandi, Associate Professor of Biology
Deborah Austin, Professor of Chemistry

The serotonin transporter gene (*SLC6A4*) has been found to play a role in the development of mental disorders such as major depressive disorder. Research indicates that the development of mental disorders is linked to the mutations and variants that the *SLC6A4* receives in the serotonin transporter-linked polymorphic region (*5-HTTLPR*). Evidence suggests that a variant of the short allele of the serotonin transporter gene is the connection between the alteration to the function of this gene and the pathogenesis of depression. This study aims to investigate the relationship between genotypes in the 5-HTTLPR region, the occurrence of depression, and the medication that is effective in mitigating symptoms. For the study, I hypothesize that individuals with a genotype homozygous to the long allele (l/l) in the serotonin transporter-linked polymorphic region will have a better response to selective serotonin reuptake inhibitor (SSRIs) antidepressant treatment. Volunteers will be asked to complete a survey and to do a cheek swab to provide a DNA sample, which will be analyzed using PCR to determine the genotype in the 5-HTTLPR region. The study will be IRB-approved, and the identity of the volunteers will be protected. The results of both the survey and the genotyping will be analyzed to determine whether there is a connection between the genotype of an individual and the medication that has proven to be effective. This study may provide information that could lead to the development of a predictive model for selecting the most effective medication to treat depression rather than relying on a trial-and-error method.

POSTER RESEARCH PRESENTATION

Judi Wolf '25

Effects of Lipid Synthesis Inhibitor ND-630 on Novirhiabdovirus Reproduction

Adviser
Brad Engle, Associate Professor of Biology

With the rise of viral outbreaks and the development of new viral mutations, finding new methods to prevent and combat viral infection is an ever-changing field. Several viral families responsible for the infection of humans and animals alike are considered enveloped, surrounded by a form of phospholipid membrane. Without this membrane, these viruses have substantially decreased chances for exocytosis from the host cell and survival in the extracellular environment. In animal cells, lipids are synthesized using carboxylated acetyl-CoA to develop fatty acid chains. This research will determine if the limiting of phospholipid synthesis in a host cell will decrease or eliminate the overall viral load. The model virus for this study is *Novirhabdovirus*, an enveloped virus that causes hemopoietic necrosis in species of fish, both naturally and in aquaculture. The viral load will be assayed in *Epithelioma papulosum cyprinid* (EPC), a cell culture line derived from fish, under increasing concentrations of ND-630, which prevents acetyl-CoA from being carboxylated and adding to the fatty acid chains in lipid synthesis. It is hypothesized that increasing the concentration of ND-630 on the cells will decrease the overall viral load.

POSTER RESEARCH PRESENTATION

Rachel Coulter '25

The Effect of Canine Raw Diet Selection on Bacterial Growth

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

As raw food diets are becoming increasingly popular among dog owners, the concern of pathogenic bacteria contaminating the foods is also increasing. With the potential of pathogenic bacteria in raw foods, humans are also at risk as the majority of these bacteria are shed through direct contact or feces. The study aims to determine the microbiome of common raw meat diets for canines. The difference between this study and previous studies is that multiple bacteria in raw meat diets fed to canines in the United States will be quantified rather than focusing on one specific bacterium or comparing foods used in various countries. I hypothesize that different canine raw food diets from various U.S. sources will exhibit a variety of bacteria communities. Data will be collected through swabbing of different raw meats and cultured. These bacterial cultures will then be identified and quantified. The results of this study will provide an understanding of the potential risks of food-borne pathogens in raw diets manufactured in the U.S.

POSTER RESEARCH PRESENTATION

Katie Kimmel '25

The Effect of Diet and Mineral Composition on Hoof Tensile Strength in Equines

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

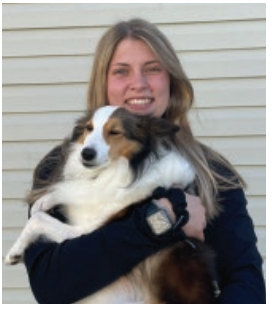
The frequency of laminitis in horses presents substantial issues for equestrian health experts and owners alike. Despite breakthroughs in treatment options, prevention remains the primary goal of laminitis therapy. Laminitis occurs when the tissue between the hoof and the coffin bone becomes inflamed. The type of food that a horse consumes is one of the most essential elements defining the mineral profile and tensile strength of its hooves, thus the quality and nutritional value of the feed provided are critical to obtaining adequate hoof condition and minimizing the risk for laminitis. The goals of this study are to use atomic absorption spectrometry to compare the differences in mineral concentrations of sodium, potassium, magnesium, zinc, and iron between two diets, silage and a commercial concentrate, and to determine which diet results in greater hoof tensile strength in horses. By identifying the dietary components that impact laminitis risk, the results of this study may provide evidence-based recommendations for improving horse nutrition and lowering the occurrence of this devastating ailment.

POSTER RESEARCH PRESENTATION

Cassidy Sowers '25

Influence of Helminth Antiparasitic Medication on Equine Microbiome

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



Dewormer antiparasitic medications are both an efficient preventative measure and treatment for helminth parasitic infections in the equine industry. However, the impact of these medications on the equine gut microbiome is unclear and requires further study. Because of the difficulty in diagnosing parasitic infections in equines, antiparasitics are often used too liberally. Because of this liberal application, unnecessary deworming can lead to antiparasitic resistance, which has the potential to harm the host equines. This study will focus on determining the relationship between antiparasitic medication and the bacterial richness and diversity of equine fecal samples pre- and post-treatment. The results may provide evidence as to whether the use of antiparasitics should be more carefully regulated.

POSTER RESEARCH PRESENTATION

Erin Roszkowiak '25

Determining the Effectiveness of Anxiolytics for Feline Phonophobia

Adviser
Carolyn Tatsch, Assistant Professor of Veterinary Nursing

The focus of this study is introducing stress to the cat's colony via a noise stimulus (phonophobia) to determine the effectiveness of anxiety supplements (anxiolytics). The practice of fear-free medicine is growing very quickly in veterinary clinics. The purpose of fear-free medicine is to implement strategies that cause the animal to experience the least amount of stress when they are being handled. This is normally seen in veterinary clinics, but much less frequently in shelters, as most studies focus on trying to improve veterinary visits. The focus of this research topic will be on a cat colony. Cat colonies have a stable population, whereas the shelter population changes daily, which increases stress. The project will be done in one month. The first week will serve as the control, with no stressor or anxiolytic added. In the second week, each cat will receive a calming treat (Zesty Calm and Chews) daily. In the third week, I plan to use a calming chew (Composure™ Pro Advanced Calming Supplement) daily, which is broken up into canned cat food. Each cat will only receive 1/7 of a can so that their caloric intake is not significantly increased, which will help keep our data more consistent. In the fourth week, each cat will receive both the calming treat and the calming chew daily. All supplements will be given around the same time every day to reduce variables. Each day of the experiment there will be a nanny cam set up to record for two hours to observe the cats' behaviors with no stress stimulus around. Then two to three times each week, a stressor will be introduced over a speaker and their responses will be recorded. If the cats appear to have any behavior that could cause harm to themselves or others, I will intervene and stop the trial for that day. The data collected will determine the effectiveness of the anxiolytics individually or in combination. Information learned in this research may apply to Shelter medicine and reduce the stress of cats in an environment that is not consistent.

POSTER RESEARCH PRESENTATION

Julia Elliott '25

Motivations Behind Excessive Alcohol Consumption Among College Students

Adviser
Brittany Harman, Assistant Professor of Psychology

Elliott, Julia L., and Brittany A. Harman. Wilson College Chambersburg, PA 17201.

Binge drinking, defined as a woman drinking four or more alcoholic beverages or a man drinking five or more alcoholic beverages within a two-hour timeframe, is common among college students (e.g., Speed et al., 2023). Furthermore, one in three people have experienced a blackout while drinking, and many reported actually wanting to experience another one in the future (Speed et al., 2023). Research indicates that drinker self-schemas (Lee et al., 2018), self-esteem (Gierski et al., 2020), and a family history of addiction (e.g., Van Namen et al., 2023) are all among factors that may contribute to drinking behaviors among college students, but some of the findings are inconsistent with our expectations. For example, Gierski and colleagues (2020) found that individuals with higher self-esteem actually reported consuming more units of alcohol per week than those with lower self-esteem. The present study will investigate various factors that may contribute to excessive drinking among college students.

Elliott, Julia L., and Brittany A. Harman. Wilson College Chambersburg, PA 17201.

POSTER RESEARCH PRESENTATION

Deahnirah Menedis '25

The Impact of Positive vs. Negative Message Framing on Consumer Purchase Intentions

Adviser
Brittany Harman, Assistant Professor of Psychology

Menedis, Deahnirah R., and Brittany A. Harman. Wilson College Chambersburg, PA 17201.

The field of consumer psychology, which focuses on purchase intentions and buying behavior, has found significant evidence in support of the phenomenon of brand loyalty (e.g., Baldinger & Rubinson, 1996; Knox & Walker, 2001; Mellens, Dekimpe, & Steenkamp, 1996). Brand loyalty involves repeatedly purchasing from the same brand, despite competitors offering the same or similar products and services (e.g., Dick & Basu, 1994; Hur, Ahn, & Kim, 2011). Little research, however, exists on factors that contribute to violations of brand loyalty. Specifically, what does it take to motivate customers to purchase from brands other than those to which they are typically loyal? One potential factor may involve the format of advertising messages. The present study will investigate how framing an advertising message either positively (by emphasizing gains) or negatively (by focusing on losses) impacts purchase intentions among those who are high vs. low in loyalty to particular brands.

POSTER RESEARCH PRESENTATION

Hennessy Strine ’25

Feelings of Belonging Amidst Racial Discrimination: Mental Health and Coping with Racism

Adviser
Alexandra Toms, Assistant Professor of Psychology

Strine, Hennessy J., Alexandra Toms, and Brittany A. Harman. Wilson College Chambersburg, PA 17201.

This study examines feelings of belongingness as a moderator for racial discrimination on mental health. The effects of discrimination will be analyzed among people of color in the United States, with an emphasis on various levels of discrimination. While numerous studies have examined the effects of discrimination on mental health (e.g., Desai et al., 2023; Okazaki, 2009; Williams & Willams-Morris, 2000) significantly less research has been conducted regarding the additional factors of belongingness as a coping mechanism. It is hypothesized that individuals who feel increased belongingness may also be prone to reporting more frequent incidents of racial discrimination.

POSTER RESEARCH PRESENTATION

PSY 468: History and Systems of Psychology

Adviser
Alexandra Toms, Assistant Professor of Psychology

Join the students enrolled in PSY 468, *History and Systems of Psychology*, to learn how historical contexts have shaped the development of different areas of psychology. Students outlined a historical time period during which a specific area of psychology experienced growth, change, or controversy. Then they analyzed how the historical context influenced the changes in that psychological area.

Group Members

Students	**Titles**
Julia Elliott '25 and Deahnirah Menedis '25	The Racial Bias in IQ Testing
Drew Alldredge '25, Teaghan Ewing '24, and Hennessy Strine '25	Women's Mental Health and Lobotomies in the Early to Mid-Nineteen Hundreds
Haiden Brookens '24 and Connor Bowers '24	A Glimpse into the Emergence of Clinical Psychology around the time of World War II
Sydney Caprara '24 and Hope Sanders '25	The History of Unethical Studies in Psychology
Lesley Rodriguez '25	A Cross Cultural Analysis of Abraham Maslow's Hierarchy of Needs

POSTER RESEARCH PRESENTATION

SOC 235: Race, Class, and Gender

Adviser
Alexandra Toms, Assistant Professor of Psychology

Join the students enrolled in SOC 235, *Race, Class, and Gender*, as they use an intersectional approach to explore different social problems. The posters are based on workshops they created to teach on a topic related to intersectionality and how that impacts individuals' experiences in relation to a social problem. Students examined at least 2 intersecting identities related to race, class, and/or gender and created workshops connecting those intersecting identities to a social problem or systemic inequality in the U.S.

Group Members

Students	Topics
Erin Gohegan '26, Lexie Hubbard '27, and Hennessy Strine '25	Handle with Care: Queer Black Men and the AIDS Epidemic
Daniel Bogere '24, Jenia Farrell '28, Jayden Pritchett '26, and Ethan Wilson '27	Differences between Lower Class Black and White Men's Experiences with Police
Mackenzie Caldwell-Degnon '27 and Madison Shanholtz '27	Visibility and Invisibility: Racial-Minority Women's Experiences in the Workforce
Kaley Barnhart '25, Madelyn Bush '25, and Whitney Waters '28	Healthcare Disparities among Race, Class, and Gender

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.

Ela Rossmiller
Assistant Professor of Political Science & Committee Chair

Adam DelMarcelle
Assistant Professor of Graphic Design

Daniela DiGregorio
Associate Professor of Education

Brittany Harman
Assistant Professor of Psychology

Cynthia Hyland
Director of Academic Technology

Cassandra Latimer
Vice President of Marketing, Communications, and Strategic Initiatives

Denise McDowell
Director of Major Gifts

Kathryn Sarachan
Associate Professor of Chemistry

Amy Gulino
Director, Grants, Foundation Relations & Donor Research

Denise Sandell
Director of Library Services

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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