

- Welcome from the -

DIRECTOR OF UNDERGRADUATE RESEARCH AND CREATIVE WORKS

Welcome to the 11th 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 154 projects from 254 students mentored by 77 faculty from 30 different fields across most of High Point University's schools. Our students' achievements reflect HPU's holistic learning approach and the dedication of its caring faculty. Thank you for being part of the 2023 High Point University Research and Creativity Symposium.

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



THE 11TH HIGH POINT UNIVERSITY
RESEARCH AND CREATIVITY SYMPOSIUM
(High-PURCS)
APRIL 19, 2023
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	Oral Session I 2202 A-F
2:00 pm – 3:00 pm	Oral Session II 2202 A-F
3:00 pm – 3:30 pm	Oral Session III 2202 A-F
3:15 pm -4:15 pm	Dance and Vocal Performances Premier Ballroom - 2202 G
4:00 pm – 5:30 pm	Poster Session, Exhibit & Reception 2 nd floor Concourse (hallway)

Congratulations to our 2022-2023 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 which will give them an edge later in job interviews or applications for graduate or professional schools. This spring we are excited to congratulate ten students who have recently completed the program and have earned the title of Research Apprentice.

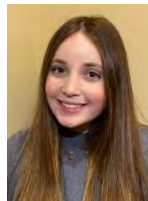
New Spring 2023 Apprentices:



Alyvia Brainard



Darius Cummings



Shira Gold



Emma Higgins



*Imogen Irons



*Madison Pezik



*Jonathan Raz



Jade Stewart



Paige Vercio



Adrian Zeni

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

Research Apprentices recognized in a fall 2022 ceremony:

Sophia Csulak
Cody Daggett
Mary-Kate Easter
Caroline Field
Miranda Gough
John Guglielmetti

Lena Hetrick
Troy Kubanka
Cierra Mahoney
Isabella Maldonado
McIver Mann
Tyler Matthews

Tatum Mehring
Ethan Muckerheide
Gabby Ochoa
Erik Peterson
Julia Thackston



SCHOLARLY INTERDISCIPLINARY RESEARCH GRANT

The Scholarly Interdisciplinary Research Grant (SIRG) is a competitive grant awarded to one student each year for work that crosses disciplines and involves mentorship from two mentors in different fields.

Congratulations to the 2023 SIRG winners!



1st Place – Jalen Bynum

Theatre of the Mind: Simulating Psychiatric Patient Encounters with Student Actors which is an interdisciplinary effort between Theater and the School of Pharmacy

Mentors: Doug Brown, Theater; Shaina Schwartz, Pharmacy



2nd Place – James Gallagher

Oral History with Vietnam Veterans

Mentors: Joey Fink, History; Kirsten Li-Barber, Psychology

Last Year's SIRG winner

Rachel Watne was awarded the 2022 SIRG Award and will be presenting at this year's High-PURCS.

Oral Presentation Schedule

12:30 p.m. – 1:00 p.m. Opening remarks and Awards

	Room A	Room B	Room C	Room D	Room E	Room F
Session I	Biology & Biochemistry	Religion & Philosophy	English	Spanish I	Psychology I	Honors I
1:00-1:15	Katie Craun	James Faircloth	McKinley Johnson	Nicole Baker	Hannah Taming, Ethan Muckerheide, Catherine Gallagher	Karissa Fryar, Eli Asebes, Gwen Miedema, Rachel Spera
1:15-1:30	Michael Lee	James Last	Max Kresock	Thornton Christine	Samantha Riveros, Ava Demonte, Jenna Ginther	Isabella Boergert, Finn Mulder, Marlee Sauer, Christian Sawina
1:30-1:45	Kayleigh Thurston	Savannah Graver	Alyssa Pittari	Olivia Gardner	Meredith Strause, Carly Samelson	Lauren Buddie, Blake Horne, Alec Manzer, Ryan Thompson
1:45-2:00	Brianna Vierung		Jowan Williams	Aidan Lancaster		Courtney Collar, Julianne Kendrick, Kirsten Estes, Allison Berg

	Room A	Room B	Room C	Room D	Room E	Room F
Session II	Chemistry	Communication & Event Management	History	Spanish II	Psychology II	Honors II
2:00-2:15	Jalen Dixon	Noah Stillman	Kenan Althoff	Sara Pizzarello	Lexie Cobb	Gabriel Costa, Ryan Weitzner, Nathan Conrad, Alexandra Bennett
2:15-2:30	Emily Gillis	Madelynn Stokes	Jayne Eaves	Hannah Taming	Alyssa Dowdy	Sadie Flagg, Max Kresock, Elijah Sprung, Corinne Gumpman
2:30-2:45	Sophia Gregory		Bonnie Showfety	MacKenzie Wiles	Kelly Polk, Ethan Muckerheide	Hanna Zelis, Jason Hinkle, Paris Stankewich, Sarah Clancy
2:45-3:00			Maeve O'Dea			Ava Taylor, Logan Cabay, Ethan Cox, Rory King

	Room A	Room B	Room C	Room D	Room E	Room F
Session III	Computer Science	Fashion Merchandising & Studio Arts	Political Science	French	Sociology	Honors III
3:00-3:15	Lorenzo Botter	Sydney Brett	Tessa Webb	Megan Kratzer	Catherine McKinney	Jenna Ginther, Kathleen McBride, Austin Edwards, Sean Bowen
3:15-3:30		Lindsey Conway				Parker Blue, Taylor Ann Hartley, Anya Falk, Joseph Wells

Performances

3:15-3:45	Dance Performances: Running Through Empty – Caitlin Black and performers. See page 21. Societal Influences – Lauren Johnson and performers. See page 21. It Takes a Village – Connie Quagliata and performers. See page 21.
3:45-4:15	Acapella Groups: Petal Points, Offbeats See list of performers on page 22.

Poster Presentations

(Ordered alphabetically by first speaker)

Board	Presenter(s)	Topic
1	Halie Balogh	Biochemistry
2	Chloe Cox	Biochemistry
3	Gianna DiGiacomo, Robin Stempel	Biochemistry
4	Tristan Kaz	Biochemistry
5	Owee Kirpekar	Biochemistry
6	Abby Nimmo	Biochemistry
7	Makenzie Wiseman	Biochemistry
8	Alyson Acquard	Biology
9	Laird Bickford	Biology
10	Joshua Ekanem, Zane Sobejana, Morgen Story	Biology
11	Anna Ferraro, Maggie Salley, Hayes Bowman	Biology
12	Taylor Galavotti	Biology
13	John Guglielmetti, Owen Hunter	Biology
14	Billy Hayden, Owen Kelley	Biology
15	Raegan Koon	Biology
16	Micah Lamour, Daniel Sapozhnikov	Biology
17	Gracie Lefever	Biology
18	Madison Manz	Biology
19	Tyler Matthews, Zach Workman	Biology
20	Kiernan McDonald, Jenna Exley	Biology
21	Allison Reed, Bryana Daly	Biology
22	Sarah Smith, Samantha Ethier	Biology
23	Elyse Zeffiro	Biology
24	Marthina Aguirre, James Faircloth, Alex Foxx, Bailey McCormick	Chemistry
25	Zoe Brown	Chemistry
26	Kiara Busby	Chemistry
27	Jessica Emrich, Andrew Lawrence, Garrett Laws, Jake Morgan	Chemistry

28	Sadie Flagg, Erik Peterson	Chemistry
29	Sophia Gregory, Marlo Hemerson, Cameron Siler-Nixon	Chemistry
30	Alexa Herndon	Chemistry
31	Madison Hill	Chemistry
32	Alex Kaelin, Rey Robinson, Carolyn Sveden	Chemistry
33	Courtney Linden	Chemistry
34	Angelina Pierre	Chemistry
35	Bailey Sobolewski	Chemistry
36	Rachel Spera	Chemistry
37	Brandy-Fey Stratton	Chemistry
38	Rachel Watne	Chemistry
39	Lexie Young	Chemistry
40	Maya Davis	Criminal Justice
41	Carolina Kapper	Data Analytics
42	Samantha Cramer	Education
43	Jordan Morrison	Education
44	Lindsay Bonsall	Exercise Science
45	Nathan Conrad	Exercise Science
46	Karissa Fryar	Exercise Science
47	Hunter Hills	Exercise Science
48	Madison Kee	Exercise Science
49	Dylan Masalleras	Exercise Science
50	Gabby Ochoa	Exercise Science
51	Erin O'Donnell	Exercise Science
52	Caroline Rivera	Exercise Science
53	Kaley Ross	Exercise Science
54	Emma Schossler	Exercise Science
55	Isaac Shaw	Exercise Science
56	Alyssa Staggs	Exercise Science
57	Colby Treschl	Exercise Science
58	Kiah Williams	Exercise Science
59	Olivia Cirocco	Fashion Merchandising
60	Alexis Way	History
61	Jacob Bauer, Michael Mathewson, Mitchell Singletary, Nina Volpe	Honors
62	Lauren Bechtold, Hannah Engels, Josslyn Payne, Ralph Sicut	Honors
63	Olivia Connelly, Collin Senecal, Sophia Sharpe, MacKenzie Wander	Honors
64	Kate Dewan, Victoria Federico, Dylan Hudson, Melanie Kneubuehl, Joshua Thompson	Honors
65	Cora Hicks, Elijah Trutt	Honors
66	Halle Nichols, Hannah Parson, Hannah Tameling, McHale Trotter	Honors

67	Kelly Polk, Victoria Sanderson, Rachel Day	Honors
68	Chris Tashner, Tess Nguyen, Moira Houston, Blake Robinson	Honors
69	Keelin Gallagher	Interior Design
70	Kaylin LaFleche	Interior Design
71	Emily Voight	Interior Design
72	Emily Davis	Neuroscience
73	Bashnona Attiah, Garrett Alewine, Mary-Kate Easter	Pharmacy
74	Alyssa Deeds	Pharmacy
75	Miranda Gough	Pharmacy
76	Emerson Heckler	Pharmacy
77	Abby Rome	Pharmacy
78	Payton Thomas	Pharmacy
79	Priya Thornton, Kristina Dzamba	Pharmacy
80	Thomas Lotito	Physics
81	Jenna Mastropolo	Physics
82	Davis Ritenhour	Popular Culture Studies
83	Lauren Ayers, Hannah Shore, Noah Akers	Psychology
84	Olivia Charman	Psychology
85	April Gessouroun	Psychology
86	Jenna Ginther	Psychology
87	Jyllian Herman	Psychology
88	Brittney Ruud	Psychology
89	Isabel Sanel	Psychology
90	Lexi Silverio	Psychology
91	Kylie Skie	Psychology
92	Isabel Viana Teixeira	Psychology
93	Catherine Waldeck	Psychology
94	Margaret Weinbaum	Psychology
95	Darius Cummings	Religion & Philosophy
96	Daya Meshri	Sociology

Technical Exhibits

Space	Presenter(s)	Topic
97	Matthew Constantino, Eric Brockmann	Engineering

Oral Presentations

Oral Session I • 1:00pm – 2:00pm

Biology & Biochemistry

Room A

1:00-1:15

Reconstruction of the Bony Labyrinth of *Dipsalidictis krausei*: Anatomy and Functional Morphology

Katie Craun*, High Point University

Mentor: Heather Ahrens, Biology

The Paleocene oxyaenid, *Dipsalidictis krausei*, is known from a well-preserved specimen that allows morphological description and functional comparisons. Using computed-tomographic (CT) data, we reconstructed the first digital endocast of the bony labyrinth of *D. krausei*. Results indicated *D. krausei*'s hearing range and agility were similar to other Paleocene mammals.

1:15-1:30

Factors that Affect Non-Prescription Opioid Use (NPOU) in College Students

Michael Lee*, High Point University

Mentor: Dinene Crater, Biology

The purpose of this study was to identify factors that contribute to NPOU in college students. We investigated the correlation between NPOU, social groups, and the behaviors that develop over time. We will determine the greatest risk factors for opioid misuse to develop educational and prevention programming for college campuses.

1:30-1:45

Phylogenetic Contrasts of Pigment Color in North American Oaks

Kayleigh Thurston*, High Point University

Mentor: Christian George, Biology

To investigate why some oaks turn red versus yellow in fall, we tested whether this is due to shared ancestry. I tested the data using R, by creating contrasts and analyzing the differences between randomness and phylogeny. This step is important to determine why some oaks favor red or yellow.

1:45-2:00

Transcriptomic Analysis of Loratadine as an Antibiotic Adjuvant Against MRSA

Brianna Viering*, Halie Balogh, Meghan Blackledge, and Heather Miller, High Point University

Mentor: Heather Miller, Chemistry

Dangerous pathogen methicillin-resistant *Staphylococcus aureus* (MRSA) quickly develops antibiotic resistance. We are exploring the use of FDA-approved loratadine as an antibiotic adjuvant. RNA-seq has revealed transcriptome-wide effects resulting from cotreatment with oxacillin and loratadine. Hundreds of differentially expressed genes were found with significant enrichment in the ribosomal pathway.

1:00-1:15

Citizens of Heaven: Comparing Revelation and City of God**James Faircloth***, High Point University

Mentor: Christopher Franks, Religion and Philosophy

An ever-present question in Christianity is the nature of the Christian community's relationship to worldly power structures. The Book of Revelation and Saint Augustine's *City of God* both provide views on this subject that are deeply reflective of the respective time periods in which they were written.

1:15-1:30

Jesus on the Screen: Why Christians Should be Skeptical of Cinematic Depictions of Christ**James Last***, High Point University

Mentor: Robert Moses, Religion

What are Christians to make of movies and television shows that employ sinful humans to depict the sinless Son of God? Drawing on scripture and Christian historians, this paper will argue that a Biblical understanding of Christianity is at odds with depicting Jesus as an actor on the screen.

1:30-1:45

Sustainable Development: Confucianism is the Solution to the Modern Environmental Crises**Savannah Graver***, High Point University

Mentor: Daliang Wang, Foreign Language

In a world where natural resources are burdened by a growing population and technological innovation, finding a method to sustainably develop is paramount. Examining the mutual coexistence of humans and nature in ancient Confucian philosophy, this research promotes Confucianism as a lens for modern sustainable development.

1:00-1:15

Is the Lord a Stronghold for the Oppressed? Atwood's Arguments on Religion as a Power Grab**McKinley Johnson***, High Point University

Mentor: Matthew Carlson, English

Margaret Atwood's unflinching engagement with sensitive issues has made her one of the most controversial authors in recent years. While many of her critics argue that her novels are antireligious, deeper analysis of Atwood's works conducted with an understanding of her views on power imbalances reveals a more complicated story.

1:15-1:30

Never Let "Me" Go: Ishiguro, Tragedy, and Schopenhauer**Max Kresock***, High Point University

Mentor: Matthew Carlson, English

While many scholars have identified tragic elements in Kazuo Ishiguro's *Never Let Me Go*, few have considered it in an existential context or compared the novel with Arthur Schopenhauer's conception of tragedy. Doing so reveals the emotional core of Ishiguro's novel: a sympathetic discomfort with the proposed meaninglessness of existence.

1:30-1:45

Literary Landscapes in Kazuo Ishiguro's The Remains of the Day and Never Let Me Go

Alyssa Pittari*, High Point University

Mentor: Matthew Carlson, English

This presentation analyzes the literary trope of the car journey in Kazuo Ishiguro's novels *The Remains of the Day* and *Never Let Me Go* and shows how the freedom of the road develops the main characters' arcs and leads them to revelatory self-knowledge.

1:45-2:00

An Analysis of Freud's Psychoanalytical Theory in Ishiguro's 'The Remains of the Day'

Jowan Williams*, High Point University

Mentor: Matthew Carlson, English

Kazuo Ishiguro's *The Remains of the Day* (1989) focuses on a butler, Mr. Stevens, and his obsession with dignity. Using Freud's psychoanalytical theory, Stevens' dignity can be viewed as an overbearing superego that completely controls his life, which effectively suppresses his id and causes him to have an underdeveloped ego.

Spanish I

Room D

1:00-1:15

Guerras De Identidades: La Transnacionalización De Las Pandillas Latinas En América Central y Los Estados Unidos

Nicole Baker*, High Point University

Mentor: Hayden Carrón, Spanish

Este trabajo de investigación examina la transnacionalización de las pandillas hispanas en Centroamérica y Estados utilizando la película "Sin Nombre", con el objetivo explorar los diversos factores que contribuyen a la formación y desarrollo de estas pandillas, incluidos los problemas de raza, estatus social e identidad cultural.

1:15-1:30

Los primeros patriotas: Una inspección del mito del guerrillero heroico en la guerra de independencia

Thornton Christine*, High Point University

Mentor: Hayden Carrón, Spanish

En 1808, Napoleone Buonaparte invadió España para derrocar Fernando VII. La historia popular de la guerra de independencia cuenta sobre héroes valientes que lucharon contra los franceses. Exploraré el mito del guerrillero heroico en la pintura de Francisco Goya *El tres de mayo 1808 en Madrid*.

1:30-1:45

Una Raza Juzgada: La Discriminación De Los Latinos En El Sistema De Justicia De Los Estados Unidos

Olivia Gardner*, High Point University

Mentor: Hayden Carrón, Spanish

Este artículo diseccionará el prejuicio racial que está presente en las identificaciones de testigos, selecciones de jurados, subsiguientes deliberaciones de jurados y barreras lingüísticas entre el sistema judicial y la población latina, en el documental del 2021, *Fantasma*, lanzado por Netflix.

1:45-2:00

Los Sabores de Opresión: Cómo "Fresa y Chocolate" Refleja y Comenzó un Movimiento de Identidad Sexual en Latinoamérica.

Aidan Lancaster*, High Point University

Mentor: Hayden Carrón, Spanish

Este trabajo busca analizar cómo la película "Fresa y Chocolate" refleja la opresión histórica de las minorías sexuales en Cuba y también en otras partes de América Latina. También se analizará cómo esta película normalizó la discusión política sobre la crisis de identidad.

Psychology I

Room E

1:00-1:15

Embracing Difficulty While Studying: Exploring Writing as a Memory Strategy in Children

Hannah Taming*, **Ethan Muckerheide***, and **Catherine Gallagher***, High Point University

Mentor: Stacy Lipowski, Psychology

The production effect is the idea that producing a to-be-remembered item will lead to better memory than items that are passively studied. First graders studied familiar pictures by looking at them silently, saying them aloud, or writing them. Results revealed that writing led to the highest level of recall.

1:15-1:30

Exploring Benefits of Written Production in Older Adults

Samantha Riveros*, **Ava Demonte***, and **Jenna Ginther***, High Point University

Mentors: Kimberly Wear Jones and Stacy Lipowski, Psychology

Words read aloud are remembered better than words read silently. Lin and MacLeod (2012) showed this say-look production effect in older adults however, research has not examined whether older adults benefit from other forms of production. Thus, the current study examined the effectiveness of writing for older adults.

1:30-1:45

Measuring the Influence of Delay on Production Effects in First and Second Graders

Meredith Strause*, **Carly Samelson***, and **Genna Manger**, High Point University

Mentor: Stacy Lipowski, Psychology

Research shows that memory is better after written or verbal production than passive study. Also, memory effects can change if there is a delay between learning and testing. This study explored the impact of a one-week delay on written and spoken production in first and second grade children.

Honors I

Room F

1:00-1:15

Relationships Within the Spider-Man Universes

Eli Asebes*, **Karissa Fryar***, **Gwen Miedema***, and **Rachel Spera***, High Point University

Mentor: Virginia Leclercq, English

Tracing the relationships between different iterations of Spider-Man and supporting characters over three generations of film spanning twenty years, we explore how these relationships develop and evolve. We will analyze how the cinematic themes and formal elements of film portray changes in these relationships and reflect each film's socio-historical context.

1:15-1:30

The Portrayal of Social Class in The Hunger Games Novels and Films

Isabella Boergert*, Finn Mulder*, Marlee Sauer*, and Christian Sawina*, High Point University

Mentor: Virginia Leclercq, English

While most scholars focus on the novels or the films, we undertook a comparative analysis of social class in both *The Hunger Games* novels and films. Using close reading and formal analysis, we will explore different representations of tropes and themes of social class in the novels and films.

1:30-1:45

Memory Manipulation in Science Fiction Films

Lauren Buddie*, Blake Horne*, Alec Manzer*, and Ryan Thompson*, High Point University

Mentor: Adam Winkel, World Languages, Literatures, and Cultures

This project focuses on the use of memory implantation and suppression in *Total Recall*, *Blade Runner*, and *Inception* to find out how memory affects one's sense of self and reality in order to help our audience understand the consequences of memory manipulation.

1:45-2:00

The Iconic Woman Over Time: The Relationship Between Marilyn Monroe and American Culture

Allison Berg*, Julianne Kendrick*, Courtney Collar*, and Kirsten Estes*, High Point University

Mentor: Virginia Leclercq, English

Marilyn Monroe has been one of the most iconic women in American society since her premiere. Through an analysis of two films that she starred in and two biopics, we will explore the continually shifting relationship between the constructed image of Monroe and American society's perception of her over time.

Oral Presentations

Oral Session II • 2:00pm – 3:00pm

Chemistry

Room A

2:00-2:15

Optimization of Fluorescence Correlation Spectroscopy: Characterization of Novel Fluorophores

Jalen Dixon*, Angelina Pierre, Keir Fogarty, and Pamela Lundin, High Point University

Mentor: Keir Fogarty, Chemistry

The novel Rhodamine B Dimer (RB₂) we've developed exhibits a unique property called photo-switching. This property grants RB₂ a wide array of applications in optoelectronics, super-resolution microscopy, and environmental sensors. Using Fluorescence Correlation Spectroscopy (FCS), we can characterize this property in preparation for future applications.

2:15-2:30

Modeling Organic Solar Cells Through the Synthesis of an Electron Donor-Acceptor Dyad

Emily Gillis*, High Point University

Mentor: Pamela Lundin, Chemistry

Photovoltaic cells are used to harness solar energy, turning sunlight into electricity. We have investigated a method of synthesizing a model for organic solar cells by concentrating on donor-acceptor dyads. We will discuss our synthetic, purification and characterization procedures employed, including vacuum sublimation, column chromatography, and NMR spectroscopy.

*Denotes student(s) presenting the work

2:30-2:45

Synthesis and Structural Expansion of a Novel Antibiotic Adjuvant Scaffold to Improve Aqueous Solubility and Biological Activity

Sophia Gregory*, High Point University

Mentor: Meghan Blackledge, Chemistry

Current antibiotics are no longer useful treatments against resistant bacteria. Our lab is developing antibiotic adjuvants, specifically a novel carbazole-based scaffold that potentiates the activity of β -lactams in MRSA. Synthesis of the scaffold and *N*-alkylation of our lead compound was explored. Synthetic methodologies and biological data will be presented.

Communication & Event Management

Room B

2:00-2:15

Fear, Framing, and Fins: Impact of Shark Media Portrayals and Shark Week Viewership on US Adults' Conservation Support

Noah Stillman*, High Point University

Mentor: Sarah Vaala, Strategic Communication

From news of shark attacks to cartoon villains, media depict sharks as scary antagonists. Yet, sharks are keystone species, and many are endangered. This research examines the effectiveness of different message strategies for motivating Americans' concern for and action regarding shark conservation. Findings indicate promoting hope in messaging is critical.

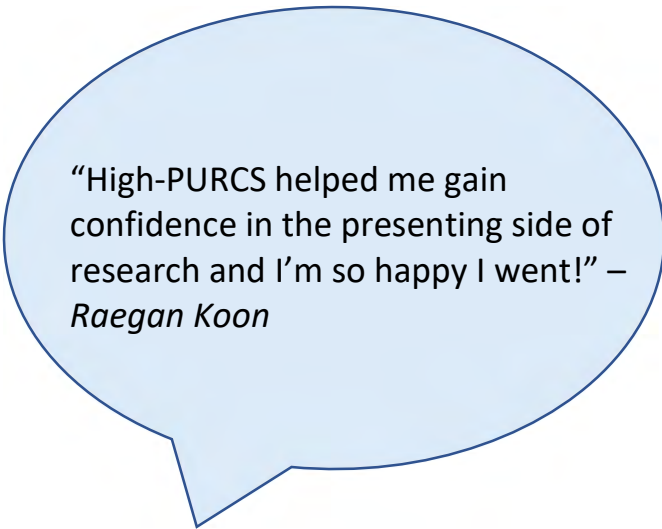
2:15-2:30

Vendor Intention to Book Same-Sex Weddings

Madelynn Stokes*, High Point University

Mentors: Brianna Clark, Event Management; Marisa Ritter, Hospitality Management; Jessica Wiitala, Event Management

Same-sex couples face persistent problems while wedding planning due to potential implicit and explicit biases harbored by wedding vendors. This study uses the theory of planned behavior to predict the behavioral intent of wedding vendors to book same-sex couples. Data collection is currently underway and will be presented upon completion.



“High-PURCS helped me gain confidence in the presenting side of research and I’m so happy I went!” –
Raegan Koon

2:00-2:15

Smoldering Ashes: Strategic Bombing, Hamburg, and the Reassessment of Measuring German Morale, 1939-1945

Kenan Althoff*, High Point University

Mentor: Andrew Tzavaras, History

This paper analyzes the impacts of the Anglo-American strategic bombing campaign on the city of Hamburg, Germany during the Second World War, and its impact on the morale of its civilian population. The analysis emphasizes the necessity for a reassessment of how historians understand the campaign and its impacts.

2:15-2:30

After Jackie Robinson: Economics and the Slow Progress of Integration in Major League Baseball, 1947-1959

Jayne Eaves* and Michael Kennedy, High Point University

Mentor: Michael Kennedy, History

The consensus that integration in Major League baseball occurred when Jackie Robinson appeared for the Brooklyn Dodgers in 1947 is incorrect. It took twelve years for integration to be complete and this study argues that the moral argument for integration was only one of many factors leading to those decisions.

2:30-2:45

Getting on the Right Track: The American Steam Railroads Regarding Strikes and Advancements in Workers' Rights

Bonnie Showfety*, High Point University

Mentor: Andrew Tzavaras, History

American Railroad workers in the late 19th century participated in railroad strikes due to economic panics, rapid modernization, and railroad accidents during the transition from the Gilded Age to the Progressive Era. These issues contributed to the development of unions, safety commissions, and anti-monopoly retaliation.

2:45-3:00

An Enduring Balance of Power in 19th Century Europe

Maeve O'Dea*, High Point University

Mentor: Andrew Tzavaras, History

Academic discussions of the balance of power typically surround its genesis in 1815 until a perceived collapse after the Crimean War in 1856. By investigating the historiography surrounding this complex and disputed system, this paper analyzes its longevity in Europe and explores its prevalence beyond the Crimean War.

2:00-2:15

Identidad Desarrollada por la Propaganda; Un Análisis de la Identidad Republicana a Través de la Propaganda de la Guerra Civil Española Durante los Años 1936-1939.

Sara Pizzarello*, High Point University

Mentor: Hayden Carrón, Spanish

Este ensayo analiza la polarización, caracterización e ideologías de la izquierda usadas en las piezas de propaganda #1, #4, #38 y #49 de la Colección de la Guerra Civil Española de Southworth en la Universidad de California en San Diego. Discute cómo se formó la identidad republicana en la época.

2:15-2:30

Transformando el árbol familiar: Una representación del blanqueamiento a través de las generaciones en A Redención de Cam

Hannah Taming*, High Point University

Mentor: Hayden Carrón, Spanish

En este ensayo, voy a analizar las relaciones raciales en Brasil a través de la pintura *A Redención de Cam* la autoría de Modesto Brocos. Esta pintura de 1895 muestra una familia y el cambio en color de piel a causa del blanqueamiento de la abuela hasta el nieto.

2:30-2:45

El estigma de los inmigrantes centroamericanos: la desconexión entre la humanidad y la política

MacKenzie Wiles*, High Point University

Mentor: Hayden Carrón, Spanish

En este análisis se discute la criminalización y deshumanización de los inmigrantes hispanos en el documental “¿Quién es Dayani Cristal?”, contrastando la desconexión entre los procesos e ideales de los inmigrantes hispanos a Los Estados Unidos y los propios inmigrantes.

Psychology II

Room E

2:00-2:15

Exploring the Impact of Therapist History of NSSI on Therapy Outcome Expectations: An Experimental Study

Lexie Cobb*, High Point University

Mentor: Laura Nagy, Psychology

Nonsuicidal self-injury (NSSI) is a highly stigmatized, but prevalent behavior. This research sought to determine if therapists with a history of NSSI would be rated lower than those without and whether ratings would be affected by participants’ personal history with NSSI. Implications for practice and stigma reduction will be discussed.

2:15-2:30

Evaluation of the Association Between Relationship Rekindling and Attitudes Toward Intimate Partner Violence

Alyssa Dowdy*, High Point University

Mentor: Sadie Leder Elder, Psychology

Previous research reveals a positive correlation between rekindling and intimate partner violence (IPV). This study examined whether rekindling also impacts participants’ attitudes about IPV. Results indicated that the more individuals had rekindled in their relationship past, the more accepting they were of “bad” relationship behaviors (i.e., abuse, violence, and control).

2:30-2:45

Self-criticism in Anger, Aggression and Violence: A Review

Kelly Polk* and Ethan Muckerheide*, High Point University

Mentor: Laura Nagy, Psychology

Self-criticism is a maladaptive thinking strategy that has consistently been associated with anger, aggression, and violence. This review discusses the relationships between these constructs as well as clinical implications, potential treatments for behaviors related to these constructs, and directions for future research.

2:00-2:15

Avatar (2009): The Ethical Limits of Environment and Policy

Alexandra Bennett*, Gabriel Costa*, Nathan Conrad*, and Ryan Weitzner*, High Point University

Mentor: Adam Winkel, World Languages, Literatures, and Cultures

This project focuses on socio-natural relationships in *Avatar* (dir. James Cameron, 2009) to find out how the film portrays the drives and motivations of different groups in order to help our audience understand the ethical limits to anthropocentrism.

2:15-2:30

Happily Ever After? Attachment Styles and Destiny Beliefs in Disney Princesses

Sadie Flagg*, Max Kresock*, Corinne Gumpman*, and Elijah Sprung*, High Point University

Mentor: Stacy Lipowski, Psychology

As the Disney Princesses hold significant cultural influence and have received much criticism, we analyze the attachment styles and relationship beliefs of eight Disney Princesses. In doing so we determine the health of the princesses' relationships and determine the likelihood of them persisting in the future.

2:30-2:45

Gym Behavior and Personality Type: A Correlational Study

Sarah Clancy*, Jason Hinkle*, Paris Stankewich*, and Hanna Zelis*, High Point University

Mentor: Stacy Lipowski, Psychology

Exercising at a gym has multiple health benefits including increased muscle synthesis and reduced risk of osteoporosis and other chronic diseases. Because variation may exist between personality types and gym attendance this study investigates the relationship between gym behaviors (e.g., attendance, time spent, and workout mannerisms) and personality type.

2:45-3:00

Exploring the Relationship Between the Philosophical, Psychological, and Theological Perspectives of Awe
Logan Cabay*, Ethan Cox*, Rory King*, and Ava Taylor*, High Point University

Mentor: Nathan Hedman, English

Awe is a universal human experience that involves the combination of perceived vastness and mental accommodation. Our research explores awe through a philosophical, psychological, and theological lens. Our principal investigation is where these lenses meet to form a compatible understanding of awe, and where they diverge.

Oral Presentations

Oral Session III • 3:00pm – 4:00pm

Computer Science

Room A

3:00-3:15

Self-Supervised Malware Classification

Lorenzo Botter*, High Point University

Mentor: Yong Wei, Computer Science

This work proposes using self-supervised contrastive learning algorithms for malware classification. By extracting features from recurrence plot of malware binaries and processing them through a deep convolutional neural network, it is possible to accurately classify malwares even without the need for a fully labeled dataset.

Fashion Merchandising & Studio Arts

Room B

3:00-3:15

The Depth of Fashion

Sydney Brett*, High Point University

Mentor: Victoria Brown, Fashion Merchandising

The fashion industry is a trillion-dollar industry yet is often considered superficial and is snubbed by many. However, fashion helps stimulate the economy, builds confidence, and is part of everyone's life. This study was conducted to identify and understand the origins of negative stereotypes associated with the fashion industry.

3:15-3:30

Narrative Perception in Cy Twombly's 50 Days at Iliam (1978)

Lindsey Conway*, High Point University

Mentor: Emily Gerhold, Art & Design

Cy Twombly's series, 50 Days at Iliam (1978), was created at the intersection of classical antiquity and modern art. This paper will examine the Iliam series through interdisciplinary means, incorporating psychology and biology along with art history to interpret this series of paintings in a novel way.

Political Science

Room C

3:00-3:15

Is America on the Wrong Track? An Analysis of a Decade of Responses from HPUPoll

Tessa Webb*, High Point University

Mentor: Martin Kifer, Political Science

With few exceptions, since 1972 most Americans have believed that the country is on the wrong track. What contributes to this negative sentiment? This presentation analyses a decade of data from HPUPoll, highlighting the impact of partisanship and demonstrating correlations between responses and demographic factors including gender and race.

3:00-3:15

Understanding Secularism: The French Perspective on Abortion**Megan Kratzer***, High Point University

Mentor: Morgane Haesen, French

Scholars have argued that French secularism – the separation of Church and State – rendered the 1975 abortion legalization in France relatively uncontested, despite it being a debated religious question in other countries. Through quantitative and qualitative analyses of historical documents, we further examine French secularism through its perspective on abortion.

3:00-3:15

The Universality of Love: Analyzing Love from a Cross-Cultural and Linguistic Perspective**Catherine McKinney***, High Point University

Mentor: Silvana Rosenfeld, Sociology and Anthropology

This research examines love from a cross-cultural linguistic perspective by analyzing romantic and non-romantic love, human and non-human love, and differences in love expression. By providing examples of the multiple forms of love, it claims that although love can be expressed in vastly different ways across cultures, it is universal.

3:00-3:15

The Effects of Economic Changes on Restaurant Culture**Sean Bowen***, **Austin Edwards***, **Jenna Ginther***, and **Kathleen McBride***, High Point University

Mentor: Sarah Nielsen, Psychology

Over the past 100 years, restaurants have adapted to economic changes by adjusting the ways that they serve people. Through the analysis of academic texts and interviews with local restaurant-owners, we seek to examine the relationship between the transformation in restaurants and their cultural values according to changing economic values.

3:15-3:30

A Star is Born, A Star Dies: Representations of Fame in A Star is Born**Parker Blue***, **Anya Falk***, **Taylor Ann Hartley***, and **Joey Wells***, High Point University

Mentor: Adam Winkel, World Languages, Literatures, and Cultures

This project analyzes the transitions between the public and private personas of the main characters in the *A Star is Born* movies (1937, 1954, 1976, 2018). We are studying how the rise and fall of fame affects their behavior and personality to help our audience understand the price of fame.

Performances

Premiere Ballroom 2202 G
3:15pm – 4:15pm

Dance

3:15-3:45

Running Through Empty

Caitlin Black, High Point University

Performers: Nicole Amorocho, Melanie Fitts, Karissa Fryar, Lauren Johnson, Sophie Lebron, Jordyn Perez, and Devlin Turner, High Point University

Mentor: Christine Stevens, Theater and Dance

Running Through Empty is a dance work exploring themes of running, being busy, but not going anywhere. The continuous repetitive cycle where one feels trapped. The feeling of working hard, always doing, but never achieving anything important or reaching the end task; just stuck in the same perpetual hamster wheel.

Societal Influences

Lauren Johnson, High Point University

Performers: Nicole Amorocho, Mary Gomez, Sophie Lebron, and Cierra Mahoney, High Point University

Mentors: Lindsey Howie and Christine Stevens, Theater and Dance

Societal Influences, inspired by George Orwell's *1984*, is a piece that reflects the reality we live in today. The concept demonstrates individuals' willingness to blindly follow influencers who hold power. Through sharp contrasting movements, the four dancers find themselves either in or under the control of their fellow dancers.

It Takes a Village

Connie Quagliata, High Point University

Performers: Melanie Fitts, Karissa Fryar, Cierra Mahoney, and Jordyn Perez, High Point University

Mentors: Lindsey Howie and Christine Stevens, Theater and Dance

Sometimes we struggle to accept help because we believe we are strong enough alone. *It Takes a Village* portrays the story of someone who believes they are strong but realizes they need support. This work shows that it's okay to lean on others because sometimes it takes a village.



Vocals

3:45-4:15

Acapella Performance at Disney World

Petal Points and Offbeats, High Point University

Mentor: Candice Burrows, Music

This collaborative performance between two of the university's acapella groups showcases the setlist they recently performed at Disney Springs. With two main combined songs, you will hear a variety of classics from Disney soundtracks. Additionally, the Petal Points will sing a popular tune from *Hercules* and the Offbeats will sing one from *Enchanted*.

Petal Points*

Joy Adjei
Reyna Alston
Abigail Cheslock
Chelsea DeLapp
McIver Mann
Macy Peele
Sydney Ryan
Adriana Salazar
Carolyn Sveden
Hannah Taming
Skylar U'Glay
Mackenzie Warden
Carly Zimmerman

Offbeats *

Trevor Ackerman
Zach Adams
Elizabeth Bado
Kenzi Davey
Eleanor (Brett) Hutchison
Emily Janik
Emma Longboat
Madeleine Rubino
Savannah Sparks
Morgen Story
Caroline Sykes
Justus Ullman
Brianna Viering
Sydney Wargo



Poster Presentations

4:00pm – 5:30pm

Biochemistry

(1) The Antihistamine, Loratadine, Modulates Hemolysin Gene Expression in MRSA

Halie Balogh*, Brianna Viering, Meghan Blackledge, and Heather Miller, High Point University

Mentor: Heather Miller, Chemistry

Methicillin-resistant *Staphylococcus aureus* (MRSA) has developed resistance to multiple antibiotics and is combated with novel antibiotic adjuvants. The adjuvant loratadine causes changes in antibiotic resistance and hemolysin gene expression, which has been verified with reverse transcription quantitative polymerase chain reactions (RT-qPCR). We will discuss these discoveries and new data.

(2) Optimizing a *C. elegans* Infection Model to Evaluate Antibiotic Adjuvants against MRSA

Chloe Cox*, High Point University

Mentors: Meghan Blackledge and Heather Miller, Chemistry

Antibiotic adjuvants are non-toxic molecules that enhance antibiotic efficacy. Our lab has identified two effective adjuvants to potentiate β -lactam antibiotics in MRSA. To determine efficacy *in vivo*, we developed a host infection model using *Caenorhabditis elegans* (*C. elegans*). Assay optimization parameters and biological results will be discussed.

(3) CRISPR-Cas9 as a Genetic Tool for Studying MRSA Antibiotic Resistance

Gianna DiGiacomo*, Robin Stempel*, and Victoria Federico, High Point University

Mentor: Heather Miller, Chemistry

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a major human pathogen with resistance to beta-lactam antibiotics. Our lab is using CRISPR/Cas9 technologies to create deletion mutants in the *stk1* gene. By creating these deletions in clinically relevant strains of MRSA, we can further analyze this master regulator's role in resistance.

(4) Using Self-Assembled Monolayers to Control the Pattern and Morphology of Conjugated Polymer Brushes of Poly(3-hexylthiophene)

Tristan Kaz*, Sadie Flagg, Olivia Armendarez, Grace Todd, Evan Silver, Brian Augustine, and Pamela Lundin, High Point University

Mentor: Pamela Lundin, Chemistry

From the surface of a substrate, we grew many conjugated polymers that share a π electron system. Our interest revolves around how reactive headgroups, at the start of each conjugated polymer, can facilitate the growth of poly(3-hexylthiophene). The quality of these polymers is determined through atomic force microscopy.

(5) Identification of Lead Compounds to Inhibit Methicillin Resistant Staphylococcus Aureus (MRSA) Biofilm Adherence and Growth

Owee Kirpekar*, High Point University

Mentor: Meghan Blackledge, Chemistry

The goal of this research is to identify lead compounds that may inhibit MRSA biofilm adherence and growth to prevent and treat biofilm infections. We focused on three clinically relevant MRSA strains and identified a few lead compounds that facilitated inhibition. Biological results will be presented.

*Denotes student(s) presenting the work

(6) *Novel Expression and Characterization of Lactate Monooxygenase from Thermus Thermophilus*
Abigail Nimmo*, Imogen Irons, Makenzie Wizeman, Kaelee Rowan, and Kelsey Kean, High Point University

Mentor: Kelsey Kean, Chemistry

Thermophilic proteins often possess desirable properties, such as increased stability under high heat, which is useful in industrial and medical applications. Here, we report the first expression, purification, and characterization of the flavoenzyme lactate monooxygenase from the thermophilic bacteria *Thermus thermophilus*.

(7) *Novel Expression and Characterization of Lactate Monooxygenase from Halopiger Salifodinae*
Makenzie Wiseman*, Abigail Nimmo, Kaelee Rowan, Imogen Irons, and Kelsey Kean, High Point University

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

(8) *Taxonomic Trends in Anatomical Distribution of Anthocyanins within Autumn Leaves*
Alyson Acquard*, High Point University

Mentor: Nicole Hughes, Biology

This research explores why only certain species within the temperate zone produce red pigments, known as anthocyanins, during autumn months. Red autumn leaves of nearly 300 species sampled at 13 field sites were collected. Anatomical location was determined and taxonomic trends in anthocyanin histology are presented here.

(9) *Inspecting and Preserving the Birds of the Department of Biology*
Laird Bickford*, High Point University

Mentor: Christian George, Biology

Natural history collections are vital to our understanding of biodiversity. I reviewed all of the avian specimens in the department of biology's teaching collection for species identifications and collection information. Maintaining these collections improves their usefulness in future teaching and research projects.

(10) *Anthocyanins Modulate Behavior and Development in Drosophila melanogaster*
Joshua Ekanem*, Zane Sobejana*, and Morgen Story*, High Point University

Mentor: Jackson Sparks, Biology

Insects interact with anthocyanin-rich plants in many ways. We use pure anthocyanins to test adult and larval chemosensory-dependent behaviors in flies. Multiple anthocyanins elicit robust appetitive responses. Anthocyanin-enriched diets increase the rate of development of multiple strains of flies. Our data suggests anthocyanins are important chemosensory cues affecting physiology in insects.

(11) Characterizing Biochemical Responses Associated with Leaf Pathogenic Stress: Spotlight on Red Spots

Anna Ferraro*, Maggie Salley*, and Hayes Bowman*, High Point University

Mentors: Nicole Hughes, Biology, and Andrew Wommack, Chemistry

Red leaf spots commonly accompany pathogen infections in plants; however, functions of red anthocyanins in infected tissues are unknown. We have characterized biochemical responses of Red-tip Photinia (*Photinia glabra*) and Indian Hawthorn (*Rhaphiolepis indica*), infected by the fungus, *Entomosporium mespili*, and are currently investigating antimicrobial properties of the anthocyanin, Cyanidin-3-O-Galactoside.

(12) Effect of a Plant-Derived Compound Erucin on ROS Levels in Mammalian cells

Taylor Galavotti*, Gracie Lefever, and Raegan Koon, High Point University

Mentor: Kevin Suh, Biology

Increased levels of Reactive Oxygen Species (ROS) as induced by aerobic metabolism are toxic to human cells. These highly reactive chemicals can break down integral cellular machinery, especially membranes and proteins. We tested whether erucin, a phytochemical derived from cruciferous vegetables, can decrease the ROS level in mammalian cells.

(13) Uncovering the Fire History of Pilot Mountain through burn scars on Pines

John Guglielmetti*, Owen Hunter*, and Dane Kuppinger, High Point University

Mentor: Dane Kuppinger, Biology

Fire impacts the biodiversity, structure, and function of many Southeastern ecosystems. Our research on the fire history of Pilot Mountain provides insights into the understudied fire history of the Piedmont and the effects of changing management practices over time. This information will help land managers improve fire-related management actions.

(14) Eye Lens as a Model for the Study of Post-Translational Protein Modifications.

Billy Hayden*, Owen Kelley*, High Point University

Mentors: Jeremy Whitson, Biology

The crystalline structure of the eye lens provides a unique model to study the posttranslational modifications associated with biological aging. As the lens grows it creates a spatiotemporal gradient of cells. In this study, cells are lysed in a buffer solution and protein content is analyzed for posttranslational modifications.

(15) Dietary Phytochemical Erucin Induces Apoptosis Through Suppression of mTOR Signaling Pathway in Cervical Cancer Cells

Raegan Koon*, Taylor Galavotti, and Gracie Lefever, High Point University

Mentor: Kevin Suh, Biology

The mammalian target of rapamycin (mTOR) signaling pathway promotes tumor progression and regulates autophagy. Therefore, studies suggest that targeting these pathways could be an effective strategy for the treatment of cancer. In the current study, we investigated whether erucin can inhibit mTOR signaling pathway in cervical cancer cells.

(16) Treatment with Benzimidazole Derivatives Suppresses Migration of Cervical and Breast Cancer Cells on Ibidi Plates

Micah Lamour*, Daniel Sapozhnikov*, and Kevin Suh, High Point University

Mentor: Kevin Suh, Biology

Cell migration plays a pivotal role in cancer as it is closely associated with invasion and metastasis. Previously, we have shown that benzimidazole derivatives can cause apoptosis in prostate and cervical cancer cells. In this study, we tested whether these drugs could inhibit migration of cancer cells at sublethal dose.

(17) Examining the Invasiveness of Cervical and Triple Negative Breast Cancer Cells Following Phytochemical Treatment

Gracie Lefever*, Raegan Koon, and Taylor Galavotti, High Point University

Mentor: Kevin Suh, Biology

Consumption of cruciferous vegetables is associated with reduced risk of cancer. Isothiocyanates such as erucin is believed to be responsible for such anticancer effect. We tested the effect of erucin on migration of cervical and triple negative breast cancer cells using specific cell culture plates called ibidi plates.

(18) The State of Domestic Violence in North Carolina

Madison Manz*, High Point University

Mentor: Christian George, Biology

Through ArcGIS, this study seeks to examine the relationship between age, domestic violence (DV) resources, and DV prevalence across North Carolina counties. Findings seek to identify potentially vulnerable populations as well as gaps in resources where DV efforts should be applied in the future.

(19) Utilization of the Zebrafish Embryo Model System to Study the Potential Developmental Effects of an Eco-Friendly Aquatic Herbicide

Tyler Matthews* and Zach Workman*, High Point University

Mentor: Vernon Coffield, Biology

The zebrafish embryo model is widely used in toxicology research to study potential effects of chemical exposure, since embryos are transparent, develop rapidly, and share physiological similarities with humans. Using a modified EPA Zebrafish Toxicology Protocol, we are evaluating the safety of MonarchChem's Eco-Friendly Aquatic Herbicide on aquatic vertebrate development.

(20) A Methodical Quantitation of Nicotinamide Adenine Dinucleotide (NAD), Nicotinamide Riboside (NR) and Nicotinamide Mononucleotide (NMN) in Extracts from Dietary Sources.

Kiernan McDonald* and Jenna Exley*, High Point University

Mentors: Megan Rudock, Biochemistry, and Jeremy Whitson, Biology

Nicotinamide adenine dinucleotide (NAD⁺) levels decline with age, indicating its importance in aging. Restoring NAD⁺ content to young levels, through increased consumption of dietary NAD⁺ precursors, may lead to improved aspects of aging. We have quantified total NAD⁺/NADH, NR and NMN in grocery produce using an enzymecoupled fluorometric cycling assay.

(21) Survival Effects of Cannabinoids in an Oxidative Neuronal Injury

Allison Reed* and Bryana Daly*, High Point University

Mentor: Michael Grider, Biology

Neuronal injuries affect millions of people; however, no FDA-approved neuroprotective drug exists. We tested the effectiveness of Delta 8 THC to prevent injury to neurons following Hydrogen Peroxide exposure. We found that Delta 8 did not significantly affect cell viability. Additional cannabinoid derivatives will be investigated using this injury model.

(22) Exploring the Relationship Between Nitrogen Limitation and Leaf Reddening during Fall in Quercus phellos

Sarah Smith*, Samantha Ethier*, and Corinne Gumpman, High Point University

Mentor: Nicole Hughes, Biology

The function of autumn leaf coloration is debated. Nitrogen deficiency increases light stress and makes trees low-quality hosts; anthocyanins may protect leaves from photo-oxidative damage and signal poor host quality. We measured anthocyanins, leaf N, and number of leaf parasites in *Quercus phellos* with varying degrees of autumn reddening.

(23) Endocast of Hyaenodon raineyi: Implications for Neuroanatomy in Hyaenodonta

Elyse Zeffiro*, High Point University

Mentor: Heather Ahrens, Biology

Cranial endocasts, three-dimensional representations of the endocranial cavity, are useful for describing the morphology and evolutionary patterns within the brain. We created a digital endocast of *Hyaenodon raineyi* using computed tomography (CT) for comparison with other species of *Hyaenodon*. Analysis of sulci and other structures provides evidence of neocortical development.

Chemistry

(24) Analysis of Sulfur in Gasoline Using X-Ray Fluorescence

Marthina Aguirre*, James Faircloth*, Alex Foxx*, and Bailey McCormick*, High Point University

Mentor: Keir Fogarty, Chemistry

Sulfur in gasoline has several negative effects; it increases air pollution and has carcinogenic effects. An analysis using X-ray fluorescence of various brands of gasoline from local stations will seek to determine if there is a statistically significant difference in the sulfur content between them.

(25) Total Chemical Synthesis of Novel Antibacterial Peptides from Capsicum Chinense

Zoe Brown*, High Point University

Mentor: Andrew Wommack, Chemistry

Two novel cysteine-rich peptides, CC-AMP1 and CC-AMP2, were identified in *Capsicum chinense*. To study the antimicrobial mechanisms, Fmoc-based solid-phase peptide synthesis was performed to produce reduced forms of CC-AMP1/2 after native chemical ligation reactions. Conditions for regioselective oxidative folding to form the desired disulfide bonding patterns of CC-AMP1/2 were achieved.

(26) Synthesizing Derivatives of Loratadine in the Development of Antibiotic Adjuvants to Target Antibiotic Resistance

Kiara Busby*, High Point University

Mentor: Meghan Blackledge, Chemistry

Antibiotic resistance in bacteria is on the rise, and current treatments are no longer useful in treating infections. Our lab develops antibiotic adjuvants that potentiate pre-existing antibiotics. Previous research identified loratadine as an effective adjuvant against resistance. Analogs of this compound were synthesized. Synthetic methodologies will be presented.

(27) Determination of Antioxidant Content in Coffee and Chocolate Extracts Using High Performance Liquid Chromatography

Jessica Emrich*, Andrew Lawrence*, Garrett Laws*, and Jake Morgan*, High Point University

Mentors: Keir Fogarty and Elizabeth McCorquodale, Chemistry

Antioxidants are compounds that target free radicals in the body, which are linked to elevated risks for cancers and other diseases. Coffee and chocolate samples exhibit high levels of antioxidant activity which counteract free radicals. High Performance Liquid Chromatography has been used to separate and quantify the compounds responsible.

(28) Understanding the Impact of BHT Inhibitor and Water on the Microstructure of Spun-cast Nanoporous Films of PMMA Exhibiting High Surface Areas

Sadie Flagg*, Erik Peterson*, and Brian Augustine, High Point University

Mentor: Brian Augustine, Natural Sciences

The acid-base properties of solvents and hydrogen bonding influence the dissolution of a polymer solute. We examined the effect of the interaction between the solvent THF, BHT, and water on the nanoporosity of films made from poly(methyl methacrylate) (PMMA) that were spun-cast from a THF solution onto silicon substrates.

(29) Determining Phenolic and Flavonoid Concentration in Chardonnay and Merlot Alcoholic and Non-Alcoholic Wines

Sophia Gregory*, Marlo Hemerson*, and Cameron Siler-Nixon*, High Point University

Mentors: Keir Fogarty and Elizabeth McCorquodale, Chemistry

The purpose of this work is to determine and compare flavonoid and phenolic concentration in alcoholic and non-alcoholic wines using UV-Vis spectroscopy. Two differing alcoholic wines were selected: Sutter Home Chardonnay and Merlot, and are being compared to two dealcoholized wines: Be Free Chardonnay and Merlot.

(30) Matrix Effects on the Fluorescence of Quinine

Alexa Herndon*, Emily Gillis, and Jacob Bauer, High Point University

Mentors: Keir Fogarty and Elizabeth McCorquodale, Chemistry

Quinine is an organic compound found in tonic water, which has also been used as an antimalarial. We have investigated the matrix effects of temperature and halogens on quinine's ability to fluoresce. To examine these factors, we used a fluorometer along with temperature control methods.

(31) Comparison of Metal Concentrations in High Point City Lake and High Point University Tap Water

Madison Hill*, Rachel Watne, and Caroline Rivera, High Point University

Mentors: Keir Fogarty and Elizabeth McCorquodale, Chemistry

The presence of certain metals in water is often used as a metric of drinking water quality. To determine the effectiveness of the water filtration system in High Point, the MP-AES was used to quantify metal concentrations before and after treatment.

(32) Evaluation of Ethanol Content within Generic versus Name-Brand Hand Sanitizers using Gas Chromatography with Flame Ionization Detection

Sadie Flagg, Alex Kaelin*, Rey Robinson*, and Carolyn Sveden*, High Point University

Mentor: Keir Fogarty and Elizabeth McCorquodale, Chemistry

Are name-brand hand sanitizers better than generic? This project evaluates the accuracy of the ethanol content reported on the labels on one brand name hand-sanitizer to three generic versions through gas chromatography with flame ionization detection (GC-FID)

(33) Towards the synthesis of a simple alkyl-substituted meta poly(arylene ethynylene)

Courtney Linden* and James Faircloth, High Point University

Mentor: Pamela Lundin, Chemistry

Helical polymers mimic enzymes and have shown signs of possessing antibacterial properties. Scaffolds of synthetic polymers can achieve this helical shape, one of which is a meta-substituted poly(arylene ethynylene) (m-PAE). We are interested in studying simple alkyl-substituted m-PAEs. The synthesis of the alkyl-substituted monomers and preliminary polymerization results are shown.

(34) Synthesizing And Characterizing a Library of Rhodamine B Amide Dimers with Varying Covalent Linkers

Angelina Pierre*, Rachel Spera, Brandy-Fey Stratton, Pamela Lundin, and Keir Fogarty

Mentor: Pamela Lundin and Keir Fogarty, Chemistry

We are interested in how forming dimers of rhodamine B amides impact the optical properties. A library of rhodamine B covalent dimers were synthesized using different diamine linkers, including aryl and alkyl diamines that vary in flexibility. These dimers were characterized using nuclear magnetic resonance, liquid chromatography-mass spectroscopy, and fluorescence spectroscopy.

(35) Fabrication of a Microfluidic Flow Cell to Observe Possible Treatment of Antibiotic Resistance Infections

Bailey Sobolewski*, High Point University

Mentor: Keir Fogarty, Chemistry

Biofilms are communities of bacteria that adhere to and continuously grow on surfaces and are antibiotic resistant. My research focuses on measuring the inhibition of biofilm formation on a custom-designed flow cell. The flow cell is designed via 3D printing to simulate biofilm formation in physiologically relevant environments.

(36) Investigating pH Sensitivity of Rhodamine B Amide Derivatives

Rachel Spera*, Bailey Sobolewski, and Angelina Pierre, High Point University

Mentors: Pamela Lundin and Keir Fogarty, Chemistry

Rhodamine B dimers and amide derivatives were combined with diluted acids and bases to establish incremental pH levels in a variety of solvents. Excitation and emission wavelengths were then collected from 3D fluorescence spectra using fluorometry and analyzed to observe pH-dependent fluorescent behavior.

*Denotes student(s) presenting the work

(37) Studying the impact of Rhodamine B dimer concentration on fluorescence data

Brandy-Fey Stratton*, Rachel Spera, Angelina Pierre, Pamela Lundin, and Keir Fogarty, High Point University

Mentor: Keir Fogarty, Chemistry

Our group studies a new photoswitching Rhodamine B dimer that emits two different wavelengths of light— orange and blue— when exposed to UV light. We hope to understand how different concentrations of this dimer and similar compounds impact their unique fluorescence properties.

(38) Myotube PGC-1 α Content Increases and BCAA Media Content is Reduced with GW501516-Induced PPAR β/δ Agonism Irrespective of BCAA Catabolic Enzyme Expression

Rachel Watne*¹, Caroline Rivera², Jason Hinkle², and Trent Macgowan¹, High Point University

Mentors: Andrew J. Wommack, Chemistry¹; and Roger A. Vaughan, Exercise Science²

Peroxisome proliferator-activated receptor gamma coactivator 1-alpha (PGC-1 α) helps regulate expression of branched-chain amino acid (BCAA) metabolism through peroxisome proliferator-activated receptor β/δ (PPAR β/δ). Diabetics experience increased circulating BCAAs, potentially due to reduced PGC-1 α expression. BCAA content of C2C12 myotubes treated with GW501516 (GW), a PPAR β/δ agonist, was monitored using LC-MS analysis.

(39) Analyzing the Equilibrium Thermodynamics of Amide-linked Rhodamine B

Lexie Young*, Rachel Spera, Brandy-Fey Stratton, and Angelina Pierre, High Point University

Mentors: Pamela Lundin and Keir Fogarty, Chemistry

Amide derivatives of rhodamine B are used in sensing applications due to responses of stimuli. Dimers of rhodamine B, fluoresce orange and blue, depending on its form. A change in temperature creates a shift in equilibrium and color. Varying temperatures are used to determine thermodynamic factors of the dimers.

Criminal Justice

(40) The Effects of “True” Crime Media on Public-Police Relations

Maya Davis*, High Point University

Mentor: Meg Chrusciel, Criminal Justice

The rise in true crime media such as podcasts and documentaries has come at a cost, driving fear of victimization and distrust within the police. This research aims to determine the impact one's consumption of true crime media may have on their perceptions of police.

Data Analytics

(41) Predicting Success of Indomethacin Treatment for Patent Ductus Arteriosus

Carolina Kapper*, High Point University

Mentor: Laurie Zack, Mathematical Sciences

Using data from Dr. Gal of the HPU School of Pharmacy, we seek to predict the success of using Indomethacin as treatment for Patent Ductus Arteriosus in infant patients. Logistic regression and Generalized Linear Mixed Models were utilized for prediction, and data imputation was necessary to account for data missingness.

*Denotes student(s) presenting the work

Education

(42) The Unity of Uniforms

Samantha Cramer*, High Point University

Mentor: Victoria Brown, Home Furnishings and Interior Design

This study highlights benefits of uniforms in grade school, with research and data showing that they improve education. Interviews were conducted to examine how uniforms impact people who wear them. The impact of the uniform fabric and garments on one's personal style will also be examined.

(43) A New Dimension in Science Education: Augmented Reality as an Instructional Tool

Jordan Morrison*, High Point University

Mentor: Sarah Vaala, Strategic Communications

Augmented reality is a growing tool that enhances the real world with media anchored to the location and content. There is a gap in literature regarding efficacy of AR compared to more familiar media. Children viewed a video and an AR app to compare learning outcomes.

Exercise Science

(44) Effects of Eccentric Overload and Concentric Offloading on Quadriceps and Hamstring Strength in Untrained Individuals.

Lindsay Bonsall*, Kiah Williams, Paul Kline, Brett Pexa, Kevin Ford, and Christopher Johnston, High Point University

Mentor: Christopher Johnston, Athletic Training

Seventeen recreationally active individuals participated in a 4-week lower extremity program using traditional or variable resistance modes. Concentric knee extension and knee flexion strength were assessed using an isokinetic dynamometer. While all groups improved, neither group improved more significantly than the other after training.

(45) SARS-COV-2 Infection Does Not Alter Cellular Stress Response During Prolonged Exertional Heat Stress

Nathan Conrad* and Karissa Fryar, High Point University

Mentor: Matthew Kuennen, Exercise Science

To determine if people with a prior clinical diagnosis of SARS-CoV-2 infection exhibit differences in their cellular stress response following 60min of cycling exercises in hot, dry conditions. We found no evidence of greater thermal or cardiovascular strain during 1hr of exertional heat stress in persons with prior SARS-CoV-2 infection.

(46) Prior SARS-COV-2 Infection Does Not Reduce Immunocompetence in Humans Challenged with Exertional Heat Stress

Karissa Fryar*¹, Nathan Conrad¹, Ben Lee², and Matthew Kuennen¹, High Point University

Mentor: Matthew Kuennen, Exercise Science

18 participants completed 1 hour of cycling in an environmental chamber eliciting 9.0 W/kg of metabolic heat production. 10 participants were previously diagnosed with SARS-CoV-2, and the other 8 served as Control. Blood samples collected before, after, 1 hour after, and 3 hours after exercise, were assayed for sCD-14, sICAM-1, IFN- γ , and IL-8.

*Denotes student(s) presenting the work

(47) Hip Strength Changes in Collegiate Soccer Athletes Across a Competitive Season.

Hunter Hills*, Chris Johnston, Jeff Taylor, Kevin Ford, Matt Valencia, and Brett Pexa, High Point University

Mentor: Brett Pexa, Athletic Training

The purpose is to determine the changes to hip strength across a competitive season in soccer athletes. Fifty-five male and female soccer athletes performed isometric hip strength assessments. Hip strength significantly differs between sexes when accounting for bodyweight, and there is a significant change throughout the season.

(48) The BCKDH Kinase Inhibitor BT2 Rescues Mitochondrial Metabolism and Mitochondrial Content During Insulin Resistance in C2C12 Myotubes

Caroline Rivera, Carley Smith, Lilian Draper, Madison Kee*, Rachel Watne, Andrew Wommack, and Roger Vaughan, High Point University

Mentor: Roger Vaughan, Exercise Science

Excess circulating branched-chain amino acids (BCAA) are commonly observed in insulin resistant populations. We assessed the effect of BT2, an activator of BCAA metabolism, on skeletal muscle metabolism and insulin sensitivity. BT2 rescued depressed metabolic function of insulin resistant cells, however, insulin sensitivity remained unaffected by BT2.

(49) Test-Retest Reliability of Markerless Motion Capture During Comfortable Speed and Fast Speed Walking

Dylan Masalleras*, Colby Treschl, Matthew Valencia, Dora Gosselin, Lisa Zukowski, Renee Hamel, and Kevin Ford, High Point University

Mentor: Kevin Ford, Exercise Science

Gait analysis is an insightful tool utilized by researchers and clinicians. The purpose of this study is to determine the test-retest reliability of novel markerless mocap technology during comfortable and fast walking tests.

(50) The Selective Lat1 Inhibitor Jph203 Enhances Mitochondrial Metabolism and Content in Insulin Sensitive and Insulin Resistant C2c12 Myotubes

Caroline Rivera, Carley Smith, Lilian Draper, Gabriela Ochoa*, Rachel Watne, Andrew Wommack, and Roger Vaughan, High Point University

Mentor: Roger Vaughan, Exercise Science

Insulin resistant populations exhibit elevated circulating branched-chain amino acids (BCAA), however, inhibition of the primary skeletal muscle BCAA transporter (LAT1) has not been studied during insulin resistance. The LAT1 inhibitor JPH203 increased mitochondrial metabolism and content without inducing changes in related mRNA expression.

(51) Mortality Analysis: The Long-Term Health Benefits of 50-Mile Ultra-Marathon Participation Outweighs the Risks, 1951-1979.

Erin O'Donnell*, James Smoliga, and Colin Carriker, High Point University

Mentor: Colin Carriker, Exercise Science

Ultra-marathon participants are susceptible to increased cardiac stress. Fifty-eight of the 150 fastest ultra-marathoners (1951-1979) met inclusion criteria. Kaplan Meier curves estimated the median survival time (85.8 years, 95% CI = 80.8 to 90.7 years). These findings suggest the long-term health benefits of ultra-marathon participation outweigh the risks.

(52) The effect of insulin resistance on extracellular BCAA accumulation and SLC25A44 in a myotube model of skeletal muscle insulin resistance

Caroline Rivera*, Rachel Watne, Andrew Wommack, and Roger Vaughan, High Point University

Mentor: Roger Vaughan, Exercise Science

Type 2 diabetes is characterized by reduced insulin sensitivity and increased circulating metabolites such as glucose and branched-chain amino acids (BCAA). We investigated the effects of insulin resistance on mitochondrial BCAA transporter, SLC25A44, and found no effect of varied level of insulin resistance on SLC25A44 content.

(53) Reliability Of Markerless Motion Capture on the Kinematics of a Drop Vertical Jump:

Kaley Ross*, Matthew Valencia, Brett Pexa, Christopher Johnston, Jeffrey Taylor, and Kevin Ford, High Point University

Mentor: Kevin Ford, Exercise Science

Markerless motion capture (MMC) software is available to evaluate kinematics of a drop vertical jump (DVJ). We investigated test-retest reliability of the right and left lower limbs in self-selected clothing. The knee had better reliability than the ankle and hip; poorest reliability was found with hip internal-external rotation.

(54) Hip Strength Changes over the course of 1 year between Male and Female Collegiate Soccer Athletes

Emma Schossler*, High Point University

Mentor: Brett Pexa, Athletic Training

Hip strength is related to movement quality, lower extremity biomechanics, and injury risk in soccer. Thirty athletes were tested in preseason 2021 and 2022 for hip abduction and adduction peak strength. Males demonstrated higher strength over each season. These measures can assist in determining the risk of lower extremity injury.

(55) Preliminary Comparison of Vision Vs Non-Vision-Based Cognitive Motor Dual-Tasking in People with Unilateral Lower Limb Amputation

Isaac Shaw*, Lisa Zukowski, and Paul Kline, High Point University

Mentor: Paul Kline, Physical Therapy

Mobility tasks after lower limb amputation (LLA) require intensive visual-cognitive processing. The purpose of this study was to compare correlations in gait speeds during single-task walking, vision-based cognitive-motor dual-tasking, and non-vision-based cognitive motor dual-tasking with patient-reported mobility and balance for people with LLA.

(56) Overground Running Reliability with Markerless Motion Capture

Alyssa Staggs*, Lucas Butt, Matthew Valencia, Paul Kline, Donald Goss, Jeffrey Taylor, and Kevin Ford, High Point University

Mentor: Kevin Ford, Exercise Science

There has been a recent effort to advance technology to analyze human movement without markers (i.e., markerless motion capture (MMC)). This study examined test-retest reliability of MMC and concluded the majority of hip and knee stance phase kinematics exhibited good to excellent test-retest reliability for MMC during overground running.

(57) The Effects of Clothing Color on Gait with Markerless Motion Capture

Colby Treschl*, Dylan Masalleras, Matthew Valencia, Dora Gosselin, Lisa Zukowski, Renee Hamel, and Kevin Ford, High Point University

Mentor: Kevin Ford, Exercise Science

Markerless motion capture systems have advanced the feasibility of recording gait kinematic data compared to “gold standard” marker-based systems. We utilized this to determine differences in gait kinematics between clothing color or sessions. Range of motion variables did not significantly differ between two sessions of gait data while controlling clothing.

(58) Effects Of 4-week Variable Resistance Lower Body Strengthening on Body Composition in Untrained Individuals

Kiah Williams*, Lindsay Bonsall, Brett Pexa, Paul Kline, Kevin Ford, and Christopher Johnston, High Point University

Mentor: Christopher Johnston, Athletic Training

Seventeen recreationally active individuals participated in a 4-week lower extremity program using traditional or variable resistance modes. Dual x-ray absorptiometry was used to compute total body fat percentage, total body lean mass, limb lean mass, and limb fat mass. Neither group saw a change in body composition after the training.

Fashion Merchandising

(59) The Textiles of Italy and Italian Fashion

Olivia Cirocco*, High Point University

Mentor: Victoria Brown, Fashion Merchandising

A look into the world of Italian textiles. From the dramatic scenery of Lake Como to the Renaissance of Milan and Florence. Textiles from the likes of linen and leather to cotton and silk. This assignment will dive deep into the history and wearability of each material with its Italian flare.

History

(60) Hidden Not Lost: Stories of Black High Point Alumni

Alexis Way*, High Point University

Mentor: Joey Fink, History

My research uncovers the history of the first Black student organization at High Point College, the Black Unification Movement (est. 1983). My presentation will tell the story of their persistence in creating visibility for Black students and the importance of this history for HPU now.

Honors

(61) Interdisciplinary Inquiry into the Antiquated Roman Table Through the Fabulously Fictional Account of Petronius’s ‘The Satyricon’

Jacob Bauer*, Michael Mathewson*, Mitchell Singletary*, and Nina Volpe*, High Point University

Mentor: Nathan Hedman, Honors, English and Theater

The task of our research is to peer into Petronius’s *The Satyricon*, specifically the extravagantly fictional feast of Trimalchio. Putting four disciplines of culture, economics, politics, and literary devices in conversation, we aim to garner their indicative overlap and further, their reflection of the greater cultures of Roman antiquity.

*Denotes student(s) presenting the work

(62) The Impact of Childhood Pets on Personality Traits Found In College Students

Lauren Bechtold*, Hannah Engels*, Josslyn Payne*, and Ralph Sicat*, High Point University

Mentor: Virginia Leclercq, English and French

Where previous research focuses on adult pet ownership, this study explores the relationship between childhood pet ownership and current personality traits. We surveyed young adults (ages 18-25) to explore the possibility of a correlation between early pet ownership and the development of the Big Five personality traits.

(63) The Impact of Romantic Films on Children's Expectations of Romance

Olivia Connelly*, Kaylin LaFleche, Collin Senecal*, Sophia Sharpe *, and Mackenzie Wander*, High Point University

Mentor: Sarah Nielsen, Psychology

This project examines how romance in films contributes to forming a child's expectations of love and romantic relationships, how these expectations were/were not met in adulthood, and what the effect of these met/unmet expectations were on that individual. Data collection ended on March 13th and results will be presented.

(64) The Impact of Gender on Psychological Safety and Information Sharing in Group Settings

Kate Dewan*, Victoria Federico*, Dylan Hudson*, Melanie Kneubuehl*, and Joshua Thompson*, High Point University

Mentor: Sarah Nielsen, Human Relations

Information sharing is a vital component of a plethora of different group settings. Our group is examining the impact of gender on one's psychological safety and therefore one's ability to share information within a group setting. Data is being collected from an experimental procedure and the results will be presented.

(65) Picking Playlists: The Relationship between Music Choice and Self-Esteem

Cora Hicks*, Elijah Trutt*, and Jesus Jimenez, High Point University

Mentor: Adam Winkel, World, Languages, Literatures, and Cultures

Does music choice matter? The goal of this project is to find out if the music you listen to can affect your short-term self-esteem in order to help our audience understand whether what they listen to affects their self-confidence and mood.

(66) Father-Daughter Relationships with an Emphasis on Fathers

Halle Nichols*, Hannah Parson*, Hannah Tameling*, and McHale Trotter*, High Point University

Mentor: Stacy Lipowski, Psychology

Previous research shows that daughters who have a positive relationship with their fathers benefit in a multitude of ways in self-esteem development. We hope to replicate these findings regarding self-esteem in daughters, while also considering how the strength and quality of the father-daughter relationship is related to the fathers' self-esteem.

(67) Digital Parenting: A Review of Literature on Parenting Styles, Adolescent Independence, and Parental Mediation Styles

Kelly Polk*, Victoria Sanderson*, and Rachel Day*, High Point University

Mentor: Nathan Hedman, Honors, English, and Theatre

This study analyzes television consumption and exposure, digital parenting and mediation styles, and college-aged personality. We also analyze individuals' attitudes on their parents' parenting style and how they anticipate parenting their future children in a digital world. We compare parenting and mediation styles to college-aged personality and TV exposure rates.

(68) An Exploration into the Human Motivation to Name and Personify Personal Vehicles

Chris Tashner*, Tess Nguyen*, Moira Houston*, and Blake Robinson*, High Point University

Mentor: Stacy Lipowski, Psychology

Many people have a close, personal, relationship with their cars. In this study we analyze the relationship between automobiles and humans. Specifically, this study is examining the correlation between the personification of automobiles, attachment styles and childhood development conditions (e.g., location, type of area participants reside in).

Interior Design

(69) Egyptian Escape

Keelin Gallagher*, High Point University

Mentor: Jane Nichols, Interior Design

For this project I used precedent studies on glamp-grounds around the world to inform the design of a hypothetical glamping site in Egypt. Sustainable and semi-permanent behaviors were the primary focus. The findings demonstrate the importance of the environment to the design process.

(70) JH Adams Inn Lobby Design

Kaylin LaFleche*, High Point University

Mentor: Jane Nichols, Interior Design

For this project, I utilized the design process to inform a new lobby design of an existing historic boutique hotel located in High Point, North Carolina. I reimagined the space by taking inspiration from historic hotels located within the United Kingdom and specifying new FF&E for the lobby.

(71) The Modern Era of Neo-Classical Design

Emily Voight*, High Point University

Mentor: Jane Nichols, Interior Design

Neo-classical design has been restored and preserved throughout time focusing its origins on Greek and Roman architecture. Using research to determine the origins of neo-classicism and why it persists, I've applied these key elements and ideals to my current project, the renovation of the JH Adams inn lobby.

Neuroscience

(72) The Role of Autophagy During Nicotine Exposure Over the Human Life Span

Emily Davis*, High Point University

Mentor: Kristin Ackerman, Neuroscience

Excessive nicotine exposure is harmful to most organ systems within the body and has been found to disrupt cellular mechanisms as well as induce oxidative stress and autophagy. This review investigates nicotine-induced mechanisms of autophagic dysregulation via AMPK and mTOR signaling over the course of a human life span.

(73) Silver Nanoparticles Selectively Treat Plexiform Neurofibroma at Doses Which Do Not Affect Patient-Matched Non-Cancerous Schwann Cells

Bashnona Attiah*, Garrett Alewine*, and Mary-Kate Easter *, High Point University

Mentors: Cale Fahrenholtz and Robert Coover, Basic Pharmaceutical Sciences

Neurofibromatosis Type 1 (NF1) is among the most common heritable diseases. Half of all NF1 patients develop plexiform neurofibromas (pNFs) which can be debilitating and ultimately deadly. Standard of care shows incomplete penetrance with well-established side effects. Here we demonstrate pre-clinical efficacy of silver nanoparticles for the treatment of pNFs.

(74) Mapping Genetic Control of Beta-lactam Resistance Factors in MRSA

Alyssa Deeds*, High Point University

Mentor: Aurijit Sarkar, Basic Pharmaceutical Sciences

Pharmaceutical companies have discovered several chemicals that are effective against Methicillin-Resistant *Staphylococcus aureus* (Staph infections), but they do not know the drug targets. Developing a mathematical method that can determine drug targets of phenotypic screening hits will reveal new ways to enhance beta-lactam potency against MRSA infections.

(75) Finding Drug Targets for Control of Persisters in MRSA Biofilm

Miranda Gough*, High Point University

Mentor: Aurijit Sarkar, Basic Pharmaceutical Sciences

Bacterial infections can include persisters that are metabolically inactive and antibiotic resistant cells. These persisters hide within a biofilm shield, which further protects them from antibiotics. We tested MRSA kinase gene knockouts to observe and measure persister formation. Results demonstrated that some tested genes are related to persister formation.

(76) Identifying a Chemical Adjuvant to Enhance Vancomycin and Beta-Lactam Activity Against Vancomycin-Intermediate Staphylococcus aureus

Emerson Heckler*, High Point University

Mentor: Aurijit Sarkar, Basic Pharmaceutical Sciences

A strain of bacteria called Vancomycin-Intermediate *Staphylococcus aureus* has developed resistance mechanisms against our go-to antibiotics. However, screening has identified a chemical adjuvant that in conjunction with the previously ineffective antibiotics, significantly reduces the minimum-inhibitory concentration of vancomycin and oxacillin needed to kill the bacteria, thus rendering the antibiotics useful.

(77) Role of Partial Agonist Ligands Via Dopamine D₄ Receptor in Treating Neuropsychiatric Conditions

Abby Rome*¹, Samuel Yeboah¹, Ashley Nilson³, David Sibley³, Thomas Keck², and Comfort Boateng¹, ¹High Point University; ²Rowan University; ³NINDS-IRP, NIH.

Mentor: Comfort Boateng, Basic Pharmaceutical Sciences

Dopamine D₄ receptor (D₄R) is vital for cognition, attention, and decision-making and is associated with many neuropsychiatric illnesses. Mainly expressed in the prefrontal cortex (PFC) and the hippocampus, there are no FDA-approved D₄R drugs. We investigated the therapeutic application of a novel compound with partial agonist activity at this receptor.

(78) Suppression of a key enzyme in methicillin-resistant S. aureus enhances penicillin G effectiveness
Payton Thomas*, High Point University

Mentor: Aurijit Sarkar, Basic Pharmaceutical Sciences

Methicillin-Resistant *Staphylococcus aureus* (MRSA) bacterial infections remain difficult to treat in healthcare settings because it is resistant to common and newer antibiotics. A key enzyme, β -lactamase, breaks down antibiotics before they can kill the bacteria. Suppression of this enzyme is a hopeful method for restoring the effectiveness of penicillin G.

(79) Evaluation of a Novel Set of Compounds with High Selectivity for Malignant Peripheral Nerve Sheath Tumors

Priya Thornton*, Kristina Dzamba*, Evan Adams, Amy Nwachukwu, Desmond Durham, Cale Fahrenholtz, and Robert Coover, High Point University

Mentor: Robert Coover, Basic Pharmaceutical Sciences.

Malignant peripheral nerves sheath tumors (MPNSTs) are devastating tumors that arise from nerves and are inherently chemo- and radio-therapy resistant soft tissue sarcomas. We have synthesized a unique set of gamma-lactone containing compounds with exceptional selectivity to kill tumors cells and leave healthy cells alone.

Physics

(80) The Construction of Microfluidic Channels for Incorporation of Artificial Cilia

Thomas Lotito*, High Point University

Mentor: Briana Fiser, Physics

Microfluidic channels exhibit low Reynolds number, posing an obstacle to mixing within the channel. To overcome this obstacle, we propose that mixing may be achieved by lining microfluidic channels with magnetic artificial cilia and manipulating their movement. To this end, we have developed resin 3D printed channel molds 75-500 μm .

(81) Effects of Substrate Stiffness on Bacterial Biofilm Growth

Jenna Mastropolo*, High Point University

Mentors: Briana Fiser and Jacob Brooks, Physics

When bacteria adhere to surfaces, they build up and form biofilms which can grow on indwelling medical devices and eventually lead to bloodstream infections. We are investigating how the stiffness of polydimethylsiloxane (PDMS) substrates affects biofilm growth on the surface, which may help reduce bacterial adhesion.

Popular Culture and Media Production

(82) WandaVision and Anxiety

Davis Ritenour*, High Point University

Mentor: Tony Kemerly, Exercise Science

This project utilizes the concept of shadow from Carl Jung as well as Erving Goffman's Dramaturgy Theory to form a connection with Wanda Maximoff from WandaVision. These theories are used in a metacognitive function to portray anxiety.

(83) The Impact of Psychological Capital and Personality Differences Between Students of Different Majors

Lauren Ayers*, Hannah Shore*, and Noah Akers*, High Point University

Mentor: Sarah Nielsen, Psychology

Research shows that psychological capital and personality offer insight into student academic outcomes. This project seeks to compare the psychological capital, personality, and academic performance of students across academic majors. Approximately 100 undergraduate students are completing self-report surveys. Data collection ends mid-March and results will be presented.

(84) The Relationships Between Psychopathy, Aggression, and Deviance

Olivia Charman*, High Point University

Mentor: Deborah Danzis, Psychology

The relationships between psychopathy, aggression, and deviance were explored specifically examining four subsets of aggression. Positive correlations were found between psychopathy and aggression, with two of the four subsets being the most significant, and between aggression and deviance while there was no correlation found between psychopathy and deviance.

(85) Cheating, Skipping, and Psychopathy: How Psychopathic Personality Traits Affect Outcomes in School

April Gessouroun*, Lexie Cobb, and Elizabeth Joel, High Point University

Mentor: Laura Nagy, Psychology

Psychopathic personality traits are consistently related to negative social and occupational outcomes. This study aimed to examine whether maladaptive academic attitudes would mediate the relationship between psychopathy and GPA. The mediational model was significant and implications for the role of psychopathy on negative academic attitudes and outcomes will be discussed.

(86) The Moderating Role of Social Support on the Relationship Between Rumination and Sleep Health

Jenna Ginther*, Margaret Weinbaum, Brittney Ruud, and Isabel Sanel, High Point University

Mentor: Kelly Curtis and Laura Nagy, Psychology

Social support is a key factor that may affect the relationship between rumination and sleep health. Questionnaires pertaining to rumination, sleep quality, and social support were administered to college students. The moderating effects of social support on this relationship between rumination and sleep health will be presented.

(87) Role of Moral Agency in Predicting Blame and Prison Sentencing in Fictional Context

Jyllian Herman*, High Point University

Mentor: Kirsten Li-Barber, Psychology

The role of moral agency on perceptions of blame and prison sentencing of a fictional perpetrator was examined. Moral agency predicted increased sentencing for murder but a decrease for robbery. Moral agency was also associated with an increase in blame. Additional analyses were run investigating interaction effects between different predictors.

(88) The Relationship Between Rumination and Sexual Risk-Taking Moderated by Social Support
Brittney Ruud*, Isabel Sanel, Jenna Ginther, and Margaret Weinbaum, High Point University

Mentors: Kelly Curtis and Laura Nagy, Psychology

Social support is a key factor that may affect the relationship between rumination and sexual risk-taking. Questionnaires pertaining to rumination, sexual risk-taking, and social support were administered to college students. The moderating effects of social support on this relationship between rumination and sexual risk-taking will be presented.

(89) The Moderating Role of Social Support on the Relationship Between Anxious Rumination and Somatization

Isabel Sanel*, Jenna Ginther, Margaret Weinbaum, and Brittney Ruud, High Point University

Mentors: Kelly Curtis and Laura Nagy, Psychology

Social support is a key factor that may affect the relationship between rumination and general health. Questionnaires pertaining to rumination, general health, and social support were administered to college students. The moderating effects of social support on this relationship between anxious rumination and general health will be presented.

(90) Helicopter Parenting Attitudes & Experiences and its' Impact on College Students' Success

Lexi Silverio*, High Point University

Mentor: Kirsten Li-Barber, Psychology

Study examined helicopter parenting (HP) and college students' success. Both students' experiences and attitudes towards HP were negatively correlated with indicators of academic success, however there were no differences across groups. Implications for this study relate to how attitudes and experiences towards helicopter parenting behavior may influence student outcomes.

(91) Borderline Personality Disorder Traits and Relationships: Investigating the Roles of Emotional Reactivity and Self-Esteem

Olivia Charman and Kylie Skie*, High Point University

Mentor: Laura Nagy, Psychology

This study investigated why borderline personality disorder (BPD) traits may lead to interpersonal difficulties using a moderated mediation model. Results showed that BPD traits lead to emotional reactivity which then decreases the reported quality of interpersonal relationships, and that this pathway is moderated by self-esteem.

(92) Can Eating Healthy Become Unhealthy? Exploring the relationship between conversations and attitudes towards healthy eating.

Isabel Viana Teixeira*, Catherine Waldeck, and Kirsten Li-Barber, High Point University

Mentor: Kirsten Li-Barber, Psychology

Current study examined the relationship between frequency of meals with family and friends, and disordered eating behavior. Frequency of family meals was negatively correlated with disordered eating behavior, but not friend meals. Results lead to proposal for future project on relationship between frequency of meals and orthorexic behavior in college students.

(93) Let's Eat: Describing Characteristics of Family Dinners in a Post-COVID World

Catherine Waldeck* and Isabel Viana Teixeira, High Point University

Mentor: Kirsten Li-Barber, Psychology

Current study describes the characteristics of family dinners among a sample of college-age students, the topics discussed, and gender differences in perceived outcomes associated with family meals. Results point to the psychological benefits family dinners offer to young adults' mental health.

(94) Rumination and Alcohol Use: Does Social Support Moderate the Relationship in College Students?

Margaret Weinbaum*, Brittney Ruud, Jenna Ginther, and Isabel Sanel, High Point University

Mentors: Kelly Curtis and Laura Nagy, Psychology

The relationship between rumination and alcohol use may be affected by social support. To support this, questionnaires pertaining to rumination, alcohol usage, and social support were administered to college students. This relationship between rumination and alcohol along with the moderating effects of social support will be presented.

Religion & Philosophy

(95) Understanding Tibetan Thangkas

Darius Cummings*, High Point University

Mentor: Carl Helsing, Religion and Philosophy

In addition to chants and meditation, Tibetan Buddhists use ritual objects to help all sentient beings reach enlightenment. How and why are these paintings (thangkas) so important to Tibetan Buddhists hoping to achieve enlightenment? This project examines the artistic, symbolic, and spiritual elements of Tibetan Thangka paintings.

Sociology

(96) Satisfaction with the Distribution of Labor and Love within LGBTQIA+ Relationships: An Exploratory Study

Daya Meshri*, High Point University

Mentor: Mark Plume, Sociology

In an effort to contribute to the limited research on LGBTQIA+ work and family balance, this study uses data from twenty-eight LGBTQIA+ individuals, who live with their partner, to obtain an enhanced perception of work and family balance in non-heterosexual relationships. An anecdotal perspective is achieved through an in-depth interview.



Technology Exhibit

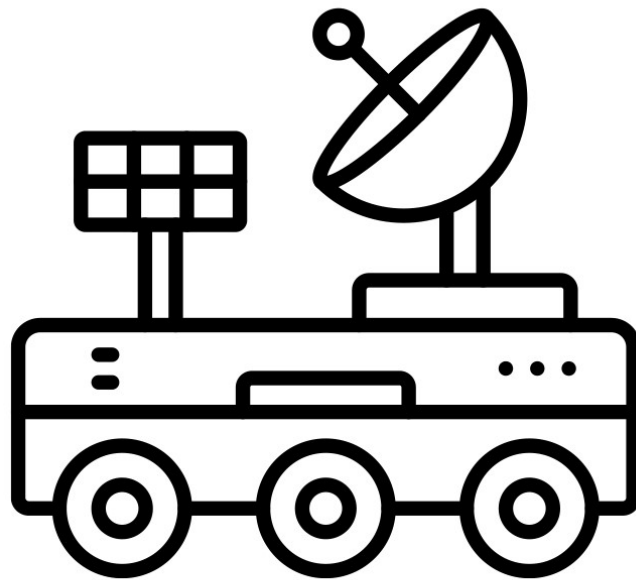
4:00pm – 5:30pm

(97) HPU Robotics NASA Lunabotics Competition

Mathew Costantino*, Eric Brockmann*, and Morgan Abrams, High Point University

Mentor: Eve Klopff, Electrical and Computer Engineering

The NASA Lunabotics competition is an undergraduate competition intended to help students develop their understanding of engineering and robotics. As a part of this competition, a team of students from HPU are developing a prototype lunabot that would be capable of lunar travel and mining.



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Abby Fort



Alec Manzer



Evelyn Reynolds

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Nido and Mariana Qubein Conference Center Map

