High Point University

High-PURCS

High Point University's Research and Creativity Symposium

April 15th, 2025

URCW

- Welcome from the -

DIRECTOR OF UNDERGRADUATE RESEARCH AND CREATIVE WORKS

Welcome to the 13th High Point University Research and Creativity Symposium (High-PURCS). High Point University is an institution which fosters intellectual and creative scholarship through student engagement and student-faculty collaboration. Our students undertake significant work in intellectual and creative endeavors mentored by faculty; they regularly share their work at professional national and regional conferences. High-PURCS is an opportunity for students to showcase their projects on campus so HPU students, faculty, and staff can witness our students' professional development and gain a glimpse of tomorrow's future leaders, artists, scientists, teachers, and scholars. At this year's symposium, we have 241 projects from 419 undergraduate students mentored by 90 faculty from 31 different fields across most of High Point University's schools, including graduate schools. Our students' achievements reflect HPU's holistic learning approach and the dedication of its caring faculty. Thank you for being part of the 2025 High Point University Research and Creativity Symposium.

Dr. Joanne D. Altman
Director, Undergraduate Research and Creative Works
Professor of Psychology

THE 13TH HIGH POINT UNIVERSITY RESEARCH AND CREATIVITY SYMPOSIUM (High-PURCS)

APRIL 15, 2025

Nido and Mariana Qubein Conference Center

12:30 pm – 1:00 pm	**Welcome, Opening Remarks & Awards** Premier Ballroom - 2202 G
1:00 pm – 2:00 pm	**Poster Session, Exhibit, & Performances I** 2nd floor Concourse (hallway)/Premier Ballroom 2202 G
2:00 pm – 3:00 pm	**Oral Session I** 2202 A-F
3:00 pm – 4:00 pm	**Oral Session II** 2202 A-F
4:00 pm – 5:00 pm	**Oral Session III** 2202 A-F
5:00 - 6:00 pm	**Poster Session, Exhibit, & Performances II** 2nd floor Concourse (hallway)/Premier Ballroom 2202 G **Reception** Food in the Club Rooms

Congratulations to our 2024-2025 Research Apprentices!

Research Rookies is a program for freshmen and first-semester sophomores who desire to be incorporated into the research and creative works atmosphere of High Point University while still early in their undergraduate careers. Participants have two consecutive semesters to complete a variety of activities. Completing this program earns the title of Research Apprentice and shows students are committed to independent work, the products of which will give them an edge later in job interviews or applications for graduate or professional schools. This spring we are excited to congratulate nine students who have recently completed the program and have earned the title of Research Apprentice.

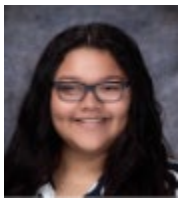
New Spring 2025 Apprentices:


Anyia Brooks-Manning


Maddie Erwin*


Brianna Harvey*


Ava Heaton*


Madison Kattke*


Larissa Paddock


Dillon Pickney*


Allie Pratt*


Lauren Talley

**Denotes students who completed the Research Rookies program in one semester in the fall.*

Research Apprentices recognized in a Fall 2024 ceremony:

Abigail Betterton
Julia Crenshaw
Lily Grace Foister
Toni Frost
Emily Gaines
Maggie Garr
Natalie Jensen
Salem Leonard
Carlee Logan
Caroline Marchis
Abbey McRae
Joyce Mondo
Kaley Neal
Gregory Olson
Salem Rainwater
Aunna Randle El
Ellie Marcella Ratta
Meredith Russell
Kara Vaartjes
Amelia Valdez
Reid Wheeler

12:30 pm – 1:00 pm Opening Remarks and Awards

Poster Session I

1:00 – 2:00 pm

Board	Presenter(s)	Topic
1	Molly McCarver	Athletic Training
2	Macie Fox	Biochemistry
3	Owee Kirpekar	Biochemistry
4	Evan Mills	Biochemistry
5	Parker Nyboer	Biochemistry
6	Gabriel Valenzano	Biochemistry
7	Lillie Wilson	Biochemistry
8	Lauren Vossen	Biochemistry
9	Laird Bickford	Biology
10	Emilie Brisco & Ava Salvant	Biology
11	Justin Ross & Alexander Contreras	Biology
12	Grace Heltzman, Catalina Kett, & Paige Winkelbauer	Biology
13	Madison Kline, Kaitlyn Ngo, & Olivia Quinones	Biology
14	Anna Neeley & Victoria Puharic	Biology
15	Rebekah Olls	Biology
16	Caroline Paccione	Biology
17	Caroline Ranneberger	Biology
18	Kara Vaartjes & Ellie Marcella Ratta	Biology
19	Julian Rodriguez	Biology
20	Cameron Sanderson	Biology
21	Brian Ragoobir & Connor Spitler	Biology
22	Gracie Vickery	Biology
23	Zachary Workman, Alex Kaelin, & Mikalyn Freeman	Biology
24	Kiara Busby & Burton Brewer	Chemistry
25	Brianna Doll, Caitlin McCray, & Ellen McKay	Chemistry
26	Isabella Frankovic, Rashi Atietalla , & Hannah Ariyo	Chemistry
27	Madison Hill & Erik Peterson	Chemistry
28	Imogen Irons	Chemistry
29	Jenna Mastropolo, Cameron Siler-Nixon, & Tristan Kaz	Chemistry
30	Nadia Khan	Chemistry
31	Owen Mader & Savannah Cherry	Chemistry
32	Stephanie Mera & Madison Prendergast	Chemistry
33	Renee Monge	Chemistry

34	Laura Sarafinas, Lexie Young, & Garland Greene	Chemistry
35	Claire Taylor & Sarah Czuba	Chemistry
36	Jack Schoultz, Gigi Orecchio, & Noah Thompson	Chemistry
37	Darryl Wright & Lexi Topping	Chemistry
38	Callie Freeman & Westyn Woodard	Chemistry
39	Ashlinn Corcoran	Computer Science
40	Alexa Dandrea	Computer Science
41	Owen Kelley	Computer Science
42	Elizabeth Ritter	Education
43	Emma Higgins & Dalia Widmer	Electrical Engineering
44	Tyler Rogers	Electrical Engineering
45	Riley Freed, Darren James, & Caroline Langone	Exercise Science
46	Gracie Ritchey	Exercise Science
47	Jacob Saunders	Exercise Science
48	Yaw Korankyi	Health & Human Performance
49	Kayla Ragland, Kipton Travis, & Emmalie Spry	Health & Human Performance
50	Dante Van Arman	Health & Human Performance
51	Mack Oakley	History
52	Kayla Wylie	History
53	Cameron Cieslica, Ava Collins, Jaden Harnar, & Sarah Petersen	Honors
54	Norah Cook, Gavin Klueg, Jardel Javier, & Christian Quaye	Honors
55	Madison Corbett, Cameron Hodges, Patrick Hynds, & Lillian Singer	Honors
56	Meigs Roberts	Hospitality Management
57	Mary Kate Hewitt	Interior Design
58	Nicholas Sheridan & Braedyn Jacobson	Mathematical Sciences
59	Faith Bradley	Neuroscience
60	Carlee Logan & Nina Ritter	Neuroscience
61	Allyssa Winegar & Chloe Buffalino	Neuroscience
62	Kelsey Jordan Sharp & Abbie Grace McNeill	Nursing
63	Jane Rainwater & Caitlin Farrington	Pharmacy
64	William Tepper, Autumn Bryan, Liam Cavicchia, Ben Mathews, Ashley Rodriguez, & Sofie Smith	Philosophy
65	Josh Honaker	Physical Therapy
66	Cassidy Krieger	Physical Therapy
67	Rachel Smith	Physical Therapy
68	Aubrey Fessler	Physics
69	Gracie Lefever, Riley McGee, Gia Cicero, Madeline Erwin, & Gena Ghandour	Psychology
70	Abby Fort	Psychology
71	Catherine Gallagher	Psychology
72	Sara Jameson	Psychology

73	Amanda Klein & Genevieve Manger	Psychology
74	Lauren Reyna & Brooke Rezendes	Psychology
75	Lauren Yaroma	Psychology
76	Paris Glover	Hospitality Management

Technical Exhibits I

1:00 pm – 2:00 pm

Space	Presenter(s)	Topic
77	Nathan Harvey, Nyar Freeman, Kennedy Greene, Kenny Pridgen, & Cole Moore	Game Design

Performances I

1:00 pm – 2:00 pm

Dance Performances:
Monica Kepins and performers – Timelapse Jessamina Piazza – What's Left of Us Kendall McDowell and Caroline Cubas– the struggle for ebullience Jessamina Piazza and performers – Everlasting Caroline Cubas and performers – True North Mary Gomez and performers – Metamorphosis Nicole Amorocho and performers – Loud Blue Resonance (see abstracts for performers)

Oral Presentation Schedule

2:00 pm – 5:00 pm

	Room A	Room B	Room C	Room D	Room E	Room F
Session I	**Computer Science**	**Natural Sciences: Biology & Physics**	**Spanish (12 min each)**	**French I**	**English I**	**Honors I (20 Mins Each)**
2:00-2:15	Ky Nguyen	Helia Osareh	Alexander Joseph Jack Fobert Katherine Munro Angelina Lappin Bailey Taylor	Paige Osché	McKenna Holz	Kendall Kobbe, Kylin Starr, Payton Kiasevicz, Nathan Lattimore Dylan Diguette, Tessa Lamb, Madison Lehmann, Emily Winkler Cailee Calabrese, Carys Cox, Marc Delgallo, & Rebecca Petersen
2:15-2:30	Madison Baly Smith	Tyler Wright		Lilianna Allen	Madison Molis	
2:30-2:45	Samuel Zito	Thomas Owens		Autumn Bryan	Hannah Hulseman	
2:45-3:00		Caitlyn Wingeart		Lila Davis	Malia Agostinelli	

	Room A	Room B	Room C	Room D	Room E	Room F
Session II	**Psychology I**	**Natural sciences: Biology**	**Social Sciences**	**French II (10 min each)**	**English II**	**Honors II (20 Mins Each)**
3:00-3:15	Catherine Gallagher & Sawyer Harrold	Kara Bensel	Natalie Hinson	Shelby Caruso Savannah Cherry Elle Discont Isabella Gould Annika Melich Will O'Brien	Sophia Csulak	Claire Barnes, Mathew Robson, Shelby Rosenhahn, Sydney Smith Abby Fort, Lauren Esposito, Gianna Hassig Ryland Brady, James Fitzpatrick, Kendall McDowell, Langston Stovall
3:15-3:30	Hailee Gosart & Muriel Gibson	Miranda Gough	Caydan Brixius		Quinn Fergusson	
3:30-3:45	Regan Jordan & Stella Smith	Katie McDonald	Darius Cummings		Caroline Marchis	
3:45-4:00	Ashley Tarjick	Holley Lowe	William Tepper		Taylor Galavotti	

	Room A	Room B	Room C	Room D	Room E	Room F
Session III	**Psychology II**	**Biochemistry/ *Pharmacy/ Physical Therapy**	**Strategic Communication/ Media Production/ Nursing**	**French III**	**English III**	**Honors III (20 Mins Each)**
4:00-4:15	Mikayla Moxley & Ashley Rodriguez	Chloe Cox	Leah Quill	Dawson Wright	Rachel Vesper	Harry Dewalt, Lizzie Kelly, Emily Lawler, Shauna Skow Mitchell Blanda, Campbell Brown, Stephen Casey, Lexi Ross Alyssa Clymer, Angelina Lappin, Sabrina Lombardo, Caitlin McCray
4:15-4:30	Josca Schabacker & Sophia Csulak	*Isabella Maldonado	Alexandra Pallander, Domenica Paccione, Eleanor Moyer, Joesph Terry, Sania Aldridge	Lena Hetrick	Paige Vercio	
4:30-4:45	Catherine Gallagher	Helia Osareh	Madison Lehmann & Andrea Zaglin	Ian Huett	Cate Stamper, Paige Osché Samantha Falla, Sophie Bolinger, Sophia Csulak	
4:45-5:00		Gabriella Rodriguez				

Poster Session II

5:00 – 6:00 pm

Board	Presenter(s)	Topic
1	Lily Cristini	Biochemistry
2	Aaliyah Coley	Biochemistry
3	Chase Dillon	Biochemistry
4	Webb Garrett	Biochemistry
5	Maggy Henkel	Biochemistry
6	Macey McGovern & Alexa Klein	Biochemistry
7	Meredith Russell	Biochemistry
8	Lexie Young & Jillian Stroup	Biochemistry
9	Makenzie Wiseman & Madison Awbrey	Biochemistry
10	Lauren Buckminster, Daniel Sapozhnikov, & Shauna Skow	Biology
11	Dominick Latta & Catherine Summerrow	Biology
12	Maggie Garr	Biology
13	Rilee Bahner & Hailee Gosart	Biology
14	John Guglielmetti	Biology
15	Jackson Jones	Biology
16	Raegan Koon	Biology
17	Tyler Matthews	Biology
18	Jake Mergenthal & Ava Heaton	Biology
19	Joyce Mondo, Kaden FungFook, & Lily Bruner	Biology
20	Kendall Philpott	Biology
21	Jack Quintana	Biology
22	Allison Ressler	Biology
23	Elizabeth Rubeira	Biology
24	Michael Wright	Biology
25	Alina Zimavaya & Tyler Wood	Biology
26	Melanie Zylberberg & Amelia Valdez	Biology
27	Justin Allan, C.J. Gulla, & Bryce Grier	Chemistry
28	Autumn Andreeff, Alex Stielau, & Dana Pitell	Chemistry
29	Jalen Dixon & Jake Ankrum	Chemistry
30	Lillian Gray & Isabel Marshall	Chemistry
31	Kaley LeFevre	Chemistry
32	Alyssa Lovallo, Selbe Laffere, & Lucas Arciola	Chemistry
33	Erik Peterson	Chemistry
34	Cameron Siler-Nixon	Chemistry
35	Talaya Holland, Naomi Harris, & Claire Taylor	Chemistry
36	Nic Bledsoe, Cam Walker, & Korbyn Hudson	Chemistry
37	Caroline Wilson, Abigail Dibble, & Rana Ligue	Chemistry
38	Toheed Zaman	Chemistry

39	Mirabella Zingales, Isabella Wells, & Xavier Galdamez	Chemistry
40	Kathaleen Brockmann	Economics
41	Morgan Abrams	Electrical Engineering
42	Zora Stovall	Event Management
43	Kiley McTamney	Exercise Science
44	Brian Shaw & Will Toth	Exercise Science
45	Millicent Tysinger	Exercise Science
46	Jillian Schulz, Katie Whalen, & Ja'niyah Williams	Exercise Science
47	Olivia Cirocco	Fashion Merchandising
48	Mikalyn Freeman & Charity Franklin	Health and Human Performance
49	Julia Koshivos	Health and Human Performance
50	Roman Montecalvo	Health and Human Performance
51	Nick Sorensen	Health and Human Performance
52	Kayla Wylie	History
53	Kailyn Allen, Felecia Gonzalez, Ashlyn Long, & Paige Osché	Honors
54	Emily Gaines, Alivia Longley, & Ryan Walter	Honors
55	Rilee Bahner, Reid Holloway, Francela Mejias-Solano, & Tim Nash	Honors
56	Brianna Jensen, Haley Hedrick, Jessamina Piazza, Paris Glover, & Rowan Trietley	Honors
57	Megan Lapari, Mackenzie Scalzo, Marie Streng, & Jordan Thompson	Honors
58	Catherine Gallagher, Sydney Litwiller, Virginia Vincent, & Alexandra Vogel	Honors
59	David Caivano, Sara Jameson, Lauren Vossen, & Andrea Zaglin	Honors
60	Paris Glover – Moved to Session I	Hospitality Management
61	Kamden Ray	Interior Design
62	Tyler Galley	Microbiology
63	Alyvia Brainard	Neuroscience
64	Taylor Galavotti & Lizzie Kelly	Neuroscience
65	Ashley Fierro & Ashley Bowman	Nursing
66	Ansley Edwards & Autumn Perrelli	Nursing
67	Alexandria Register & Natalie Woodward	Nursing
68	Andersen Tomes, Heather Duensing, & Owen Hunter	Pharmacy
69	Sofie Smith	Philosophy
70	Serene Alshalabi	Physical Therapy
71	Mitchell Talton	Physical Therapy
72	Ryland Brady	Physics
73	Skyler Gangestad	Physics
74	Caitlin McCray, Lily Grace Foister, & Spencer Hansen	Psychology
75	Haley Hedrick	Psychology
76	Ariana Gabriel, Sydney Steelman, Taylor Beason & Harper Melnick	Psychology

Technical Exhibits II

5:00 pm – 6:00 pm

Space	Presenter(s)	Topic
77	Brandon Allen, Jesse Cruz, & Christian Taylor	Art and Graphic Design
78	Kinsey Gebhart	Game Design

Performance Session II

5:00 pm – 6:00 pm

Musical Performances
Percussion Ensemble– Extremes Victoria Lavargna – Almost There Ella Marron – Lasciatemi Morire Ella Marron – Beyond My Wildest Dreams Maddie Rubino – New England Maddie Rubino – Talking to the Moon Cate Stamper – Part of Your World Hailey White – Right Hand Man Hailey White – Pretty Funny Sasha Yost – Someone Gets Hurt HPU Three A Cappella Groups – Disney Performance (see abstract for performers)
Musical Performance/Media Production
Aaron Jackson and Andrew Porter – Blue Horizon

Poster Session I

2nd Floor Concourse (hallway)
1:00 pm – 2:00 pm

Athletic Training

(1) The Prevalence of the OSTRC in Adolescent Athletes
Molly McCarver* and Brett Pexa
Mentor: Brett Pexa, Athletic Training
It is unknown if American adolescent athletes experience overuse injury symptoms. The purpose of this study was to assess the prevalence of overuse injury problems, stress, and recovery in adolescent volleyball athletes. We found many adolescent athletes are experiencing overuse injury problems and stress during a preseason time.

Biochemistry

(2) Identification and Characterization of the Putative α-Carbonic Anhydrase RzCAα
Macie Fox*
Mentor: Kelsey Kean, Chemistry
I've identified a putative α-carbonic anhydrase from the tardigrade Ramazzottius varieornatus (RzCA). Here, I present the successful recombinant expression, purification, and characterization of RzCAα. Utilizing colorimetric assays to measure activity and stability, I've thus far shown that RzCAα functions as a genuine carbonic anhydrase and continue to further characterize thermostability.

(3) Evaluation of a Small Compound Library and Possible Gene Targets for Antibiofilm Activity in Staphylococcus aureus (MRSA)
Owee Kirpekar*, Burton Brewer, and Meghan Blackledge
Mentor: Meghan Blackledge, Chemistry
The goal of this research is to evaluate a library of small compounds and possible gene targets that may disrupt the regulation of adherence and dispersal in MRSA biofilms. Compounds of interest were tested using a standard static crystal violet biofilm assay. Biological results and future directions will be presented.

(4) Using Chemical Surface Modifications to Inhibit Methicillin-Resistant Staphylococcus aureus (MRSA) Biofilm Formation
Evan Mills*
Mentor: Pamela Lundin, Chemistry
Methicillin-Resistant *Staphylococcus aureus* (MRSA) continues to pose a threat to hospitals around the world. This research looks to explore the use self-assembled monolayers to inhibit the growth of MRSA biofilms on treated silicone rubber surfaces, which are used in many types of catheters that are prone to developing bacterial biofilms.

(5) Expression, Purification, and Characterization of a Carbonic Anhydrase from Hypsibius Exemplaris
Parker Nyboer* and Nadia Khan
Mentor: Kelsey Kean, Biochemistry
Carbonic anhydrases (CAs) are metalloenzymes that catalyze the conversion of water and carbon dioxide to carbonic acid. We have identified a putative β CA from the extremophile *Hypsibius exemplaris* (tardigrade). For CA acquisition, we use recombinant protein expression and His-tag purification. For activity characterization, we are using a colorimetric-based assay.

(6) Novel anti-virulence compounds impact MRSA hemolysin activity
Gabriel Valenzano*, Meghan Blackledge, and Heather Miller
Mentor: Meghan Blackledge, Chemistry
Methicillin-resistant *Staphylococcus aureus* (MRSA) is a dangerous bacterium that is quickly becoming a worldwide health issue due to its antibiotic resistance and many virulence factors. Hemolysins are exotoxins that harvest iron from host red blood cells. Hemolysin regulation by novel compounds was tested and measured at mRNA and protein levels.

(7) Identification and Evaluation of Antibiotic Adjuvants for Therapeutic Potential Against ESKAPE Pathogens
Lillie Wilson*, Burton Brewer, Kiara Busby, and Sophie Gregory
Mentors: Heather Miller and Meghan Blackledge, Chemistry
The ESKAPE pathogens are highly antibiotic-resistant pathogens that cause life threatening infections. Due to antibiotic resistance, these infections are difficult to treat. Our laboratory is interested in developing and studying antibiotic adjuvants, which enhance antibiotic activity. Antibiotic adjuvants that displayed therapeutic promise were tested in vivo to determine their efficiency.

(8) Small Molecule Antibiotic Adjuvants on VRSA: A Transcriptome-wide Analysis
Lauren Vossen*, Meghan Blackledge, and Heather Miller
Mentor: Heather Miller, Chemistry
Methicillin-resistant *Staphylococcus aureus* (MRSA) is a pathogen that develops antibiotic resistance and produces many virulence factors. We have performed a transcriptome-wide analysis of *Staphylococcus aureus* that also has vancomycin resistance (VRSA). I will discuss findings on VRSA samples treated with antibiotic adjuvants to uncover molecular mechanisms.

Biology

(9) Evolution of Blue Coloration in Kingdom Fungi: a Review
Liza Ragan, Nicole Hughes, and Laird Bickford*
Mentor: Nicole Hughes, Biology
Adaptive coloration of fungi remains largely unexplored. The objective of the current study was to review the literature for information on the biochemical, evolutionary, and ecological basis for blue colored fungi. Blueness is imparted by a variety of widespread (e.g., melanin, laccase) and taxon-specific molecules. Most haven't been identified.

(10) Repurposing Cancer Drugs as Anti-parasitics Against Toxoplasma Gondii
Emilie Brisco* and Ava Salvant*
Mentor: Robert Charvat, Biology
Toxoplasma gondii infects roughly one-third of the global population and is the second leading cause of death from food-borne illnesses. Current combative treatments against the parasite are largely unsuccessful. Therefore, this project examines anti-cancer drugs and aims to repurpose them as novel anti-parasitic treatments to reduce parasite growth and replication.

(11) Pigment Composition and Photosynthetic Gas Exchange In Different Colored Autumn Leaves of Sweetgum, Liquidambar styraciflua
Alyson Acquard, Andrea Argueta, Kara Bensel, Hootie Bickford, Justin Ross*, Tyler Wright, Alex Contreras*, and Nicole Hughes
Mentor: Nicole Hughes, Biology
The breakdown of chlorophyll during autumn corresponds with changes in leaf colors. Misconceptions remain around pigment combinations responsible for certain hues. Sweetgum leaves collected over two field seasons were used to quantify concentrations of chlorophyll, carotenoids, and anthocyanins. We also measured photosynthetic gas exchange rates and identified pigment location.

(12) CRISPR-Cas9 Injections Targeting E74B and Broad Genes in Vanessa cardui
Carlye Gruss, Grace Heltzman*, Catalina Kett*, and Paige Winkelbauer*
Mentor: Kenneth McKenna, Biology
Butterfly eyespot development involves genes regulating dorsal-ventral and anterior-posterior patterning. CRISPR-Cas9 sgRNAs were injected into freshly laid V. cardui eggs to knock out *Broad* and *E74B* genes, crucial for metamorphosis, to attempt to alter wing eye spot patterning to highlight the roles of these genes in developmental patterning.

(13) Environmental Effects on Wing Shape in the Painted Lady Butterfly, Vanessa Cardui
Madison Kline*, Kaitlyn Ngo*, Olivia Quinones*, and Kenneth McKenna
Mentor: Kenneth McKenna, Biology
Wing development in *Vanessa Cardui* follows a homologous pattern, making butterflies a useful model for developmental biology. Environmental factors, including nutrition and temperature, can influence this process. Our analysis showed that starvation reduces cell proliferation, altering wing shape. Additionally, anterior development occurred earlier than posterior development, highlighting wing shape plasticity.

(14) Larval Color Plasticity in the Painted Lady Butterfly, Vanessa cardui
Anna Neeley*, Victoria Puharic*, and Kenneth McKenna
Mentor: Kenneth McKenna, Biology
Caterpillars of *Vanessa cardui* change color with temperature, turning white at 45°C. We mapped this reaction norm and investigated its link to melanin synthesis. Using enzyme inhibitors, we tested if color change involves the melanin pathway. Next, we'll explore how extreme temperatures alter enzyme activity and expression.

(15) Why do Evergreen Herbs Synthesize Anthocyanins in Leaves During Winter?
Testing the Herbivory Defense Hypothesis Using Red and Green Varieties of Lactuca sativa
Rebekah Olls*, Serene Alshalabi, and Nicole Hughes
Mentor: Nicole Hughes, Biology
The reddening of certain evergreens in the winter is caused by increased anthocyanin pigments. We hypothesized that they serve as defense from red-blind winter herbivores, such as deer. Utilizing choice experiments, color preference between red and green lettuce was tested. Data showed a small but insignificant preference for green leaves.

(16) Genetic and Physical Characterization of an Unknown Bacteriophage from a Commercially-Available Sample of Bacillus thuringiensis

Caroline Paccione*

Mentor: Dinene Crater, Biology

A bacteriophage (MBt.ph1) isolated in our laboratory can specifically infect *Bacillus thuringiensis* (Bt). Preliminary DNA analysis suggests it is uncharacterized. We sequenced the whole genome and will use transmission electron microscopy imaging to understand MBt.ph1. Combining genetic and structural analyses will aid in confirming if it is an unidentified bacteriophage.

(17) Butterfly Wing Development

Caroline Ranneberger*

Mentor: Kenneth McKenna, Biology

I hypothesized that butterfly wing pattern development is correlated with transcription factor changes during the metamorphic molt that is correlated with brain development. I analyzed the expression of metamorphic transcription factors in wings throughout the molt. I found a strong correlation with expression levels and those in developmental patterning genes.

(18) Evaluating the Effects of Plant Density and Garden Location on Pollinator Diversity as Assessed by eDNA Metabarcoding and Pitfall Traps.

Kara E. Vaartjes*, Ellie Marcella Ratta*, Brian Ragoobir, Connor Spitler, Michael Wright, Daniel Greene, and Megan Rudock Bowman

Mentor: Megan Rudock Bowman, Biology

Greater than 87% of the world's flowering plants and crops depend on pollinators, which are in decline. This study assesses the distribution and diversity of native pollinators in 3 HPU gardens of varying size, plant diversity, density, and land use. Pollinators are identified using eDNA, pitfall-traps, bee-hotels and visual observation.

(19) Assessment of Posttranslational Modification Across the Spatiotemporal Gradient of the Mammalian Eye Lens

Julian Rodriguez*, Ryan Kelsey, Julianna Moock, Billy Hayden, Owen Kelley, Jeremy Whitson, Carol Shively, Emily Kolonia, Gennifer Merrihew, Michael MacCross, James MacDonald, and Theo Bammler

Mentor: Jeremy Whitson, Biology

The crystalline lens provides a model for studying aging-related posttranslational modifications (PTMs) in long-lived proteins. Using fractionation and proteomics, we analyzed PTM changes across the lens spatiotemporal gradient in pig and macaque lenses. Deamidation, oxidation, and carbamylation increased with age, significantly affecting structural and glycolytic proteins, highlighting aging's biochemical impact.

(20) The Use of Bacillus thuringiensis as an Insecticide in Caterpillar Larvae of the Painted Butterfly (Vanessa cardui)

Cameron Sanderson*

Mentor: Dinene Crater, Biology

To determine the effects of GerE in *Bacillus thuringiensis (Bt)*, we will develop a method to measure its insecticide ability using larvae of the Painted Butterfly (*Vanessa cardui*). This will allow us to compare our CRISPR mutants with wildtype *Bt*, potentially opening new avenues for pest control and agricultural sustainability.

(21) Using eDNA to Assess the Distribution and Diversity of Native Pollinators in High Point University Campus Gardens

Brian Ragoobir*, Connor Spitler*, and Megan Rudock Bowman

Mentor: Megan Rudock Bowman, Biology

Animals pollinate >87% of the world's flowering plants and crops. HPU boasts an extensive network of over 30 campus gardens. This study aims to explore how the distribution and diversity of native pollinators varies within and between these gardens, utilizing eDNA left behind on flowerheads and metabarcoding.

(22) Monitoring the Presence of the Endangered Cape Fear Shiner (Notropis Mekistocholas in the Cape Fear River Basin Using eDNA

Gracie Vickery* and Jack Quintana

Mentor: Megan Rudock Bowman, Biology

The endangered Cape Fear Shiner is a minnow-fish native to the Cape Fear River Basin in NC. Catch-and-release monitoring may be harmful to small populations, so environmental DNA (eDNA) assays can be used instead. This study aims to develop a species-specific qPCR assay for non-invasive, long-term monitoring.

(23) Impact of Color-Filtered Light on Danio rerio Reproduction

Zachary Workman*, Alex Kaelin*, and Mikalyn Freeman*

Mentor: Vernon McNeil Coffield, Biology

This study investigates the impact of ecologically relevant color-filtered light on zebrafish (*Danio rerio*) reproduction in controlled environments. By evaluating embryo production and viability, we aim to elucidate the role of environmental light in reproductive success, offering valuable insights into aquatic ecosystem biology.

Chemistry

(24) Synthesis and Evaluation of a Targeted Compound Library Based on Active Anti-Virulence Scaffolds

Kiara Busby*, Burton Brewer*, Chloe Cox, and Owee Kirpekar

Mentor: Meghan Blackledge, Chemistry

MRSA causes severe hospital infections, often resistant to antibiotics. As an 'ESKAPE pathogen,' it has high mortality rates. Adjuvants, which enhance antibiotic effectiveness, offer alternative treatments. We synthesized compounds to boost beta-lactams and vancomycin and inhibit biofilms. Synthetic details, SAR, and biological data will be presented.

(25) Building Blocks of Novel Medications: Methodology Development of Yndiamides

BriAnna Doll*, Caitlin McCray*, and Ellen McKay*

Mentor: Brock Miller, Chemistry

Research in the Miller Laboratory investigates the synthesis of yndiamides. These substrates can produce vicinal diamines that are common building blocks to the pharmaceutical industries. Our lab has made significant progress towards the methodology development of these compounds. This presentation will provide an overview of our progress thus far.

(26) PETase: An Emerging Enzymatic Solution to Plastic Waste Management

Isabella Frankovic*, Rashi Atietalla*, and Hannah Ariyo*
Mentor: Kelsey Kean, Chemistry

PET (polyethylene-terephthalate) is a plastic found in everyday items including water, detergent, and shampoo bottles. Only 10% of plastics are recycled, most ending up in landfills or as harmful toxins in the air. This project researches FAST PETase, an emerging enzyme that depolymerizes PET, reducing plastic waste and environmental pollution.

(27) The Hard Stuff: Analysis of Metal Ion Content in Commercially Available Wine Samples Using X-Ray Fluorescence Spectroscopy.

Madison Hill* and Erik Peterson*
Mentors: Keir Fogarty and Elizabeth McCorquodale, Chemistry

X-Ray Fluorescence is an instrument useful for determining the presence of heavy elements in solid and liquid samples. Using developed methods, the concentrations of common metal analytes were determined in samples of commercially available wine. The results are used to draw conclusions about soil conditions and nutritional value.

(28) Novel Expression and Characterization of Lactate Monooxygenase from the Parasitic Fungus Beauveria Bassiana

Imogen Irons*
Mentor: Kelsey Kean, Chemistry

Lactate monooxygenase (LMO) is a flavoenzyme that utilizes flavin mononucleotides to catalyze redox chemistry. We present the first study of a putative LMO from the parasitic fungus, *Beauveria bassiana*. We used recombinant protein expression in *Escherichia coli* and purification by affinity chromatography to isolate pure protein.

(29) What's in Your Tea: Determining Variability of Epicatechin and Caffeine Concentration Ratios in Matcha Tea Samples

Jenna Mastropolo*, Cameron Siler-Nixon*, and Tristan Kaz*
Mentors: Keir Fogarty and Elizabeth McCorquodale, Chemistry

Matcha tea, powdered green tea, is popular for its versatility in drinks and healthy diets. The ratio of chemicals like epicatechin and caffeine helps assess relative antioxidant activity. Using High Performance Liquid Chromatography (HPLC), the caffeine and epicatechin content in various matcha grades and flavors was analyzed and compared.

(30) Expression, Purification, and Characterization of a Novel Carbonic Anhydrase from Hypsibius exemplaris (HeCA)

Nadia Khan*, Parker Nyboer, and Kelsey Kean
Mentor: Kelsey Kean, Chemistry

We identified a β-carbonic anhydrase (HeCA) from the tardigrade *Hypsibius exemplaris*, known for surviving extreme environments. HeCA may be suited for biomedical and industrial applications like CO_2 capture and artificial lungs. We successfully expressed, purified, and characterized HeCA and plan to optimize purification and test its activity under extreme conditions.

(31) Design and Implementation of an Innovative Undergraduate Chemistry Laboratory Experiment Utilizing an Inquiry-based Approach and Artificial Intelligence for Biodiesel Synthesis and Thermodynamic Analysis.
Owen Mader*, Savannah Cherry*, Maggie Junkin, and Sarmad Hindo
Mentor: Sarmad Hindo, Chemistry
This study presents the development of a novel inquiry-based undergraduate laboratory experiment that incorporates artificial intelligence (AI) into the synthesis of biodiesel using the transesterification process. It combines hands-on experience with real-time AI data analysis, optimization, and thermodynamic simulations, aiming to deepen understanding of chemistry, reaction mechanisms, and molecular properties.

(32) Development of a Calibration Curve for 3-Hydroxyisobutyrate Standards Using LC-MS for the analysis of Branched-Chain Amino Acids
Stephanie Mera*, Madison Prendergast*, Pamela Lundin, and Roger Vaughan
Mentor: Keir Fogarty, Chemistry
3- hydroxyisobutyrate (3-HIB), a metabolic intermediate is associated with insulin resistance in cells. The objective of the experiment is to develop a calibration curve using Liquid-Chromatography-Mass Spectroscopy (LCMS) to quantify 3-HIB in biological samples and further analyze its potential role in metabolic disorders.

(33) Determining Cytotoxicity of Novel Anti-virulence Compounds Used in a Human Cell Line MRSA Infection Model
Renee Monge*, Meghan Blackledge, and Heather Miller
Mentor: Heather Miller, Chemistry
Methicillin-resistant *Staphylococcus aureus* (MRSA) is a harmful pathogen due to antibiotic resistance and the production of virulence factors targeting its host. We investigated the sensitivity of human cells to different concentrations of novel anti-virulence compounds to verify that they are not cytotoxic in MRSA infection experiments.

(34) Unknown Biodiesel-Herbicide Analysis Using Gas Chromatography-Mass Spectrometry (GC-MS)
Laura Sarafinas*, Lexie Young*, and Garland Greene*
Mentors: Keir Fogarty and Elizabeth McCorquodale, Chemistry
To analyze an unknown herbicide made from a biodiesel waste layer, we aimed to use Gas Chromatography-Mass Spectrometry (GC-MS), which works by separating the contents of a solution to identify its composition. We found expected biodiesel waste compounds, stearic and palmitic acid, and unexpected silicon, naphthalene, and silane-related compounds.

(35) Characterization and Synthesis of Rhodamine B and Fluorescein Spirolactam Dimers
Madison Hill, Claire Taylor*, Sarah Czuba*, and Darryl Wright
Mentors: Keir Fogarty and Pamela Lundin, Chemistry
Rhodamine B is a commonly used dye with fluorescent properties. In prior research, our lab has explored the optical behaviors of rhodamine B amide derivatives. Our current experiments explore the impact of solvents and functional groups on the ultraviolet-induced ring opening reaction of rhodamine B and fluorescein amide derivatives.

(36) Reimagining Recycling: PETase's Potential to Change the World
Jack Schoultz*, Gigi Orecchio*, and Noah Thompson*
Mentor: Kelsey Keen, Chemistry
PETase is an enzyme used to break down PET plastics. PET plastics make up much of the world's plastics products. By learning how to use PETase to break PET down we can gain better control of the excess plastic that is in landfills.

(37) Probing Redox Behavior: A Study of Rhodamine B and Fluorescein via Cyclic Voltammetry
Darryl Wright* and Lexi Topping*
Mentor: Keir Fogarty, Chemistry
Cyclic Voltammetry (CV) investigates the redox chemistry of rhodamine B amide derivatives and fluorescein examining the charge-dependent open (orange) and closed (blue) forms of rhodamine B and fluorescein's structural framework. By analyzing dimer controllability, we aim to comprehend fluorescent color selection and energetics, with implications for optoelectronic devices.

(38) Development and Analysis for Utilization of ChemDraw/Chem3D Software to Teach Lewis Structures and VSEPR Theory in General Chemistry Laboratories
Ryland Brady, Callie Freeman*, Westyn Woodard*, Maggie Junkin, Sydney Wargo, Jared Toney, Owen Mader, and Sarmad Hindo
Mentor: Sarmad Hindo, Chemistry
This study describes the development of a novel undergraduate laboratory experiment utilizing molecular modeling software ChemDraw/Chem3D to teach Lewis structures and VSEPR theory. The study assesses the efficacy of integrating this software into the general chemistry curriculum. Current analysis indicates improvements comparable to pre-established laboratory procedures.

Computer Science

(39) Protecting Creative Content from Unauthorized AI Usage
Ashlinn Corcoran*
Mentor: Luis Cueva Parra, Computer Science
This project explores techniques to protect creative content from unauthorized machine learning usage. It develops a reinforcement algorithm that modifies images to decrease AI classification accuracy while maintaining visual integrity, helping artists and media owners safeguard their intellectual property from misuse.

(40) Measuring the Quality of Code Generated by AI Platforms
Alexa Dandrea*
Mentor: Roger Shore, Computer Science
This research evaluates the quality of code generated by AI platforms across four tasks: algorithm writing, code translation, bug identification, and bug fixing. By analyzing correctness, runtime efficiency, and memory usage across multiple languages, the findings aim to establish a benchmark for AI-generated code quality and performance.

(41) Translating Computer Data to DNA
Owen Kelley*
Mentor: Roger Shore, Computer Science
The synthesis of computer data into a DNA strand could dramatically reduce the physical size, energy requirements, and longevity of storing data compared to our current methods. I have developed a method of finding hairpins in DNA, reduced using a base-3 Huffman code, along with avoiding homopolymers (repeating nucleotides).

Education

(42) The Impact of Cellphones on Learning in the Classroom
Elizabeth Ritter*
Mentor: Hilary Tanck, Education
This research aims to explore how the growing prevalence of cellphones among middle school students impacts learning in the classroom. By assessing the educational costs and benefits of cellphone use, we can develop effective media use plans for the classroom to harness the benefits of technology while mitigating the costs.

Electrical Engineering

(43) Evaluating Triboelectric Nanogenerators for Sustainable Power Generation on the Lunar Surface
Emma Higgins*, Dalia Widmer*, and Eve Klopf
Mentor: Eve Klopf, Electrical Engineering
This research investigates the feasibility of Triboelectric Nanogenerators (TENGs) for lunar energy generation. Key focuses include material selection, mechanical constraints, energy conversion efficiency, and the impact of lunar regolith. The goal is to optimize TENG designs for effective power generation in harsh lunar conditions, supporting future lunar exploration and habitation.

(44) Etching Patterns On Buried Graphene for Nanowire (NW) Fabrication
Tyler Rogers*
Mentor: Sean Johnson, Electrical Engineering
Graphene is a two-dimensional carbon allotrope with high thermal and electrical conductivity. A process consisting of physical vapor deposition, photolithography, and a hydrofluoric acid etch proposes to expose graphene under a patterned SiO_2 layer. The patterned substrate serves as a base for controlled NW growth for photodetector and optoelectronic applications.

Exercise Science

(45) Walking Gait, Swing Mechanics, and Knee Health in Golfers With and Without Surgical History
Riley Freed*, Garrett Hess, Stephen Payne, Darren James*, Caroline Langone*, Lance Mabry, Dave Sinacore, Jeff Taylor, Don Goss, and Kevin Ford
Mentor: Don Goss, Physical Therapy
Physical activity is encouraged in older adults to improve physical health. Knee joint pathologies such as osteoarthritis make it difficult for individuals to be physically active. The goal was to compare gait mechanics, golf mechanics, and knee joint osteoarthritis between golfers with and without a history of knee surgery.

(46) Vascular Calcifications In Diabetic Neuropathic Feet With Chronic Kidney Disease-Mineral Bone Disorder (CKD-MBD) Syndrome.

David Sinacore, Michael Jones, Gracie Ritchey*, Olivia Powers, Paul Commean, Yan Yan, Victor Cheuy, and Mary Hastings

Mentor: Dave Sinacore, Physical Therapy

The chronic kidney disease-mineral bone disorder (CKD-MBD) syndrome connecting cardiovascular morbidity and arterial calcifications, impairing minerals and bones due to chronic kidney disease. This study explores the prevalence and patterns of pedal vessel calcifications (PVC) in feet of individuals with diabetic neuropathy in stages of CKD-MBD and Charcot neuroarthropathy (CN).

(47) Dietary Berberine Supplementation Reduces Heart Rate Response During Exertional Heat Stress

Jacob C. Saunders*, Dante Van Arman, and Yaw Korankyi

Mentor: Matthew Kuennen, Health and Human Performance

This study examined the effect of Berberine supplementation on thermoregulation during exercise in hot conditions. Seven participants took 1.5g berberine or placebo for 7 days before running in 35°C & 35% relative humidity. Berberine supplementation lowered heart rate ($p<0.01$) and trended toward improved ventilatory efficiency, suggesting potential performance benefits.

Health and Human Performance

(48) Dietary Berberine Supplementation Improves Mean Skin Temperature During Exertional Heat Stress

Yaw Korankyi*, Jacob Saunders, and Dante Van Arman

Mentor: Matthew Kuennen, Health and Human Performance

This study examined the impact of berberine supplementation on core, skin, and mean body temperature during 60-minutes of treadmill exercise in hot conditions. Core temperature response was not improved but mean skin temperature was reduced (Berberine: 34.81±1.22; Placebo: 35.12±0.71) and mean body temperature trended toward significance (Berberine: 37.60±0.50; Placebo: 37.74±0.27).

(49) Dexamethasone-mediated atrophy on reduces mitochondrial function during insulin resistance in C2C12 myotubes

Kayla Ragland*, Kipton Travis*, Emmalie Spry*, Toheed Zaman, Pamela Lundin, and Roger Vaughan

Mentor: Roger Vaughan, Health and Human Performance

Pathological muscle loss (such as that seen in atrophy and/or sarcopenia) are often associated with insulin resistance. This study investigated the effect of dexamethasone-mediated myotube atrophy with and without insulin resistance on myotube metabolism. Dexamethasone and insulin resistance both independently impaired mitochondrial function and reduced mitochondrial content.

(50) Dietary Berberine Supplementation Improves Thermal Comfort and Perceived Exertion During Exertional Heat Stress

Dante Van Arman*, Yaw Korankyi , and Jacob Saunders

Mentor: Matthew Kuennen, Exercise Science

Investigate berberine's effect on human perceptions during exercise-heat stress. Methods: 7 subjects ingested 1.5g Berberine or placebo for 7 days before a 1-hour run in heat. Results: Berberine lowered thermal sensation ($p=0.027$), perceived exertion ($p=0.002$), and discomfort ($p=0.074$). Conclusion: Berberine improves these perceptions during heat stress.

History

(51) Echoes of Empire: Houthi Attacks in Historical Perspective
Mack Oakley*
Mentor: Andrew Tzavaras, History
The Houthis, with a history dating back to the 7th century, are gaining attention due to their attacks on Red Sea shipping lanes. They arguably contribute towards an ongoing proxy war between Iran and the West; in the latest iteration of a historic struggle for states to gain geostrategic, political, and economic control over the Middle East.

(52) In Defense of the Papacy: Rethinking the Catholic Response to the Protestant Reformation
Kayla Wylie*
Mentor: Andrew Tzavaras, History
Sixteenth-century Protestant satire denounced the Catholic Church as corrupt and immoral. However, while the Church certainly experienced internal problems, this terrible reputation was not entirely accurate. By reexamining the Protestant Reformation from the Catholic perspective, this research will explain the reasons why the Papacy reacted harshly to prospective reformers.

Honors

(53) Mental Health Effects of Dark Tourism
Cameron Cieslica*, Ava Collins*, Jaden Harnar*, and Sarah Petersen*
Mentor: Jay Putnam, Theater and Dance
This research attempts to explore the connections between Dark Tourism destinations and Mental Health effects on individuals before and after their visit. Destinations such as Concentration camps and Hiroshima. We conduct data collection through in-person interviews and online surveys. Quantifications of data include a Likert scale and thematic analysis.

(54) Music Preferences and Memory Recall
Norah Cook*, Gavin Klueg*, Jardel Javier*, and Christian Quaye*
Mentor: Silvana Rosenfeld, Sociology and Anthropology
Undergraduate students often play background music while studying and doing other tasks. To investigate the relationship between preference for genre and memory performance, researchers designed an experiment where randomly assigned participants completed memory tasks while a genre of music they preferred or didn't prefer was played in the background.

(55) Film, Memory, and Product Placements
Madison Corbett*, Cameron Hodges*, Patrick Hynds*, and Lillian Singer*
Mentor: Timothy O'Keefe, English
Our research examines the impact of emotions on the memory recall of product placements within film scenes. By surveying participants on five film scenes of varying emotion, we aim to identify which emotional responses lead to stronger memory associations with featured product placements.

Hospitality Management

(56) Brand Loyalty in Cruise Lines: An AI Approach
Meigs Roberts*, Marisa Ritter, Jessica Wiitala, and Brianna Clark
Mentor: Marisa Ritter, Hospitality Management
Cruise lines are increasingly using AI to enhance guest experiences, potentially impacting brand loyalty, awareness, and engagement. This experiment examines consumer responses to AI itinerary planning for cruises, also incorporating the technology acceptance model. Findings will help cruise brands balance AI adoption with customer engagement, shaping future AI integration strategies.

Interior Design

(57) Cascade Cancer Center: Healthcare Design
Mary Kate Hewitt*
Mentor: Jane Nichols, Interior Design
Healthcare interior design supports patient well-being, staff efficiency, and healing. Through functional layouts, aesthetics, and evidence-based principles, it improves medical outcomes and reduces stress. Key components in cancer care facilities include reception areas, cafeterias, chemo infusion bays, and nursing stations, all designed to foster a supportive and healing environment.

Mathematical Sciences

(58) Predicting Hitter Success Using Bat Tracking Metrics in the MLB
Nicholas Sheridan* and Braedyn Jacobson*
Mentor: Jakub Michel, Statistics and Data Analytics
This study examines Major League Baseball hitter data to determine the predictive power of bat tracking metrics in estimating xwOBA, a key measure of hitter success. Using regression and decision tree models, we identify the most influential variables and evaluate model performance via RMSE to provide insights for player evaluation and development.

Neuroscience

(59) Examining Perceived and Physiological Stress Among Multi-Event Athletes in Practice and During Meets
Faith Bradley*
Mentor: William Kochen, Neuroscience
This study examined how stress is perceived and physiologically measured in collegiate multi-event athletes (pentathletes and heptathletes). The data collected through heart rate monitors and stress questionnaires revealed significant correlations between perceived and physiological stress during practices and competitions, highlighting the need for future research into stress reduction strategies.

(60) Evaluating the Immune-Modulatory Effects of Curcumin on B-Lymphocyte Activity in Rat Spleens
Carlee Logan*, Nina Ritter*, and William Kochen
Mentor: William Kochen, Neuroscience
The active chemical compound in turmeric is curcumin, which has multiple proclaimed benefits, including immune-modulatory properties, among others. This study examines the proposed immune-modulatory properties by assessing B-lymphocytes in rat spleens using an ELISA test for the antigen CD19. The results will determine if curcumin influences B-lymphocyte production and presence.

(61) Autism Spectrum Disorder in Cerebral Organoids
Allyssa Winegar*, Chloe Buffalino*, and Michael Grider
Mentor: Michael Grider, Neuroscience
Autism spectrum disorder (ASD) is rapidly growing, yet its neurological causes remain unclear. This study aims to examine ASD using 3D cerebral organoids from induced pluripotent stem cells. By comparing wild-type and KCNMA1 knockout organoids, it is possible to identify functional deviations and offer insight into ASD's potential genetic causes.

Nursing

(62) Developmental Outcomes in Preterm vs. Full-term: A Comparison from 1 To 3 Years of Age
Kelsey Jordan Sharp* and Abbie Grace McNeill*
Mentor: Alexis Best-Rhodes, Nursing
The developmental impact of preterm births remains unclear. This presentation will explore current literature to compare developmental outcomes in children born preterm to children born full term when they are between the ages of 1-3 years old. Findings will enhance the understanding of early childhood development in preterm infants.

Pharmacy

(63) Neuropharmacology of the Dopamine D_4 Receptor Ligand In Neuropsychiatric Treatment
Jane Rainwater*, Caitlin Farrington*, Tian Li, and Comfort Boateng
Mentor: Comfort Boateng, Basic Pharmaceutical Sciences
The Dopamine D4 receptor (D4R) plays a crucial role in cognition, attention, and decision-making and is associated with various neuropsychiatric disorders. Currently, there are no FDA-approved selective D4R drugs. This study investigates a new partial agonist targeting D4R in the prefrontal cortex and hippocampus for potential therapeutic use as a D4R agonist.

Philosophy

(64) Contemporary Applications of the Belmont Report in Healthcare Ethics
William Tepper*, Autumn Bryan*, Liam Cavicchia*, Ben Mathews*, Ashley Rodriguez*, and Sofie Smith*
Mentors: Amy MacArthur and Thaddeus Ostrowski, Religion and Philosophy
This poster presents the application of the Belmont Report to ten cases in healthcare ethics, which were prepared for the 2025 NCICU Ethics Bowl competition. The work is the product of six months of weekly collaborative meetings among a team of six students and two faculty.

Physical Therapy

(65) Exploring Polypharmacy and Fall Risk in Community-Dwelling Adults with Chronic Pain and Limited Healthcare Access
Josh Honaker*, Garrett Naze, and Alicia Emerson
Mentor: Alicia Emerson, Physical Therapy
Slower gait speed is demonstrated in adults with chronic pain, hypertension (HTN), or polypharmacy. This retrospective study explored the relationships between these factors in community-dwelling adults with limited healthcare access. Polypharmacy was significantly associated with age, higher pain severity, and obesity, but not with chronic pain, HTN, and fall risk.

(66) Relationship Between Pain Catastrophizing, Kinesiophobia, Central Sensitization and Cognitive Function in Patients with Chronic Low Back Pain
Cassidy Krieger* and Kaley Neal
Mentor: Cory Alcon, Physical Therapy
The relationship between pain behaviors and cognitive performance in patients with chronic low back pain (CLBP) was investigated. Participants completed the Pain Catastrophizing Scale, Tampa Scale of Kinesiophobia, Stroop Color Word, Comprehensive Trail Making, and Coding tests. PC and Kinesiophobia negatively influenced attentional interference, inhibitory control, set-shifting, and sustained memory.

(67) The Impact of Fear of Falling on Brain Activity and Cognitive Performance in Older Adults
Rachel Smith*, Brad Manor, and Melike Kahya
Mentor: Melike Kahya, Physical Therapy
Abstract: Elevated fear of falling (FoF) among older adults is associated with an increased risk of cognitive decline. This cross-sectional research aimed to understand the effect of FoF on resting-state EEG alpha power and cognitive performance in older adults. High FoF may be associated with reduced alpha power and potentially impaired executive function and attention.

Physics

(68) Exploring Rheological Properties of PDMS Blends to Obtain Insight on Biofilm Adhesion
Aubrey Fessler*, Ryland Brady, Caitlyn Wingeart, Jacob Brooks, and Briana Fiser
Mentor: Jacob Brooks, Physics and Astronomy
Rheometry, a method to analyze behavior of materials under stress is being utilized to study the viscosity and viscoelastic properties of various polydimethylsiloxane (PDMS) blends and biofilms. This semester focused on rheometer training and PDMS testing, with future research involving biofilm samples to investigate its adhesion surfaces of different stiffnesses.

Psychology

(69) Exploring the Benefits of Verbal and Written Production in Older Adults
Gracie Lefever*, Riley McGee*, Gia Cicero*, Madeline Erwin*, and Gena Ghandour*
Mentor: Kimberly Wear Jones, Psychology
Wear Jones et al. (2022) observed a production effect for written and spoken words but no age-related differences, contrary to theoretical predictions and Lin and MacLeod (2012). This study modified the design to minimize cognitive load during encoding, aiming to investigate the production effect in both recall and recognition memory.

(70) The Role of Biases in Criminal Profiling: An Analysis of Expertise, Depth, and Similarity
Abby Fort*
Mentor: Deborah Danzis, Psychology
The highly controversial tactic of criminal profiling has been subject to much debate and research. However, a significant gap has been the effects that professional type, depth, and similarity to profile has on the evaluation of validity. A quasi-experimental method was developed to test these variables' influence on profiling.

(71) Understanding the Relationship Between Self-Injury and Pain Tolerance: The Role of Body Investment
Catherine Gallagher*
Mentor: Laura Nagy, Psychology
The goal of the present study was to test whether the reason NSSI and pain tolerance are associated is due to low body investment. We hypothesized that low levels of body investment would mediate the relationship between NSSI and pain tolerance.

(72) Investigating Rejection Sensitivity Dysphoria in Undergraduates: A Study of Emotional Responses and Personality Factors
Sara Jameson*
Mentor: Kelly Curtis, Psychology
Rejection sensitivity dysphoria (RSD) involves intense emotional reactions to perceived rejection. This study examines whether RSD is distinct from general rejection sensitivity by analyzing psychological and personality factors in an undergraduate sample, focusing on its relationship with ADHD.

(73) An Examination of the Benefits of Production Following a Delay in Undergraduates and Elementary School Children
Catherine Gallagher, Amanda Klein*, and Genevieve Manger*
Mentor: Stacy Lipowski, Psychology
The production effect is enhanced memory for actively produced items over passively studied items. The goal was to investigate the effect of a delay on production effects. Children and undergraduates studied 15 items silently, aloud, or in writing, and completed a memory test after 3 minutes or 1 week.

(74) The Dark Side of the Screen: Personality Traits and Media Tastes
Lauren Reyna* and Brooke Rezendes*
Mentor: Laura Nagy, Psychology
This study examined the relationship between Dark Triad traits (Machiavellianism, narcissism, and psychopathy) and media preferences in 123 participants. Machiavellianism and psychopathy were linked to lower enjoyment of emotional content, while narcissism showed no strong correlations. Findings suggest personality may shape media choices, highlighting the need for further research.

(75) Exercise and Self Care Perceptions
Lauren Yaroma*
Mentor: Daniel Krenzer, Psychology
Research shows that exercise is perceived as a self-care and stress relief method. This study explores how exercise preferences—type, location, and group or solo activities—affect mental well-being. Results will highlight whether individuals prefer solo workouts or instructor-led classes for reducing stress and supporting mental wellness.

Hospitality Management II– Moved from Session II

(76) Cultural Competency in Hospitality
Paris Glover*
Mentor: Marisa Ritter, Hospitality Management
(see page 55 for abstract)

Technical Exhibits I

2nd floor Concourse (hallway)
1:00 pm – 2:00 pm

Game Design

(77) Speed Door
Nathan Harvey*, Nyar Freeman*, Kennedy Greene *, Kenny Pridgen *, and Cole Moore*
Mentor: Brian Heagney, Game Design
Speed Door is a fast-paced obstacle course where players race to reach a final door in the shortest time possible. Precision, timing, and quick reflexes are key as you navigate challenging levels designed to test your skill and speed.

Performances I

Premier Ballroom – 2202 G
1:00 pm – 2:00 pm

Dance

Timelapse
Monica Kepins*
Mentor: Lindsey Howie, Theatre and Dance
Performers: Nicole Amorocho, Natalee Balestra, Maryna Crawford, Caroline Cubas, Elizabeth Devine, Mary Gomez, Jessica Hagenbuch, Annabella Laden, Sophie LeBron, Kendall McDowell, Jordyn Perez, Jessamina Piazza, Devlin Turner
Timelapse explores the concept of time in our daily lives and how even though time never speeds up or slows down, how we perceive time passing can change over the course of a lifetime. Throughout the piece, the dancers' movements work together to mimic the interconnected components of clockwork.

What's Left of Us
Jessamina Piazza*
Mentor: Lindsey Howie, Theatre and Dance
This film is an exploration of movement and nature. It attempts to showcase the movement of the human body and how it reflects the pattern of nature around it. The two dancers demonstrate our relationship with the people around us and how we change as those relationships end.

the struggle for ebullience
Kendall McDowell* and Caroline Cubas*
Mentor: Christine Stevens (choreographer), Theatre and Dance
This work explores the nature of addiction through movements that embody the patterns of craving, release, and relapse. Dancers physically manifest the internal struggle, portraying the push and pull between desire and destruction. Ultimately, this works seeks to illuminate the vulnerability of the human condition in the face of overwhelming compulsion.

Everlasting
Jessamina Piazza
Mentor: Lindsey Howie, Theatre and Dance
Performers: Nicole Amorocho, Caroline Cubas, Sophie LeBron, Emily Precopio, Jordyn Perez
In "Everlasting," nature serves as a guardian, far beyond its typical representation. The film explores the contrast between humanity's fleeting existence and nature's timeless endurance. Dancers, influenced by their surroundings, embody nature's movements, reflecting its protective, cyclical presence. Life is transient, but nature persists, guiding and inspiring us eternally.

True North
Caroline Cubas*
Mentor: Lindsey Howie, Theatre and Dance
Performers: Kendall McDowell, Jessamina Piazza, Jessica Hagenbuch
True North, inspired by artist Cameron Cubas, explores life's journey and the interconnected paths of individuals. The artwork, depicting the Northern Lights, symbolizes the idea that there's always a way forward, with dancers using the path to find and connect with each other.

Metamorphosis
Mary Gomez*
Mentor: Lindsey Howie, Theatre and Dance
Performers: Ja'Niyah Williams, Cierra Mahoney, Natalee Balestra
Inspired by the sculpture by Kinsey Gebhart. The dance investigates the dynamic of the 'cage' and the 'bird'. Two dancers have an instinctual need to capture the other, it's their purpose in life. The third dancer wants to be free, paying them no mind, finally getting trapped in the end.

Loud Blue Resonance
Nicole Amorocho*
Mentor: Michele Trumble (choreographer), Theatre and Dance
Performers: Nicole Amorocho, Caroline Cubas, Mary Gomez, Sophie Hanks, Annabella
Laden, Sophie Lebron, Kendall McDowell, Jordyn Perez, Jessamina Piazza, Emerson Schmidt, Cassidy Spencer
Loud Blue Resonance developed out of research on the Blue Stocking Society, a group of women in pursuit of intellectual topics as opposed to the socially acceptable feminine chatter in England during the second half of the 18th century. It is an ode to reclaiming agency in a subtle, but steadfast manner.

Oral Presentations

Oral Session I • 2:00 pm – 3:00 pm

Computer Science **Room A**

2:00-2:15

Optimized Three-Layer Hyperspectral Image Classification Model

Ky Nguyen*

Mentor: Luis Cueva Parra, Computer Science

This paper presents an optimized three-layer hyperspectral image classification model using Nvidia RAPIDS for enhanced performance. The model integrates ensemble learning and a Guided Median Filter for accuracy improvement. Experiments on HPC systems show superior performance over neural networks. This presentation details the model and performance results.

2:15-2:30

Correlative Factor Identification and Pattern Recognition for Early Diagnostics of Alzheimer's Using Demographic, Clinical, Symptomatic, and Historical Data

Madison Baly Smith*

Mentor: Luis Cueva Parra, Computer Science

Alzheimer's is a leading cause of death, with cases expected to double in the next 25 years. Early detection improves quality of life but remains costly and invasive. This research analyzes medical, demographic, and lifestyle data to identify patterns to support non-invasive, affordable, and accessible diagnostic advancements for healthcare professionals.

2:30-2:45

Rowing Technique Analysis Using AI Feedback for Performance Enhancement

Samuel Zito*

Mentor: Luis Cueva Parra, Computer Science

Rowing technique is crucial for performance and injury prevention. This research analyzes rowing technique using an AI system that provides feedback to refine technique. This system has the capability to reduce injury and improve performance by tracking key angles in real-time. This research suggests that there is potential in integrating AI with traditional coaching methods.

Natural Sciences: Biology & Physics **Room B**

2:00 – 2:15

Mechanistic Insights into Melittin-Induced Cell Death in Cervical Cancer Cells

Helia Osareh* and Kevin Suh

Mentor: Kevin Suh, Biology

This study examines melittin, a key component of honeybee venom, and its effects on HeLa cervical cancer cells. Melittin reduced cell viability, inhibited migration, and altered Erk, Akt, and mTOR signaling pathways. Findings suggest melittin may induce ferroptosis, highlighting its potential as a therapeutic agent in cancer treatment.

2:15-2:30

Epigeal arthropod community dynamics as a function of urbanization in Guilford County, NC

Tyler Wright*, Maggie Garr, Bella Perez, and Daniel Greene

Mentor: Daniel Greene, Biology

Urbanization drives species extinctions and habitat loss. We assessed the effects of urbanization on arthropods in Guilford County, NC, by analyzing their abundance across 20 sites over 4 weeks in summer 2024 using pitfall traps. The identification of drivers of abundance is vital to increasing arthropod biodiversity in urban habitats.

2:30-2:45

Feasibility of a Gas Degrader at FRIB for Fission Studies

Thomas Owens* and Adam Anthony

Mentor: Adam Anthony, Physics and Astronomy

Controlling heavy nuclei's kinetic energy is crucial for studies of nuclear reactions. We explored a gas-based degrader to provide more precise energy control compared to an iron degrader. Simulations guided gas selection, and a test chamber assessed film strength, confirming the degrader's feasibility.

2:45-3:00

Textured PDMS Surfaces: A Promising Approach to Biofilm Prevention

Caitlyn Wingeart*, Ryland Brady, Jack Moreland, Brian Augustine, Briana Fiser, Meghan Blackledge, and Jacob Brooks

Mentor: Jacob Brooks, Physics and Astronomy

Bacterial and fungal biofilms increase patient morbidity and costs. Textured surfaces, including laser-textured and PDMS designs, help control biofilm formation. This project focused on creating new designs using KLayout, printing with μMLA Heidelberg, and improving manufacturing via PDMS-on-PDMS molding. Future work explores liquid flow's effect on biofilms in bioreactors.

Spanish (12 minutes each) Room C

2:00-2:12

"Codificación Cultural e Identidad Grupal: La Evolución y el Significado de las Prácticas del Tatuaje en las Organizaciones Callejeras Hispanos"

Alexander Joseph*

Mentor: Hayden Carrón, World Languages, Literatures, and Cultures

Este estudio explora cómo los tatuajes de pandillas hispanos incorporan simbolismo indígena que refleja la identidad cultural de los miembros. Los tatuajes usan imágenes como figuras de dioses aztecas, y la naturaleza. Representan una estrategia para que los miembros identifiquen como una comunidad que representa la cultura e identidad indígena. (This talk is in Spanish)

2:12-2:24

Ritmos De Resistencia: Identidad Afrocubana Y Desafío Al Estilo Europeo En La "Elegía A Jesús Menéndez" De Nicolás Guillén

Jack Fobert*

Mentor: Hayden Carrón, World Languages, Literatures, and Cultures

A principios del siglo XX, la literatura cubana negociaba entre tradición y nuevas técnicas. Nicolás Guillén incorporó patrones afrocubanos en "Elegía a Jesús Menéndez", rompiendo con las formas tradicionales. Este estudio examina los elementos formales del poema, que afirman la legitimidad cultural afrocubana, desafiando las suposiciones europeas de la época. (This talk is in Spanish)

2:24-2:36

De La Resistencia A La Síntesis: Las Identidades Maya K'iche', Española Y Guatemalteca En El "Baile De La Conquista"

Katherine Munro*

Mentor: Hayden Carrón, World Languages, Literatures, and Cultures

El Baile de la Conquista es el baile nacional guatemalteco que se realiza varias veces al año durante los festivales religiosos para retratar la convergencia de las identidades maya k'iche' y española. Este artículo explora cómo este baile representa la creación de la identidad guatemalteca y cómo ha evolucionado. (This talk is in Spanish)

2:36-2:48

Melodías de Género: Estereotipas Y Percepciones De las Mujeres En la Música Urbana

Angelina H. Lappin*

Abstract: Hayden Carrón, World Languages, Literatures, Cultures

La estudia examina la dinámica de la representación de género en la música urbana hispanoamericana donde el análisis de los marcos sociológicos y perspectivas etnomusicológicas revelan un panorama donde los estereotipos masculinos tradicionales persisten mientras que las artistas femeninas lo utilizan una plataforma para desafiar las estructuras patriarcales. (This talk is in Spanish)

2:48-3:00

Mezclando Legados: Influencias Africanos, Caribeñas E Hispanas En La Cultura Garífuna De Centroamérica

Bailey Taylor*

Mentor: Hayden Carrón, World Languages, Literatures and Cultures

La comunidad garífuna, descendiente de esclavos africanas e indígenas arawak, vive en las costas de Centroamérica después de una historia de migración forzada y resistencia. A pesar de la presión para asimilarse a regiones hispanas, los garífunas han mantenido una identidad cultural única que mezcla influencias africanas, caribeñas e hispánicas. (This talk is in Spanish)

French I **Room D**

2:00-2:15

L'autonomisation et la perspective féministe

Paige Osché*

Mentor: Denis Dépinoy, French and Francophone Studies

Within the scope of the novel *Texaco*, by Patrick Chamoiseau, this presentation will highlight the role of the female narrator and exhibit how her story evades gender stereotypes and exudes a theme of empowerment amongst women and their struggles in a post-colonial society. (This talk is in French.)

2:15-2:30

Symbolisme biblique et résistance à Texaco: reconquérir l'histoire afro-martiniquaise

Lilianna R. Allen*

Mentor: Denis Dépinoy, French and Francophone Studies

The religious and historical landscape of Martinique was shaped by colonial rule, slavery, and social hierarchies. In Texaco, Patrick Chamoiseau uses biblical themes to depict Afro-Martiniquans' resistance against oppression. This essay explores how biblical symbolism legitimizes their struggle, linking it to sacred narratives of deliverance, resilience, and historical reclamation. (This talk is in French.)

2:30-2:45

Une analyse du lien entre la langue, la culture, et le symbolisme dans le roman Texaco de Patrick Chamoiseau

Autumn Bryan*

Mentor: Denis Dépinoy, French and Francophone Studies

This paper examines the symbolic importance of certain characters in *Texaco*, relating their role in the text to characteristics of the créolité movement. Further, it identifies connections that can be found between the thematic motivations of the novel's author and their representations in the context of the story. (This talk is in French.)

2:45-3:00

Paysages de résistance: spiritualité, nature, et narration décoloniale dans Texaco de Patrick Chamoiseau

Lila Davis*

Mentor: Denis Dépinoy, French and Francophone Studies

This project examines the relationship between Creole spirituality, nature, and decolonial narratives primarily through examples from *Texaco* by Patrick Chamoiseau. It explores how the natural landscape functions as a spiritual force, preserver of memory, and site of resistance, blending ecological and spiritual dimensions to challenge colonialism and assert Creole identity. (This talk is in French.)

English I — Room E

2:00-2:15

Peace and Quiet: Chapter 4

McKenna Holz*

Mentor: Autumn Grosser, English

Peace and Quiet is a multiple point-of-view, fictional narrative that centers around a capstone class massacre at a small university in the 1980s. In this chapter, the student killer with heavy sensory issues attacks his classmate after an unexpected discovery. Bart's internal monologue tells readers he believes he's a robot.

2:15-2:30

Idealized Women in Rossetti's "In an Artist's Studio"

Madison Molis*

Mentor: Matthew Carlson, English

This essay examines Christina Rossetti's sonnet "In an Artist's Studio" as a critique of 19th-century gender dynamics and the idealization of women. Through rhetorical analysis and historical context, it explores how the male gaze reduces women to objects of beauty, stripping them of individuality, agency, and emotional depth.

2:30-2:45

The History of the Nun: Ties Between Murder and the Constriction of the Catholic Church

Hannah Hulseman*

Mentor: Laura Alexander, English

The History of the Nun, written by Aphra Behn shortly after the Glorious Revolution, introduces the heroine, Isabella, who begins her life as a devoted nun. She leaves the convent, marries twice, and murders both husbands. This presentation considers the manner of both murders, suffocation and drowning, as a reflection of Behn's view of the Catholic Church in the late 1600's.

2:45-3:00
Uncovering the Psyche: A Psychoanalytical Exploration of Desire in The Awakening
Malia Agostinelli*
Mentor: Matthew Carlson, English
Exploring the desires, repressed sexuality, and unmet needs of Edna Pontellier—the protagonist of Kate Chopin's 1899 novel, The Awakening—this essay uses psychoanalytic theory to explain how Edna's strained childhood connection to her father motivates her subsequent relationships

Honors I (20 minutes each)	**Room F**

2:00-2:20
Historical Misrepresentation and Collective Memory
Kendall Kobbe*, Kylin Starr*, Payton Kiasevicz*, and Nathan Lattimore*
Mentor: Jay Putnam, Theatre and Dance
We investigated how media impacts collective memory. Through surveys and interviews, we examined how the Disney film Pocahontas impacted individuals' recollections of the historical figure. We looked at the impact of media on a wider scale alongside testing how aware individuals are of the different biases in film.

2:20-2:40
Memory & Recall
Dylan Diguette*, Tessa Lamb*, Madison Lehmann*, and Emily Winkler*
Mentor: Jay Putnam, Theater and Dance
This research was conducted to determine which writing methods are most effective for memory retention and to identify the best way to take notes and study. We tested different writing utensils and worked with paper and tablets to obtain our results.

2:40-3:00
Memory and Identity Through Object Attachment and Sensory Experiences
Cailee Calabrese*, Carys Cox*, Marc Delgallo*, and Rebecca Petersen*
Mentor: Jay Putnam, Theater and Dance
This presentation explores memory and object attachment through the senses. Through interviews we examined how individuals across different age groups associate objects with memories and what senses are most important. By integrating memory, the senses, and object attachment, this presentation offers insight into how our material possessions influence our identity.

Oral Presentations

Oral Session II • 3:00 pm – 4:00 pm

Psychology I **Room A**

3:00-3:15

Entitled to an easy A?: Dark Triad Traits, Academic Entitlement, and Cheating Attitudes

Catherine Gallagher* and Sawyer Harrold*

Mentor: Laura Nagy, Psychology

It is possible that attitudes towards cheating may explain how individuals high in certain dark triad traits are more academically entitled. The goal of the present study was to examine whether positive attitudes towards cheating moderates the relationship between dark triad traits and academic entitlement.

3:15-3:30

Contact and Non-Contact Sports; Effects on Cognition and Academic Performance

Hailee M. Gosart* and Muriel A. Gibson*

Mentor: Daniel Krenzer, Psychology

This study examines the impact of concussions on academic performance in high school and college students. Analyzing cognitive differences, academic outcomes, and recovery factors, it highlights declines in grades and attendance. Findings aim to inform "return-to-learn" protocols, ensuring effective academic reintegration and support for concussed students.

3:30-3:45

Unraveling The Pain Puzzle: How Type D Personality, Catastrophizing, and Metacognitions Shape Pain Behavior

Regan Jordan* and Stella Smith*

Mentor: Kelly Curtis, Psychology

A mediation model examined the impact of Type D personality, pain catastrophizing, and metacognitions on pain behavior. Participants with chronic pain completed online questionnaires, including the Pain Catastrophizing Scale, Type D Scale, Pain Metacognition Questionnaire, and Pain Disability Index. Statistical analyses examining the relationships amongst these variables will be reported.

3:45-4:00

Mind Over Matter? How Pain Catastrophizing Shapes Body Awareness and Disability.

Ashley Tarjick*

Mentor: Kelly Curtis, Psychology

This study examines the relationship between interoceptive awareness (IA), pain catastrophizing (PCS), and disability outcomes. Participants with chronic pain completed online questionnaires measuring these variables. Using Hayes' PROCESS model for mediation, the mediating impact of pain catastrophizing on interoceptive awareness and disability will be reported.

Natural Sciences: Biology — Room B

3:00-3:15

Regurgitation Unraveled: Plant Microstructures and Hairball Formation in Cats

Kara Bensel*

Mentors: Nicole Hughes and Megan Rudock Bowman, Biology

Cats have been observed eating grasses before expelling hairballs. We hypothesized grasses and other plant materials play a role in the gathering of hairs ingested by diet or grooming to help facilitate their expulsion. Hairballs were analyzed under SEM and genetically tested using DNA barcoding to identify the plant species.

3:15-3:30

Exploring the Potential of IP-BPZ as an Antiparasitic against Toxoplasma gondii

Miranda Gough*

Mentor: Robert Charvat, Biology

Toxoplasma gondii is a microscopic intracellular parasite that infects roughly one-third of the world's population. IP-BPZ is an anti-cancer compound that is effective at inhibiting the replication of *T. gondii*. This project aims to determine the transcriptional response of *T. gondii* to IP-BPZ to better understand the mechanism of action.

3:30-3:45

Searching For Novel Superhydrophobic Surface Structures In Tropical Plants Of The Caine Conservatory

Katie McDonald*

Mentor: Nicole Hughes, Biology

There is a growing interest in exploring physical, nano-scale mechanisms for water repellency. Such structures also prevent biofilm formation. For my research project I am examining the leaf surface structures of two new potentially superhydrophobic plants, specifically the *Musella*, *Amorphphophallus,* and the *Phaleanopsis* using drying techniques and SEM images.

3:45-4:00

Expansion of Surveying for the Eastern Hellbender Across Northwest North Carolina Using eDNA

Holley Lowe*, Gracie Vickery, Dominick Latta, Michael Wright, Christian Jones, and Megan Rudock Bowman

Mentor: Megan Rudock Bowman, Biology

Monitoring of the endangered Eastern Hellbender using aquatic eDNA has been successfully implemented across parts of Western NC by the Wildlife Resources Commission, reducing habitat disruption. Expanding the range of an existing study, we have collected 37 samples across 3 counties in NWNC for further population surveillance using qPCR analysis.

Social Sciences — Room C

3:00-3:15

Mental Health in North Carolina: Pre- and Post-COVID-19 Perspectives

Natalie Hinson*

Mentor: Martin Kifer, Political Science and Survey Research Center

The COVID-19 pandemic has had an impact on North Carolinians' mental health. In spring 2025, the Survey Research Center surveyed 1,000 NC residents on their experiences. Using this data, I compare NC residents' recollections of pre- and post-pandemic life across various topics.

3:15-3:30

Outcomes of Children with Incarcerated Parents

Caydan Brixius*, Kylee Runyan, Alec Szalewski, and Kirsten Piatak

Mentors: Alec Szalewski and Kylee Runyan, Criminal Justice

Research on children of incarcerated parents has found that parental incarceration is a risk factor for future negative outcomes for children. This research attempts to synthesize the existing data on children of incarcerated parents to identify common risk and mediating factors for these children's futures.

3:30-3:45

Just Dharma: Reincarnation as a Theory of Punishment in Sino-Tibetan Buddhism

Darius Cummings*

Mentor: Matthew Mitchell, Religion and Philosophy

Buddhist metaphysics of the self, reality, and *karma* portray reincarnation in ways similar to Western understandings of punishment. Using Indian, Chinese, and Tibetan philosophy and art, I argue that core tenets of Buddhism align with Western theories of punishment.

3:45-4:00

A Moral Conception of Retributive Justice

William Tepper*

Mentor: Amy MacArthur, Religion and Philosophy

In this project, I argue that retributive justice, where punishment is distributed based solely on what one deserves, requires a moral grounding to be justified. I examine the views of Kant and Hegel, respond to critiques of retributivism, and highlight the distinctions between retributivism and other forms of justice.

French II (10 minutes each) Room D

3:00-3:10

Le Prisonnier

Shelby Caruso*

Mentor: Benoît Leclercq, World Languages, Literatures, and Cultures

A fictional creative writing that focuses on the innermost thoughts of an amnesiac victim of a violent attack. He has no memory of himself before the attack nor the attack itself. The story develops the events as he considers his circumstances when he is obligated to remain in the hospital.

3:10-3:20

Savannah Cherry

No abstract provided.

3:20-3:30

Un Petit Secret

Elle Discont*

Mentor: Benoît Leclercq, World Languages, Literatures, and Cultures

This is a short story that is written in French for a High Point University French Creative Writing course. It is a fictional autobiography in the genre of modern fantasy. In this coming-of-age story, the main character ends up finding herself despite her attempts to hide her secrets.

3:30-3:40
Mon Histoire de L'ecriture Creative Francais
Isabella Gould*
Mentor: Benoît Leclercq, World Languages, Literatures, and Cultures
For HighPurcs, I will present my project for Creative Writing in French. I chose to write a fictional projection of myself in the future. Since this narrative is a projection of myself, I will adopt a first-person narrative to allow the main character's perspective rather than an omniscient one.

3:30-3:40
Une Histoire D'origine Sombre
Annika Melich*
Mentor: Benoît Leclercq, World Languages, Literatures, and Cultures
This story is a fictional autobiography written in French. The narrative delves into the mind of a serial killer, revealing the psychological and emotional turmoil that led to their transformation. Told in first person, it offers an intimate, unsettling exploration of trauma, morality, and the blurred line between fate and personal choice.

3:50-4:00
Smile, Be Happy, Learn Something: The Story of Will O'Brien
Will O'Brien*
Mentor: Benoît Leclercq, World Languages, Literatures, and Cultures
This presentation is a French feature of my autobiography. My project is written in a modern reflective style in the first-person. It's structured in chronological order starting with the prologue. Followed by my early life leading to the present day. With the intention to inspire others by sharing my story.

English II **Room E**

3:00-3:15
Zelda's The Great Gatsby
Sophia Csulak*
Mentor: Bryan Vescio, English
After compiling a list of works of Fitzgerald scholars, we utilized Mathew Bruccoli, Nancy Milford, and numerous other works of both Zelda and Scott. We formed a theory of how Scott broke Zelda into the three heroines of *The Great Gatsby* in descending order in society to reflect his preference of different aspects of her. There is further debate into the extent of artist and muse.

3:15-3:30
Multifaceted Monstrosity: Monsters, Multiplicity, and Epistolary Framing in 19th-Century Gothic Fiction
Quinn Fergusson*
Mentor: Virginia Leclercq, English
Multifaceted Monstrosity: Monsters, Multiplicity, and Epistolary Framing in 19th-Century Gothic Fiction" highlights the function of monsters in 19th-century gothic novels, specifically epistolary and frame narratives. The paper both explores gothic monstrous characteristics in relation to 19th-century social sciences and examines how each narrative's epistolary form mirrors the monsters they depict.

3:30-3:45

The Blend of Medieval Romance and Heroic Tragedy in Aphra Behn's Oroonoko

Caroline Marchis*

Mentor: Laura Alexander, English

Aphra Behn's *Oroonoko* merges medieval romance and heroic tragedy to depict the trials of a fallen prince, contrasting themes of slavery and royalty, as well as love and tragedy. Through its exploration of gender roles, love, and tragedy, *Oroonoko* presents relationships as passionate and destructive, questioning the nature of devotion.

3:45-4:00

Dialogism and the Servant Narrator in Victorian Sensation Fiction

Taylor Galavotti*

Mentor: Virginia Leclercq, English

At odds with historical class conventions, both *Wuthering Heights* and *The Moonstone* trust the majority of their narration to servants. The dialogic nature of Gabriel Betteredge and Nelly Dean - specifically their ability to engage with characters in different socioeconomic classes - shapes these characters into dominating narrative forces in both novels.

Honors II **Room F**

3:00-3:20

Disney Animation Changing Perceptions Among College Students

Claire Barnes*, Mathew Robson*, Shelby Rosenhahn*, and Sydney Smith*

Mentor: Stacy Lipowski, Psychology

Disney has been a prominent form of media for decades. This study examined how Disney's animated princess films shape expectations and perceptions of feminism, beauty ideals, romantic relationships, and gender stereotypes among students. Correlations between these variables will be discussed, along with qualitative analysis of more recent Disney films.

3:20-3:40

The Collective Memory of Witches

Abby Fort*, Lauren Esposito*, and Gianna Hassig*

Mentor: Silvana Rosenfeld, Sociology and Anthropology

We seek to answer the question: how have witches evolved from feared beings to cultural icons? Through a mixed method analysis of contemporary American witch media and a survey we explore the change in the collective memory of witches, as well as how they are viewed today.

3:40-4:00

North Carolina's Collective Memory of the Civil War: The Impact of Civil War Education Across Generations

Ryland Brady*, James Fitzpatrick*, Kendall McDowell*, and Langston Stovall*

Mentor: Virginia Leclercq, English

This project explores how teaching about the Civil War shapes collective memory across generations. Through interviews with high school and college students, as well as adult participants, the study investigates the effect of educational methods and materials within the context of North Carolina and individual perceptions of the Civil War.

Oral Presentations

Oral Session III • 4:00 pm – 5:00 pm

Psychology II **Room A**

4:00-4:15

What is the Role of Depression, Stress, and Anxiety in BPD and Increased Alcohol Consumption?

Mikayla Moxley* and Ashley Rodriguez*

Mentor: Laura Nagy, Psychology

The present study examined to what extent depression, anxiety, and stress impact the relationship between BPD traits and alcohol consumption. Participants completed self-report scales to measure trait levels of each construct. Results suggest that depression and stress, but not anxiety, may influence the relationship between BPD traits and alcohol consumption.

4:15-4:30

The Role of Resilience on the Relationship Between Adverse Childhood Experiences and Dark Triad Traits

Josca Schabacker*, Sophia Csulak*, and Danielle Hallberg

Mentor: Laura Nagy, Psychology

This study examines whether resilience moderates the relationship between adverse childhood experiences (ACEs) and Dark Triad traits. Contrary to expectations, resilience did not buffer psychopathy or narcissism but strengthened the ACE-Machiavellianism link. Findings suggest resilience may foster Machiavellianism in adversity, highlighting the need for interventions promoting adaptive coping strategies.

4:30-4:45

Storytelling Through Dance: Exploring the Impact of Learning Strategies and Cognitive Styles on Movement

Catherine Gallagher*

Mentors: Stacy Lipowski and Laura Nagy, Psychology; Lindsey Howie, Theatre and Dance

The primary goal of the current study was to investigate storytelling as a memory strategy to determine whether teaching movement with emotional words improves recall of movements. Another goal of this study was to examine the finding that a self-critical cognitive style interferes with the ability to learn.

Biochemistry/ Pharmacy/Physical Therapy **Room B**

4:00-4:15

Evaluating compounds for anti-virulence activity in Acinetobacter baumannii

Chloe Cox*, Lauren Vossen, and Chase Dillon

Mentors: Meghan Blackledge and Heather Miller, Chemistry

Antibiotic adjuvants are non-toxic molecules that enhance antibiotic efficacy. Our lab has identified several potential adjuvants to potentiate the last-resort antibiotic colistin in *A. baumannii*. MIC and antibiotic potentiation assays were conducted, followed by transcriptional analysis of key resistance genes to elucidate compound mechanism of action. Results will be discussed.

4:15-4:30

in vivo Pharmacokinetic and Neurochemical characterization of Ibogaine in Rats

Isabella Maldonado*, Nicklaus Smith, Scot McIntosh, and Scott Hemby

Mentor: Scott Hemby, Basic Pharmaceutical Sciences

We investigated ibogaine's in vivo pharmacokinetics and neurochemical effects to better understand its therapeutic potential and risks. Following acute administration, ibogaine reached peak concentrations in brain at 20 minutes, while noribogaine accumulated and was eliminated more slowly. Extracellular dopamine levels decreased after administration and gradually returned to baseline.

4:30-4:45

Reduced Alpha Power Associated with Impaired Dual-Task Standing Performance in Older Adults with MCI

Helia Osareh*, Brad Manor, and Melika Kahya

Mentor: Melike Kahya, Physical Therapy

Older adults with mild cognitive impairment (MCI) struggle with balance during dual-tasking due to limited cognitive processing. Participants completed balance assessments while performing verbal subtractions. EEG studies show reduced alpha power in MCI individuals, particularly in the central right and anterior left brain regions, correlating with worse dual-task standing performance.

4:45-5:00

The Relationship Between Cognitive-Motor Dual-Tasking Assessments and Balance Confidence in People with Lower Limb Amputation

Gabriella Rodriguez*, Lisa Zukowski, Paula Gandopadhyay, Aaron Scott, and Paul Kline

Mentor: Lisa Zukowski, Physical Therapy

People with lower limb amputations are heavily reliant on vision when walking. Current mobility assessments fail to incorporate visuo-cognitive challenges and may not translate to real-world walking. This study compared the effects of vision-based versus non-vision-based cognitive-motor dual-task assessments on gait-speed outcomes and identified potential relationships with self-reported real-world walking.

Strategic Communication/Media Production/Nursing — Room C

4:00-4:15

Climate Anxiety and Contempt Among Gen-Z: Relationships with Efficacy and Policy Support

Leah Quill*

Mentor: Sarah Vaala, Strategic Communications

In a survey of 758 Gen-Z North Carolinians, climate contempt linked to conservatism, low efficacy, and low science knowledge. Conversely, climate anxiety correlated with liberalism, pro-environmental policy support, high efficacy, and higher science knowledge. Reducing contempt and fostering urgency through science education may improve climate communication and policy support.

4:15-4:30

Hidden In Plain Sight

Alexandra Pallander*, Domenica Paccione*, Eleanor Moyer*, Joseph Terry*, and Sania Aldridge*

Mentor: Barry Thornburg, Media Production

Hidden in Plain Sight is a short film that blends drama and thriller to examine complex friendships and emotions. A small-town treasure hunt turns deadly as teens are hunted one by one, forcing them to uncover the killer's identity. Through suspenseful storytelling, the film explores survival, greed, and betrayal.

4:30-4:45

Narcan and Opioid Use: A Lifeline or a Safety Net for Increased Consumption?

Madison Lehmann* and Andrea Zaglin*

Mentor: Alexis Best-Rhodes, Nursing

Harm reduction was developed to increase active drug users' safety while using opioids. Some argue that providing individuals with a reversal agent may encourage drug usage because the antidote is accessible. Alternatively, others support the idea that supplying users with an antidote may help save lives.

French III — Room D

4:00-4:15

La Religion entre les Colonisateurs et les Colonisés dans Texaco de Patrick Chamoiseau

Dawson Wright*

Mentor: Denis Dépinoy, World Languages, Literature, and Culture

The point of this presentation is to analyze the relationship between religion and identity of the Antilleans of Martinique in Patrick Chamoiseau's *Texaco.* This presentation will look at the Créolité movement and the religious manner in which the identity of the Antilleans is established within a dominating western mix. (This talk is in French.)

4:15-4:30

La fluidité de l'histoire et de la mémoire dans Texaco de Patrick Chamoiseau

Lena Hetrick*

Mentor: Denis Dépinoy, World Languages, Literatures, and Cultures

Texaco explores the fluidity of historical truth through the unreliable narration of Marie-Sophie. The novel examines memory and oral history, highlighting the influence of biases and communal perspectives over objective records. I argue this challenges the popular, European views of how history is conveyed, emphasizing storytelling over truth. (This talk is in French.)

4:30-4:45

Langue et pouvoir à Texaco: le rôle du Français et du Créole dans la formation de la narration et de la voix

Ian Huett*

Mentor: Denis Dépinoy, World Languages Literatures and Cultures

This paper explores how Patrick Chamoiseau's use of French and Creole in *Texaco* shapes the narrative structure and literary voice, examining how language functions to both reinforce and challenge power dynamics within the context of postcolonial society. (This talk is in French.)

English III — Room E

4:00-4:15

The Gothic Novel's Demonization of the Protagonist as a Critique of the Rise of Individualism

Rachel Vesper*

Mentor: Virginia Leclercq, English

Gothic narratives systematically demonize protagonists, shifting them from virtuous to morally ambiguous. This analysis reveals the genre's critique of Individualism, demonstrating how societal conformity is enforced through fear and suffering. The genre acts as a "punisher," subverting heroism to maintain traditional norms.

4:15-4:30

Twisted Souls, Twisted Minds: Dissecting Symptomatic Passion In Emily Brontë's Wuthering Heights

Paige Vercio*

Mentor: Laura Alexander, English

This paper examines Aristotelian and Cartesian models of passion in Emily Brontë's *Wuthering Heights*, exploring how the novel reflects historical debates on reason and emotion. This study considers how passion, when left unchecked, distorts both personal identity and the social order.

4:30-4:45

The Creative Writing Panel

Cate Stamper*, Paige Ocshé*, Samantha Falla*, Sophie Bolinger*, and Sophia Csulak*

Mentor: Charmaine Cadeau, English

During the Creative Writing session, each panelist will read 3 minutes of original poetry or fiction. The presenters will then discuss their approaches to character creation, style, narrative choices, and more, and conclude with a question and answer discussion with the audience.

Honors III **Room F**

4:00-4:20

Pre-Game Strategies: Emotional Intelligence and Memory in Esports vs. Sports

Harry Dewalt*, Lizzie Kelly*, Emily Lawler*, and Shauna Skow*

Mentor: Timothy O'Keefe, English

This study explores the impact of pre-game preparation strategies on emotional intelligence and cognitive memory in both esports and traditional sport athletes. By identifying overlaps between these groups, we will examine how preparation methods influence performance, focus, and emotional regulation across different competitive environments.

4:20-4:40

Can You Predict the Future?: Precognitive Abilities and Experience

Mitchell Blanda*, Campbell Brown*, Stephen Casey*, and Lexi Ross*

Mentor: Timothy O'Keefe, English

In this study, we examine participants' precognitive ability, their perceptions of precognitive ability, and gender differences. An experiment was conducted where participants guessed which of five cups had a mark underneath it across ten trials. The goal of our study is to determine actual versus perceived precognitive ability.

4:40-5:00

The Power of Words: How College Slogans Can Affect Students' Memories

Alyssa Clymer*, Angelina Lappin*, Sabrina Lombardo*, and Caitlin McCray*

Mentor: Silvana Rosenfeld, Anthropology

This study investigates how High Point University's slogan, "God, Family, Country," relates to students' emotional memory, sense of belonging, and loyalty to the institution. Survey and interview data was collected from students, alumni, and parents. The results will reveal which on-campus aspects are most important for student satisfaction and well-being.

Poster Session II

2nd floor Concourse (hallway)
5:00 pm – 6:00 pm

Biochemistry

(1) Yeast Two-Hybrid Assays
Lily Cristini*
Mentor: Grace Hamilton, Chemistry
Septins are a key component of the cytoskeleton, playing a role in human diseases. Using yeast two-hybrid assays, I explored the regulation of septin-septin interactions in the model fungus *Saccharomyces cerevisiae*. The goal is to understand how different septin structures form under different cellular conditions.

(2) Synthesis and Evaluation of Activity Based Protein Purification Reagents
Aaliyah Coley*
Mentor: Meghan Blackledge, Chemistry
Methicillin-resistant *Staphylococcus aureus* (MRSA) is an antibiotic-resistant infection that causes tens of thousands of deaths each year. This project focused on the design and synthesis of activity-based protein purification ligands that we will use to identify the molecular targets of these compounds in MRSA. Preliminary biological results will be presented.

(3) Potentiating the Antibiotic Colistin Against Acinetobacter baumannii
Chase Dillon*, Lauren Vossen, Chloe Cox, Meghan Blackledge, and Heather Miller
Mentor: Heather Miller, Chemistry
Acinetobacter baumannii is a pathogen that developed resistance to antibiotics, including colistin. This study looks at effects of small molecules that potentially lower antibiotic resistance. RT-qPCR was used to measure the effect of these small molecules on *mcr1* gene expression and suggest a way to enhance the effects of colistin.

(4) Characterization of a Putative Alpha Carbonic Anhydrase (HeCAα313) from Hypsibius Exemplaris: Insights into Enzymatic Properties and Potential Biotechnological Applications
Webb Garrett*, Mack Fox, and Meredith Russell
Mentor: Kelsey Kean, Chemistry
Studying α-CAs in tardigrades reveals unique biochemical adaptations. We cloned, expressed, and purified HeCAα313 from Hypsibius exemplaris in E. coli using recombinant DNA technology. Spectroscopic and enzymatic assays confirm its catalytic activity. This research advances extremophile α-CA understanding and potential biotechnological applications.

(5) Evaluation of Antibiotic Adjuvants on MRSA Pathogenicity and Virulence in an Endothelial Cell Infection Model

Maggy Henkel*, Izzie Marshall, and Meghan Blackledge
Mentor: Heather Miller, Chemistry

MRSA is a clinical challenge due to antibiotic resistance and virulence regulation. This study examines the effects of loratadine and compound 8 in infected endothelial cells, focusing on master regulators Stk1 and Stp. RT-qPCR analysis reveals impact on virulence genes suggesting a possible role as anti-virulence therapy against MRSA infections.

(6) Effect of pan-PPAR agonism via Lanifibranor on C2C12 myotube metabolism

Macey McGovern*, Alexa Klein*, Kipton Travis, Kayla Ragland, and Roger Vaughan
Mentor: Roger Vaughan, Health and Human Performance

The peroxisome proliferator-activated receptor (PPAR) super-family of nuclear receptors regulates many metabolic pathways including those associated with lipid metabolism and mitochondrial function. In these experiments we assessed the effect of the pan-PPAR agonist, Lanifibranor, on myotube metabolism. Lanifibranor treatment increased mitochondrial function, mitochondrial content, and glycolytic metabolism.

(7) Expression, Purification, and Characterization of a Novel Carbonic Anhydrase from Hypsibius exemplaris (HeCa-α)

Meredith Russell*, Mack Fox, Webb Garrett, and Kelsey Kean
Mentor: Kelsey Kean, Chemistry

α-Carbonic Anhydrases catalyze CO2 hydration to bicarbonate and protons, playing vital metabolic roles. This study characterizes a putative α-carbonic anhydrase (HeCA-α) from tardigrade *Hypsibius exemplaris*, detailing its cloning, expression, and enzymatic activity. Ongoing research involves further characterization, exploring its stability and potential applications in carbon sequestration.

(8) The Creation of a Microfluidic Flow Cell to Analyze Treatment of Antibiotic Resistant Biofilms

Lexie Young*, Jillian Stroup*, and Meghan Blackledge
Mentor: Keir Fogarty, Chemistry

Biofilms, bacterial communities inside extracellular matrices, are a common source of hospitalacquired infections. A 3D-printed flow cell was designed to mimic environments that are conducive to biofilm formation. We want to grow and visualize biofilm growth under flow conditions. Future work aims to explore the treatment of biofilms with antibiotics.

(9) Novel Expression and Characterization of Lactate Monooxygenase from Halopiger Salifodinae

Makenzie Wiseman*, Madison Awbrey*, Abigail Nimmo, and Kelsey Kean
Mentor: Kelsey Kean, Chemistry

Lactate monooxygenase (LMO) is part of the α-hydroxy acid oxidase protein family. We present the first study of LMO from *Halopiger salifodinae*. Colorimetric assays and HPLC-based assays were used for characterization. We optimized conditions by adding FMN or replacing the purification tag with GST.

Biology

(10) Genetic Determinants of Morphological Plasticity in Knufia Petricola
Lauren Buckminster*, Daniel Sapozhnikov*, and Shauna Skow*
Mentor: Grace Hamilton, Chemistry
Does changing cell shape allow fungi to survive in extreme environments? We identified genes possibly involved in cell shape change in *Knufia petricola*, then knocked them out using CRISPR. We predict knocking out these key genes will reduce tolerance to stress, providing insights into fungal resilience and guiding future studies.

(11) Development of an eDNA Assay to Monitor the Endangered Moxostoma sp. Carolina (Carolina Redhorse) in North Carolina Waters.
Dominick Latta*, Catherine Summerrow*, Gracie Vickery, Micheal Wright, Holley Lowe, Christian Jones, and Megan Rudock Bowman
Mentor: Megan Rudock Bowman, Biology
The Carolina Redhorse (*Moxostoma sp.Carolina*) is an endangered fish primarily found in the Peedee River. Monitoring by eDNA improves efficiency, while decreasing cost and the potential for harm. We are developing a species-specific assay to aid the NC Wildlife Resource Commission during surveillance studies in the NC Greater Peedee River.

(12) Container Mosquito Oviposition Activity as a Function of Urbanization in Guilford County NC
Maggie Garr*, Tyler Wright, Bella Perez, and Daniel Greene
Mentor: Daniel Greene, Biology
We assessed urbanization's effect on mosquito oviposition in Guilford County, NC, using ovitraps at 20 sites over four weeks (June–July 2024). Egg counts were analyzed via generalized linear mixed modeling, considering land cover, date, and trap height. Understanding environmental factors influencing mosquito abundance aids in disease prevention efforts.

(13) Assessment of Anti-Cataract and Pro-Longevity Properties of Flavonoids
Rilee Bahner*, Hailee Gosart*, Kiernan McDonald, Billy Hayden, Rachel Munds, Michael Montague, Melween Martinez, Gadi Wollstein, James Higham, John Danias, Amanda Melin, and Jeremy Whitson
Mentor: Jeremy Whitson, Biology
Photooxidation-induced protein aggregation contributes to cataract formation. Using rhesus macaque lenses, flavonoids were tested for anti-cataract effects. Daidzein significantly reduced aggregation by 26%. Longevity effects were assessed in C. elegans, where daidzein and quercetin significantly increased lifespan by 6.2%. Further testing was initiated to explore dose responsiveness and stress resilience.

(14) Effects of Changes in Fire Management Policy at Pilot Mountain State Park on Fire Frequency and Size

John Guglielmetti* and Esprit Cha
Mentor: Dane Kuppinger, Biology

Fire plays a vital role in southeastern U.S. ecosystems, including the Piedmont's dry forests. This study extends Pilot Mountain's fire history to 1826, documenting 45 fires: 20 pre-suppression (1689–1929), 11 during suppression (1930–1979), and 10 post-suppression (1980–2023). Fire frequency increased post-suppression, but fire size remains smaller than pre-suppression levels, suggesting incomplete restoration of historical fire regimes and potential ecological impacts.

(15) Binding of GerE to the promoter region of spore coat genes in Bacillus subtilis

Jackson Jones*
Mentor: Dinene Crater, Biology

This research investigates whether the DNA-binding protein GerE represses transcription of spore coat genes in *Bacillus subtilis*. Using a new EMSA method, our research aims to determine GerE's affinity for promoter DNA and extend findings to other *Bacillus* species to understand its role in sporulation regulation.

(16) Investigation into Fused Tricyclic Derivatives as Potential Antiparasitic Treatment for Toxoplasmosis

Raegan Koon*
Mentor: Robert Charvat, Biology

Toxoplasmosis, a disease caused by infection with the *Toxoplasma gondii* parasite, is a leading cause of death from foodborne illness and presents particular risk in pregnant and immunocompromised individuals. This study analyzes the antiparasitic capabilities of fused tricyclic compounds and their derivatives, investigating the potential as a treatment for toxoplasmosis.

(17) A Potential Role For Color and Stress in Determining Reproductive Success in Danio Rerio

Tyler Matthews*, Zachary Workman, and Alex Kaelin
Mentor: Vernon McNeil Coffield, Biology

Zebrafish have demonstrated color preference linked to hormonal stress response, however its impact on egg production and fertilization remains unclear. We tested the effects of color-induced stress during egg production, finding red and yellow exposure significantly decreased egg production and embryo fitness, suggesting a color induced negative impact on reproduction.

(18) Tracking Pollinators at High Point University

Jake Mergenthal* and Ava Heaton*
Mentor: Anthony Greene, Biology

Bee hotels provide artificial nesting sites for solitary bees and other pollinators. This project examines pollinator diversity and plant preferences at High Point University by installing bee hotels across campus. We aim to identify species using the hotels, analyze seasonal activity, and assess nesting success. Findings will contribute to local conservation efforts and pollination studies.

(19) The influence of Menadione on Toxoplasma gondii Egress

Joyce Mondo*, Kaden FungFook*, Lily Bruner*, and Robert Charvat

Mentor: Robert Charvat, Biology

Previous observations demonstrated that menadione induces Toxoplasma gondii parasites to egress from infected cells. Additionally, cells treated with menadione exhibit an oxidative stress. Since parasite egress is tightly controlled by calcium signaling, we sought to understand if there is a connection between menadione, oxidative stress, calcium dysregulation, and parasite egress.

(20) Genetic Characteristic Of An Unknown Bacteriophage From A Commercially-Available Stock Of Bacillus thuringiensis

Kendall Philpott* and Dinene Crater

Mentor: Dinene Crater, Biology

Bacillus thuringiensis (Bt) is a gram-positive bacterium commonly found in soil. It exhibits insecticidal properties due to spores that are toxic to insects. The purpose of our research is to genetically characterize the unknown bacteriophage we found in a commercially available stock using whole-genome sequencing and bioinformatic analysis.

(21) Extracellular Vesicle Isolation from Various Sources and Applications

Jack Quintana*

Mentor: Megan Rudock Bowman, Biology

Extracellular vesicles are membrane-bound structures used for intracellular signaling and therapeutic delivery. Human stem cell EVs show promise in treating degenerative disease but have ethical and cost concerns. Our research explores alternative EV sources— plants and fruits—developing scalable isolation methods while investigating genetic differences, modifications, and in vivo applications.

(22) The Influence of Nutrition on Wing Shape and Body Size Scaling in Drosophila melanogaster using the DGRP

Allison Ressler*

Mentor: Kenneth McKenna, Biology

This study examines how nutrition influences body and trait size scaling in *Drosophila melanogaster*. By altering larval diets, we induced phenotypic plasticity and analyzed scaling using imaging and regression techniques. Results show nutrition's role in coordinating body and organ sizes, offering insights into mechanisms generating morphological diversity across species.

(23) Proteomic Analysis of Aged and NDUFS4-/- Mouse Lenses Reveals Commonalities and Divergences

Elizabeth Rubeira*, Alessandro Bitto, Jacob Rose, Christina King, Birgit Schilling, and Jeremy Whitson

Mentor: Jeremy Whitson, Biology

Beyond a monolayer of epithelia, eye lenses consist of fiber cells which lack organelles, including mitochondria. NDUFS4-/- mice feature deletion of a key mitochondrial gene and show aspects of accelerated aging. We analyzed lens proteomes and determined that NDUFS4-/- mice show accelerated aging in lens epithelial but not fiber cells.

(24) Monitoring The Atlantic Pigtoe In North Carolina Using eDNA Applications
Michael Wright*, Gracie Vickery, Holley Lowe, Dominick Latta, and Christian Jones
Mentor: Megan Rudock Bowman, Biology
The Atlantic Pigtoe mussel is a threatened species vital to NC's river ecosystems. Traditional monitoring is inefficient, making environmental DNA (eDNA) a promising alternative. This study develops a species-specific assay for PCR and qPCR. We will use this assay to amplify eDNA target sequences and monitor the Atlantic Pigtoe mussel.

(25) Initial Steps in the Construction of Hanging Rock State Park's Fire History
Alina Zimavaya*, Tyler Wood*, and Dane Kuppinger
Mentor: Dane Kuppinger, Biology
Forest fires play a critical role in forest ecosystems, influencing vegetation and species distributions. This study aimed to enhance the fire history for Hanging Rock State Park. We conducted field surveys, identified fire-scarred pines, and analyzed previous samples to establish a foundation for understanding fire's role in this ecosystem.

(26) Affects of Temperature Stress on Larval Appendages
Melanie Zylberberg*, Amelia Valdez*, and Kenneth McKenna
Mentor: Kenneth McKenna, Biology
Temperature stress plays and important role in phenotypic evolution. We have found that elevated temperatures not only change the larval color, but we have also found that they change the shape of spines extending from the integument. We will report on the affects different temperatures have on larval spine morphology.

Chemistry

(27) Measuring Activity of PETase.
Justin Allan*, CJ Gulla*, and Bryce Grier*
Mentor: Kelsey Kean, Chemistry
This study measures PETase activity using the PNPA assay and direct PET degradation experiments. Enzymatic efficiency is assessed through p-nitrophenol formation (UV-Vis spectroscopy) and PET mass loss over time. By optimizing reaction conditions, our findings provide insights into PETase's potential for plastic biodegradation, contributing to sustainable waste management solutions.

(28) Analysis of PETase on the Degradation of PET Plastic
Autumn Andreeff*, Alex Stielau*, and Dana Pitell*
Mentor: Kelsey Kean, Chemistry
Plastics pollute Earth's lands leading to depletion of natural resources. Current plastic decomposition methods are energy intensive and inaccessible. However, scientists have found mutations in PETase which led to breakthroughs and new degradation processes of unrecyclable plastics. Improving our understanding of how FAST PETase works can reduce our environmental footprint.

(29) Single-Molecule Fluorescence Correlation Spectroscopy: Characterization of Novel Fluorophores
Jalen Dixon*, Jake Ankrum*, Angelina Pierre, Pamela Lundin, and Keir Fogarty
Mentor**:** Keir Fogarty, Chemistry
Fluorescence Correlation Spectroscopy (FCS) analyzes nanomolar concentrations of fluorophores by measuring emitted photons over time. We optimized our FCS setup to study novel rhodamine b dimers (RB2), which exhibit unique fluorescence properties, enabling us to explore their physical parameters and expand applications beyond rhodamine b's traditional on/off sensing capabilities.

(30) Loratadine's Unexpected Effect on MRSA and Human Host Cell Morphology
Lillian Gray*, Isabel Marshall*, Meghan Blackledge, and Heather Miller
Mentor: Heather Miller, Chemistry
Methicillin-resistant *Staphylococcus aureus* (MRSA) is a pathogen resistant to many antibiotics. While investigating the antihistamine loratadine's impact on human cells, we observed it has anti-virulence effects in vitro. Additionally, the host cells morphed from the typical elongated shape to being circular. We are measuring this morphology change in cell culture.

(31) Synthesis of Potential Antibiotic Adjuvants
Kaley LeFevre*
Mentor: Meghan Blackledge, Chemistry
Cases of antibiotic resistance in bacteria are increasing; this research aims to help combat these escalating issues. We are synthesizing potential antibiotic adjuvants using carbazoles and epoxides, opening the epoxides to restore hydrogen bonding. These molecules are paired with various antibiotics and are tested on MRSA bacteria to measure effectiveness.

(32) Preparation and Characterization of Conjugated Polymer Brush Films
Alyssa Lovallo*, Selbe Laffere*, and Lucas Arciola*
Mentor: Pamela Lundin, Chemistry
Conjugated polymer brush (CPB) films offer improved mechanical strength and alignment compared to spun-cast films. We explored the preparation of CPB films using (3-aminopropyl) triethoxysilane (APTES) on amine-functionalized silicon surfaces. Through contact angles and surface chemistry measurements, we aim to understand how these factors influence film morphology and electrical conductivity.

(33) Optimization of Polymerization of a Meta-Substituted Ethynylbenzene Derivative Using the Sonogashira Reaction Mechanism
Erik Peterson*
Mentor: Pamela Lundin, Chemistry
Using the Sonogashira reaction mechanism, chain-growth polymerization of an ester substituted ethynylbenzene derivative was achieved. Based on this result, optimization of the monomer synthetic pathway and final polymer formation was progressed, with a focus on an increase in yield and the application of the dry column vacuum chromatography method.

(34) Overall School Grades as an Indicator of Neurocognitive Function Among School-Aged Children in Botswana

Cameron Siler-Nixon*, Tyler Moore, Jennifer Chapman, Mogomotsi Matshaba, Cobb Scott, and Elizabeth Lowenthal

Mentor: Kier Fogarty, Chemistry

Despite antiretroviral therapy advances, many children, particularly in Botswana, are still affected by HIV, increasing their risk of neurocognitive impairments. This study aims to determine the relationship between HIV exposure and overall school grades, and to evaluate the relationship between grades and neurocognitive impairment through implementation of a neurocognitive battery.

(35) PETase: Unlocking the Potential of Plastic-Degrading Enzymes

Talaya Holland*, Naomi Harris*, and Claire Taylor*

Mentor: Kelsey Kean, Chemistry

Polyethylene terephthalate (PET) is a common form of plastic that is difficult to degrade or to recycle and is toxic to burn. A possibly better alternative to handling PET is an enzyme named PETase. This project seeks to analyze the effectiveness of PETase to degrade PET plastic.

(36) Discovering PETase: A Revolutionary Plastic Degradation Enzyme

Nic Bledsoe*, Cam Walker*, and Korbyn Hudson*

Mentor: Kelsey Kean, Chemistry

Plastic pollution, particularly from a common form of plastic polyethylene terephthalate (PET), is an expanding environmental crisis. In the context of sustainable solutions, PETase, offers an effective solution for plastic degradation. This project explores PETase's activity as an enzyme to develop efficient strategies for large-scale plastic waste reduction and pollution.

(37) Evaluating Rate of PET Film Degradation Using Different Temperatures

Caroline Wilson*, Abigail Dibble*, and Rana Ligue*

Mentor: Kelsey Kean, Chemistry

Our project is focused on PETase enzyme which is used to degrade PET plastics that we find in everyday life. We have analyzed PETase using both qualitative and quantitative measures including protein PNPA assay. This data can be used to inform future studies based on plastic waste pollution.

(38) Fructose Reduces Mitochondrial Metabolism and Increases Extracellular BCAA during Insulin Resistance in C2C12 Myotubes

Norah Cook, Macey McGovern, Toheed Zaman *, Pamela Lundin, and Roger Vaughan

Mentor: Pamela Lundin, Chemistry

Fructose, known to link with certain metabolic diseases, was studied for its impact on insulin resistance and branched-chain amino acids (BCAA) metabolism in C2C12 myotubes. Fructose reduced peak glycolytic and mitochondrial metabolism at physiological levels, but there was no change in the BCAA catabolic enzymes or insulin sensitivity. Nevertheless, it raised extracellular BCAA within the insulin-resisted cells, showing impaired BCAA use during insulin resistance.

(39) How the Enzyme PETase Degrades PET plastics

Mirabella Zingales*, Isabella Wells*, and Xavier Galdamez*

Mentor: Kelsey Kean, Chemistry

PET, or polyethylene terephthalate, is a polymer commonly found in disposable plastics. PETase is an enzyme that catalyzes the breakdown of PET plastics. In this experiment we will explore the breakdown rate of PETase using a PNPA assay, mass loss experiment, and other techniques.

Economics

(40) The Preference of Cash

Kathaleen Brockmann*

Mentor: Peter Summers, Economics

The presentation explores the impact of the COVID-19 pandemic on cash spending habits, highlighting the decline in cash usage and the rise of digital payments. It also discusses the demographics and motivations of those who continue to use cash, such as convenience, security concerns, and resistance to digital change.

Electrical Engineering

(41) Buried Graphene Analysis for Nanowire (NW) Fabrication

Morgan Abrams*

Mentor: Sean Johnson, Electrical Engineering

Graphene, a 2D carbon allotrope with a hexagonal lattice, has high thermal and electrical conductivity. Current research analyzes its thickness, structure, and purity. This study explores buried graphene as a potential method for patterned NW fabrication. SEM and Raman spectroscopy assess SiO_2 deposition, NW hole diameter, and graphene post-lithography.

Event Management

(42) Resilience & Resistance: Examining Black Women's Leadership Experiences in the Event Industry

Zora Stovall* and Brianna Clark

Mentor: Brianna Clark, Event Management

This study examines Black women's leadership experiences in the event industry through intersectionality and resilience frameworks. A two-phase exploratory qualitative approach, including survey analysis and interviews, identifies three key themes and corresponding sub-themes. Findings highlight systemic barriers and advocate for inclusive practices that dismantle harmful "strong Black woman" narratives.

Exercise Science

(43) Addition of Short Duration Stretching Prior to Traditional Warmup Does Not Alter Cycling Sprint Power

Kiley McTamney*, Millicent Tysinger, Emily Spina, and Colin Carriker

Mentor: Colin Carriker, Health and Human Performance

While static stretching may reduce peak power, less is known about the impact on performance when stretching is followed by a traditional cardiovascular warmup prior to power-based activities. This study explores whether the addition of a short duration stretch prior to a traditional warmup impacts cycling sprint performance.

(44) Reliability Data of Force Plate Information Based on Principal Component Analysis.
Sydney Litwiller, Brian Shaw*, and Will Toth*
Mentor: Brett Pexa, Athletic Training
The purpose of this study was to analyze countermovement jump data from force plates variables with the hopes of simplifying them into information that could be used to predict injury. Using a Principal Component Analysis, 99 output variables were cut down to 3 categories and then analyzed accordingly.

(45) Short Duration Warmup Does Not Impact Caloric Expenditure During a Virtual Cycling Class
Millicent Tysinger*, Kiley McTamney, Emily Spina, and Colin Carriker
Mentor: Colin Carriker, Health and Human Performance
Time constraints, a barrier to exercise, necessitate shorter workouts. While the ACSM advises a 5-10 min warmup, brief spin classes (<20 min) limit this phase. Therefore, a supplemental warmup (5-min) prior to such classes may enhance exercise efficiency by increasing energy expenditure (kcal) while maintaining the desired short duration session.

(46) Differences Between Synthetic Turf Systems During Cutting in Cleated Footwear
Jillian Schulz*, Katie Whalen*, and Ja'niyah Williams*
Mentor: Brett Pexa, Athletic Training
This study determined the difference in traction and joint kinetics between two synthetic turf surfaces during a cutting task. Participants completed five maximum effort 180-degree cuts on each surface. Data demonstrated significant differences in translational and rotational traction and knee abduction and ankle moments between surfaces.

Fashion Merchandising

(47) International Branding Strategies for Maison Serein
Olivia Cirocco*
Mentor: Victoria Brown, Interior Design, Furnishing, and Fashion Merchandising
This project expands upon a senior capstone, where students created a fictional plus-size fashion brand targeting Gen Z consumers. Building on the initial concept, it examines how well the brand might perform in two emerging international markets and develops tailored branding strategies for each potential expansion opportunity.

Health and Human Performance

(48) Wearable Sensors Detect Interlimb Kinetic Walking Differences in People with Chronic Ankle Instability
Mikalyn Freeman* and Charity Franklin*
Mentor: Kimmery Migel, Physical Therapy
Nineteen participants with chronic ankle instability (CAI) walked on a split belt treadmill for one minute while wearing inertial measurement units. Between limbs, the CAI limb had higher normalized vertical ground reaction force, but no between limb differences were noted for impact Gs or shock while walking.

(49) Analysis of Smartphone Apps for Lifestyle Medicine Behavior Change Potential
Julia Koshivos* and Kimberly Reich
Mentor: Kimberly Reich, Health and Human Performance
We evaluated the top 100 free health and fitness apps in the iOS app store for evidence-based behavior change across six pillars of lifestyle medicine. Apps focused on physical activity, nutrition, and stress-management. App descriptions accurately reflected users' experiences; however, app rankings didn't correlate with effectiveness for supporting health behavior change.

(50) Comparing HIV/AIDS Health Knowledge at Different Universities
Roman Montecalvo*, Amani Williams, and Jason Keeler
Mentor: Jason Keeler, Human and Health Performance
To test the hypothesis if there is a difference in HIV knowledge between a HBCU and Non-HBCU. The results from two HIV general knowledge surveys were compared. The results show that the HBCU students disproportionally stated that there is a vaccine and that it is curable.

(51) Relationship Of Select Macronutrient Consumption With Arterial Stiffness In Law Enforcement Officers
Nick Sorensen*
Mentor: Jason Keeler, Health and Human Performance
To investigate if consumption of 6 selected macronutrients is associated with increased arterial stiffness in law enforcement officers (LEOs), 58 LEOs completed carotid-femoral pulse wave measurements and a one-year dietary recall questionnaire. Regression analysis with the predictor variables of dietary fats, monounsaturated fatty acids, saturated fatty acids significantly predicted PWV.

History

(52) Popes, Princes, & Power: European Politics & the Italian Wars
Kayla Wylie*
Mentor: Andrew Tzavaras, History
During the Italian Wars (1494-1559), personal and dynastic ambitions sowed division between European powers, and religion, which once bound Christendom together, was abused by secular forces for their own gains. Therefore, these wars were not just military conflicts, but transformative events shaping the Church and State's relationship.

Honors

(53) Sex-based Duet Pairings and Muscle Memory
Kailyn Allen*, Felecia Gonzalez*, Ashlyn Long*, and Paige Osché *
Mentor: Virginia Leclercq, English
This experiment explores the correlation between homogeneous versus heterogeneous sex-based groups, memory recall, and perceived confidence through duet-styled contemporary dance. Participants complete two dances, as well as pre- and post-surveys. We hypothesize that homogeneous sex-based groups will have a higher rate of memory recall/muscle memory and perceived confidence recall.

(54) ***Exploring the Effects of Sleep Levels, Stress Levels, and Caffeine Intake on Working Memory in Undergraduate Students***

Emily Gaines*, Alivia Longley*, and Ryan Walter*
Mentor: Silvana Rosenfeld, Sociology and Anthropology

This study examines how sleep quality, stress levels, and caffeine intake affect working memory in undergraduate students. Past research has explored how each of these factors affect working memory, but not cumulatively. Through an Operation Span task and a Qualtrics Survey, we will examine possible correlations through SPSS and GRETL.

(55) Harry Potter, Apoptosis, and Memory Retention

Rilee Bahner*, Reid Holloway*, Francela Mejias-Solano*, and Tim Nash*
Mentor: Timothy O'Keefe, English

This research examines the retention differences across different forms of media, specifically reading and viewing. We surveyed students in two disciplines (fiction and biology) to observe which factors influence long-term recall in order to understand optimal teaching practices in the classroom.

(56) Shared Illusions: How Conspiracy Theory Belief Influences Collective Memory and Public Perception

Brianna Jensen*, Haley Hedrick*, Jessamina Piazza*, Paris Glover*, and Rowan Trietley*
Mentor: Stacy Lipowski, Psychology

This study examined whether belief in conspiracies relates to memory of historical events. Participants completed the Generic Conspiratorial Beliefs Scale (Brotherton et al., 2013), rated agreement with 18 conspiracy theories, and completed a Historical Events Inventory. It was hypothesized that belief in conspiracies and memory accuracy would be negatively correlated.

(57) Unmasking the Villains: Exploring How Traumatic Memories Shape Disney's Animated Antagonists

Megan Lipari*, Mackenzie Scalzo*, Marie Streng*, and Jordan Thompson*
Mentor: Virginia Leclercq, English

This study examines how trauma influences Disney animated villains. Analyzing fourteen films, we explore how experiences like loss, abuse, and neglect shape villains' motivations, behaviors, and interactions. By understanding the psychological impact of trauma on these characters, the research aims to offer a deeper view of villainy and morality.

(58) The Impact of Positive Emotional Stimuli and Mood States on False Memory

Catherine Gallagher*, Sydney Litwiller*, Virginia Vincent*, and Alexandra Vogel*
Mentor: Stacy Lipowski, Psychology

Most false memory research has focused on negative or neutral information. The goal of the current study was to examine the effects of varying arousal levels of positive emotional stimuli on memory of semantic and visual information. Mood states of participants were also measured to determine impact on memory.

(59) Creation of False Memory in Social Media: Does Scrolling Speed Matter?

David Caivano*, Sara Jameson*, Lauren Vossen*, and Andrea Zaglin*
Mentor: Stacy Lipowski, Psychology

This study examines Instagram's impact on false memory formation, analyzing how scrolling speed (3 vs. 6 second viewing) influences memory distortion. Participants viewed a prerecorded Instagram video with accurate and misleading captions of 21 posts. We aim to determine if social media induces false memories and how speed affects them.

Hospitality Management – Moved to Poster Session I

(60) Cultural Competency in Hospitality
Paris Glover*
Mentor: Marisa Ritter, Hospitality
This research examines cultural competency in hospitality, focusing on its impact on guest satisfaction and repeat business. By analyzing diverse service interactions, the study highlights how cultural awareness enhances hospitality experiences. Findings aim to identify best practices for fostering inclusivity, improving guest relations, and strengthening long-term customer loyalty in the industry.

Interior Design

(61) Universal Design for the Elderly
Kamden Ray*
Mentor: Jane Nichols, Interior Design
By implementing universal design strategies, the elderly population can feel included and supported in their homes, and out. Through research and following ADA standards, creating an elderly-focused living environment is possible. This can support and benefit the elderly, allowing them to be comfortable in their environments, living freely and easily.

Microbiology

(62) Understanding the Ability of Bacillus thuringiensis to Act as an Insecticide Using Mutations in GerE
Tyler Galley*, Andrew Fox, and Dinene Crater
Mentor: Dinene Crater, Biology
Bacillus thuringiensis (Bt) possesses insecticidal properties which are effective at terminating unwanted insects. As a DNA binding protein, GerE has been shown to be crucial in sporulation of Bacillus subtilis. This project will uncover GerE's role in the ability for Bt to sporulate and cause death in insects.

Neuroscience

(63) Greater Beta-amyloid Deposition in Older Adults is Associated with Worse Search Efficiency in a Grocery Shopping Task
Alyvia Brainard*, Sarah Brinkerhoff, Samuel Lockhart, and Lisa Zukowski
Mentor: Lisa Zukowski, Physical Therapy
Irreversible significant cognitive decline and neuropathological changes (e.g., beta-amyloid deposition, Aβ) characterize Alzheimer's disease. Identifying subtle cognitive deficits that impact everyday task performances during the preclinical stage may enable earlier and more effective intervention. This study investigates if age and Aβ in older adults can predict grocery shopping performance.

(64) Characterizing Changes in Anxiety-like Behaviors due to Embryonic Fluoride Exposure in a Zebrafish Model

Taylor Galavotti* and Lizzie Kelly*
Mentor: Kristin Ackerman, Neuroscience

Despite the positive implications of water fluoridation for dental health, recent studies have shown that increased levels of fluoride in water can lead to neurotoxicity. This study shows that embryonic fluoride exposure leads to changes in anxiety-like behaviors and skeletal development. However, motor development and response is conserved.

Nursing

(65) The Impact of Nurse-to-Patient Ratios on Patient Outcomes

Ashley Fierro* and Ashley Bowman*
Mentor: Alexis Best-Rhodes, Nursing

This presentation examines current literature to explore how nurse-to-patient ratios impact patient care quality, hospital efficiency, and overall healthcare outcomes. Research shows that better staffing improves patient safety and reduces hospital costs. Findings will support stronger staffing policies to ensure high-quality patient care and prevent nurse burnout.

(66) The Role of Placebo Analgesia in Reducing Opioid Requirements Post-Surgery

Ansley Edwards* and Autumn Perrelli*
Mentor: Alexis Best-Rhodes, Nursing

Opioid overprescription and overuse have contributed to the opioid crisis, necessitating alternative pain management strategies. This presentation is an exploration of the current literature to evaluate nonpharmacological approaches to reducing postoperative opioid consumption. Exploring nonpharmacological approaches may help reduce opioid requirements and associated risks in postoperative pain management.

(67) Comparing Healing Strategies: Wet-to-Dry Dressings vs. Vacuum-Assisted Closure for Diabetic Foot Ulcers.

Alexandria Register* and Natalie Woodward*
Mentor: Alexis Best-Rhodes, Nursing

Diabetic foot ulcers are a significant global health issue, requiring prompt healing to prevent complications like infection and amputation. While studies suggest wet-to-dry dressings promote better healing, conflicting research indicates vacuum-assisted closure (VAC) may be more effective. This is a scientific exploration of the comparative effectiveness of both treatment methods.

Pharmacy

(68) Repurposing Anti-malarials for the Selective Treatment of Malignant Peripheral Nerve Sheath Tumors

Andersen Tomes*, Heather Duensing*, Owen Hunter*, Jalen Dixon, Nicolina Graves, Nickalus Smith, Isabella Smith, and Cale Fahrenholtz
Mentor: Cale Fahrenholtz, Pharmaceutical Sciences

Malignant peripheral nerve sheath tumors (MPNSTs) are a rare and aggressive cancer that develop in peripheral nerves. We found that dihydroartemisinin (DHA), an anti-malarial drug, has shown cytotoxicity in MPNSTs relative to tumor cell of origin Schwann cells. Our preliminary findings show that dihydroartemisinin induces oxidative damage in malignant peripheral nerve sheath tumors.

Philosophy

(69) The Connection Between Self-Cultivation and Justice
Sofie Smith*
Mentor: Beth Hupfer, Philosophy
This paper dives into the idea of self-cultivation that derives from views on human nature in Chinese philosophies and religions, namely Confucianism, Daoism, and Buddhism. It is argued that cultivation itself is a theory of justice that leads to the creation of a harmonious individual and society.

Physical Therapy

(70) The Impact of Executive Dysfunction on Brain Activity During Postural Control in Older Adults
Serene Alshalabi*, Brad Manor, and Melike Kahya
Mentor: Melike Kahya, Physical Therapy
This study examined the relationship between executive dysfunction and brain activity during postural control in older adults. Results showed that those with executive dysfunction had reduced alpha power, slower mobility, and greater postural sway, indicating executive dysfunction may serve as an early biomarker of altered neurophysiological activity and fall risk.

(71) Comparing Gait Strategies of Young and Older Adults while Transitioning from Even to Uneven Surfaces
Mitchell Talton* and Lisa Zukowski
Mentor: Lisa Zukowski, Physical Therapy
Older adults (OA) exhibit more cautious gait than young adults (YA) on even and uneven surfaces. However, gait strategies have not been fully explored while transitioning between surfaces, when falls often occur. This study compares YA and OA gait phases and speed while transitioning from even to uneven surfaces.

Physics

(72) Light & Layers: Innovations in Grayscale Lithography
Ryland Brady*
Mentor: Jacob Brooks, Physics
This project explores the functions of the Heidelberg μMLA Maskless Aligner and its uses for both binary and grayscale lithography. By varying exposure intensity, three-dimensional patterns are achievable without physical masks. This project focuses on the creation of designs and optimization of the standard operating procedure.

(73) Simulated Uncertainties in The Monte Carlo Fitting Method
Skyler Gangestad*
Mentor: Adam Anthony, Physics and Astronomy
Fission is a nuclear reaction where a heavy nucleus splits into two smaller nuclei. Using simulations, we studied how mass-splitting and decay angle affect uncertainty in a Monte-Carlo fitting method. By testing different conditions, we aim to improve the accuracy of this method and enhance fission analysis.

Psychology

(74) Evaluating Production Modality Differences in 1st and 2nd Graders
Caitlin McCray*, Lily Grace Foister*, and Spencer Hansen*
Mentor: Stacy Lipowski, Psychology
The production effect is the idea that producing an item (e.g., reading aloud) leads to better memory than looking at it silently. The current study compared two types of production (i.e., say aloud and write down) to passive studying. First- and second-graders studied and took a memory test via Zoom.

(75) The Correlation Between Parenting Styles, Intrinsic/Extrinsic Motivation, Academic - Achievement and Perceived Academic Achievement
Haley Hedrick*
Mentor: Deborah Danzis, Psychology
Relationships between parenting styles, motivations for college, and academic achievement were investigated in undergraduates. There were significant positive correlations between authoritative parenting and intrinsic motivation, extrinsic motivation and sense of good achievement, and positive correlations between intrinsic motivation and academic satisfaction and achievement.

(76) Family Ties or Family Tensions? The Influence of Family Climate on College Students Depression and Self-Esteem Perceptions
Ariana Gabriel*, Mahoney Cyr, Sydney Steelman*, Taylor Beason*, and Harper Melnick*
Mentor: Kirsten Li-Barber, Psychology
Study examines role of mealtimes with friends and family and psychological outcomes. Results describe relationship between mealtime behaviors among family and friends and psychological outcomes, as well as points to potential role of family climate in predicting efficacy of mealtimes on psychological health.

Technical Exhibits II

2nd floor Concourse (hallway)
5:00 pm – 6:00 pm

Game Design/Art and Graphic Design

(77) Chameleon Crawl
Brandon Allen*, Jesse Cruz*, and Christian Taylor*
Mentor: Brian Heagney, Game Design
Embark on an exciting single player adventure as a chameleon trying to escape their terrarium! Explore a vibrant ecosystem, climbing across branches and solving puzzles to find a way out of the artificial world. Embrace the excitement of discovery and escape in this unique, puzzle-filled journey!

(78) Glaze Calculation and Formulation
Kinsey Gebhart*
Mentor: Mark Brown, Art and Graphic Design
The fundamentals of glaze and clay calculation were assessed in this research. An existing glaze formula was reduced to molecular weights chemicals no longer commercially available. This was followed by nineteen tests utilizing different iterations of fluxes, colorants, and refractories on test tiles to successfully compose a new glaze.

Performances II

Premiere Ballroom 2202 G
5:00 pm – 6:00 pm

Musical Performances

Extremes
Finnigan Gilbert*, Aaron Jackson*, Joseph Umina*, Marc Delgallo, and Kelly Samz*
Mentor: Louis Raymond-Kolker, Music
Five select members of the High Point University Percussion Ensemble received a URCW grant to attend the Percussive Arts Society International Convention (PASIC), November 13th-17th in Indianapolis, IN. At PASIC, the ensemble competed in the Concert Chamber Percussion Ensemble Competition, performing "Extremes" by Jason Treuting, and "Birdfrog" by Sebastian Zhang.

Almost There
Victoria Lavargna*
Mentor: Jaclyn Surso, Music
I will be performing "Almost There" from the 2009 film, *The Princess and the Frog*, written by Randy Newman for Walt Disney Studios. This is one of the three songs I will perform at the competition this fall at Meredith College in Raleigh, NC for the National Association of Teachers of Singing. I am working on this song with the guidance from my voice professor and accompanist.

Lasciatemi Morire
Ella Marron*
Mentor: Jaclyn Surso, Music
I will perform "Lasciatemi Morire" by Claudio Monteverdi composed for the opera Arianna. This is one of three songs I performed at the state scale of the National Association of Teachers of Singing competition, and I will revisit them to sing for the regional competition of NATS. I will be judged by professional musicians skill and how I improve from the first round.

Beyond My Wildest Dreams
Ella Marron*
Mentor: Jaclyn Surso, Music
I will perform "Beyond My Wildest Dreams" based on the classic animated film *Disney's The Little Mermaid* with music written by Howard Ashman and Glenn Slater. This is one of three songs I will perform at the National Association of Teachers of Singing competition at Meredith College. I will be judged by professional musicians on my preparation and skill.

New England
Maddie Rubino*
Mentor: Jaclyn Surso, Music
I will be presenting an original song titled, "New England", that was performed at the National Association of Teachers of Singing competition at Meredith College on November 15th, 2024. Throughout the fall, I studied with my voice teacher and a pianist that will accompany me. I received feedback on my performance from professional musicians

Talking to the Moon
Maddie Rubino*
Mentor: Jaclyn Surso, Music
I performed this song at the National Association of Teachers of Singing Regional Competition at UNC School of Arts on March 7th, 2025. I studied with my voice teacher to advance through the first round and compete at regionals. I received feedback from the professional musicians that judged the competition.

Part of Your World*
Cate Stamper*
Mentor: Jaclyn Surso, Music
I will be performing "Part of Your World" from the 2008 Broadway musical The Little Mermaid, composed by Alan Menken. This is one of four songs I will perform at the National Association of Teachers of Singing competition in the fall at Meredith College, where I will receive feedback from professional musicians at the competition. I will be working on the piece with the help of my voice teacher and a live accompanist in the fall semester.

Right Hand Man
Hailey White*
Mentor: Jaclyn Surso, Music
I will be performing "Right Hand Man" from the 2015 Musical Something Rotten and composed by Karey and Wayne Kirkpatrick. This is one of four songs I will be performing at the National Association of Teachers of Singing competition in the fall at Meredith College in Raleigh, NC. At this competition, I will receive feedback from professional musicians. I was able to work on this piece with the help of my voice teacher and live accompaniment.

Pretty Funny
Hailey White*
Mentor: Jaclyn Surso, Music
I will be performing "Pretty Funny" from the 2012 Musical *Dogfight* composed by Benj Pasek and Justin Paul. This is one oof four songs I will be singing at the National Association of Teachers of Singing competition at the University of North Carolina School of Arts. At this competition, I will receive feedback from musicians. I have scored high enough to be passed onto this regional competition that includes singers from North and South Carolina, Virginia, Maryland and Washington D.C.

Someone Gets Hurt
Sasha Yost*
Mentor: Jaclyn Surso, Music
I will be performing "Someone Gets Hurt" from the 2017 musical Mean Girls. This song was one of the 3 songs I sang at the National Association of Teachers of Singing competition in the fall of 2024 at Meredith College. I have received wonderful help and guidance on learning this piece from my voice teacher along with musicians at the competition.

HPU A Cappella Groups' Disney Performance
Petal Points, Toccatatones, and Offbeats
Mentor: Marc Ashley Foster, Music
This past January, the HPU A Cappella Groups (The Offbeats, Toccatatones, and Petal Points) had the opportunity to perform at Walt Disney World's Disney Springs through Disney's Imagination Campus. The groups travelled to Orlando, Florida, met, networked, and interviewed multiple Imagination Campus and Walt Disney World performers.

Petal Points*
Makenzie Warden
Elana (Lani) Robinson
Gabrielle (Gabby) Gill
Emma (Renee) Monge
Faith Bradley
Gwendolynn (Gwen) Lutz
Salem Parker
Ahjanáe (AJ) Logan
Éyitáyò Ahaghotu
Jenny Aguirre
Brelyn (Bre) Delmore
Mikhayah (MJ) Johnson
Isabella (Bella) Smith
Elizabeth (Ellie) Bogaczyk

Toccatatones*
Xavier Little
Enrique Laing
Kyler Koning
Gavin Conniff
Chase Hofmann
John Marsh
Jack Quintana
Justin Surratt
Michael Peebles
Edward (Ward) Mann
Julian Sardo
John (Johnny) Pohlman
Jalan Royal

Offbeats*
Emma Longboat
Sydney Wargo
Justus Ullman
John Morreale
Ryan McCauley
Madeline (Maddie) Rubino
Zachary (Zach) Adams
Akella Nardecchia
Mia Thomas
Vladimir (Vovi) Lagutin
Kara Kemple
Meghan Kealey
Samantha (Sam) D'Aguanno
Brylee Hall
Daniel Hoecker
Sydney (Syd) Ryan

Media Production/Musical Performance

Blue Horizon
Aaron Jackson* and Andrew Porter*
Mentor: Louis Raymond-Kolker, Music; Joe Michaels, Media Production
For Aaron's Senior Capstone in Media Production, he produced videos for multiple new musical pieces composed for percussion. This video includes Andrew Porter performing "Blue Horizon", a new marimba solo by Austin Keck.

Student Index

NOTES:

Mentor Index

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Nido and Mariana Qubein Conference Center Map