HIGH-PURCS

APRIL 21, 2020

High Point University Research & Creativity Symposium

URCW

THE 8th HIGH POINT UNIVERSITY RESEARCH AND CREATIVITY SYMPOSIUM (High-PURCS)

A VIRTUAL SHOWCASE

| STARTS APRIL 21, 2020 |

-Welcome from the-

DIRECTOR OF UNDERGRADUATE RESEARCH AND CREATIVE WORKS

Welcome to the 8th annual High Point University Research and Creativity Symposium (High-PURCS) and our first virtual showcase. 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 here 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.

Despite the 2020 pandemic, we have 100 students participating, mentored by 41 faculty from 18 different fields across all but two of High Point University's schools. Our students' achievements are a reflection of their resilience and courage coupled with the dedication of caring faculty. Especially in these unique and challenging times, thank you for being part of the new, virtual, 2020 High Point University Research and Creativity Symposium.

Individuals with High Point University email addresses can access our virtual symposium directly at an online platform called Symposium at http://symposium.foragerone.com/. You must first create an account with them using your High Point University email and password. After that, when you sign in select High Point University in the dropdown menu to easily access the content, as well as offer your feedback and insights. Individuals without HPU email can view presentations through this program by clicking on the individual URL for each abstract. Enjoy!

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

-A Special Welcome from the-

PROVOST

Dr. Dennis Carroll, who has always been a great supporter of undergraduate research and creative works, is retiring in June. We appreciate his years of leadership!

Congratulations on your involvement with High-PURCS! The quality and depth of a university's undergraduate research program reflects the university's commitment to the academic excellence of its students and the preparation of these students for prestigious graduate and professional schools and vocational opportunities.
High Point University is committed to this high level of academic success and has invested heavily in the undergraduate research model.

Today we celebrate you and your outstanding work.

Many thanks to Dr. Joanne Altman, whose passion, commitment and expertise are evident in this outstanding program. Thanks also to the outstanding faculty mentors who have gladly spent hours working with our students.

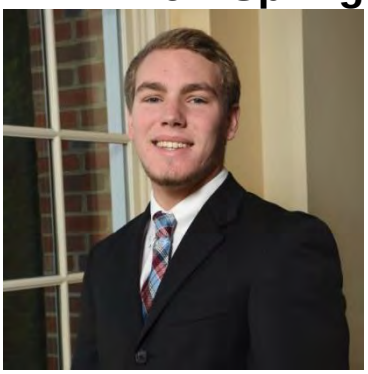
I am proud of all of you!

Dr. Dennis Carroll
Provost

Congratulations to our 2019-2020 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 three students who have recently completed the program and have earned the title of Research Apprentice.

New Spring 2020 Research Apprentices:



John Punt

Reece Sicat

Katrina Zrubek

Research Apprentices recognized in a fall ceremony:

Brooke Allen
Caitlyn Bontempo
Liz Cabrera
Kara Chapman
Brian Cooper
Grace Crowder
Gracie Cush
Jenna Duncan
Amy Foss
Kyriana Heitschmidt
Ryan Hesterman
Hannah Martin
Vivian McAllister
Keely McKinney
Ryan Mijumbi
Sofia Pinzauti
Anna Robichaud
Meaghan Robinson
Jessica Robles
Gabrielle Schmale
Mikayla Stuart
Kelly Wiles
William Kong

ORAL PRESENTATION ABSTRACTS

Art & Interior Design

An Exploration of the Sustainability of Fashion Brands
Emily Longwell, High Point University
Mentor: Victoria Brown, Home Furnishings and Interior Design

The purpose of this project is to evaluate how fashion brands define, view, and exhibit sustainability. A definition of sustainability relative to the fashion industry will be formed. Five fashion brands across multiple price points will then be examined to determine whether they exhibit the components of this definition. http://symposium.foragerone.com/highpoint/project/9c749f506f784893a5c140a1a47ee573

Biology

Why Do Plants Have Red Spots Around Entomosporium mespili Infections?
Michaela Connors*, Mary Grace, Mary Ann Lila, Sarah Jessica Forte, Harrison Seitz, Nicole Hughes, High Point University
Mentor: Nicole Hughes, Biology

Anthocyanins are red, non-photosynthetic pigments that commonly occur around infected areas of leaves. However, the reason for this "red spot" symptom is unknown. In this study, we demonstrate that red spots around infection sites represent islands of undeveloped tissues, which may reflect a resource-conservation strategy by the plant.
https://symposium.foragerone.com/highpoint/project/af4cb7ca919942ee8dc1c0101a356312

A Survey of Parasites in the Marmota monax of Eastern North Carolina
Laylah Welch, High Point University
Mentor: Brett Woods, Biology

Woodchucks, Marmota monax, belong to a group of ground squirrels that hibernate. This study attempts to understand endoparasite presence in woodchucks of Eastern North Carolina. Fecal samples were examined to gauge the parasitic-profiles of target populations, and used to hypothesize how summer preparation for hibernation could be influenced.
http://symposium.foragerone.com/highpoint/project/1906bb6854714d8db9586d8f5e6c8ed9

Chemistry

Identification of Economical Cross-Coupling Catalysts by Small-Scale Reaction Screening with Gas Chromatography-Mass Spectrometry
Luke Akers, High Point University
Mentor: Pamela Lundin, Chemistry

Palladium on carbon nanocrystals as a heterogeneous catalyst for cross-coupling reactions has been shown to produce favorable yields. However, due to the cost and toxicity of palladium, we aim to identify more economical and eco-friendly heterogeneous catalyst alternatives, through small-scale reaction screening and yield quantification by gas chromatography-mass spectrometry.
http://symposium.foragerone.com/highpoint/project/f7a42176acda408c8049630ce582dbca

Synthesis of an Indicator and Use in Titration of Organometallic Reagents
Olivia Armendarez, High Point University
Mentor: Lundin, Chemistry

Titrations are used to determine the concentration of an unknown solution. When the indicator salicylaldehyde phenylhydrazone was used with n-butyllithium, the concentration was determined to be similar to what was expected, whereas the tert-butyl magnesium chloride was significantly different more dilute, which could significantly impact on its use in synthesis.
http://symposium.foragerone.com/highpoint/project/8a5d1db22bee462d8bb9436d56b6e541

NanoPatterning Conjugated Polymer Growth by Microcontact Printing
Isabella Postle, High Point University
Mentor: Pamela Lundin, Chemistry

We are functionalizing gold surfaces with a new self-assembled monolayer that initiates polymerization, and later can be selectively cleaved to release the polymer. We are using microcontact printing to nanopattern our substrates so that we can use atomic force microscopy to show that polymerization only occurs on our SAM.
http://symposium.foragerone.com/highpoint/project/b810adfd7ea6489d98fce8fc62bce4f0

Utilizing a Nitrogen Glovebox for Air-Sensitive Synthesis Reactions
Evan Silver, High Point University
Mentor: Pamela Lundin, Chemistry

Many synthesis reactions are vulnerable to disruption by oxygen and water vapor found in air. A nitrogen glovebox is a solution to this problem, as it provides a controlled atmosphere of 99% pure, inert nitrogen gas. This environment was used to synthesize an air-sensitive silane and a nickel complex. http://symposium.foragerone.com/highpoint/project/31e014eed788467cb45cd3f45d5f96db

Investigating Novel Nanocrystals as Catalysts for Heterogeneous Cross-Coupling Reactions
Katharine Storo*[1], Hui Li,[2] Scott Geyer[2], and Pamela Lundin[1], [1]High Point University and [2]Wake Forest University
Mentor: Pamela Lundin, Chemistry

Catalysts used in cross-coupling reactions are extremely important in the fields of organic synthesis and medicinal chemistry. We are testing novel nanocrystals as heterogeneous metal catalysts under different conditions for known cross-coupling reactions. Adjusting reaction components allowed conditions to be optimized. The outcome of each reaction was analyzed via GC-MS.
http://symposium.foragerone.com/highpoint/project/f1927a4dc8b647d38ffd888b264b8785

Computer Science

Comparative Analysis of Machine Learning Classifiers in Honeynets
Ben Baker* and Kelsey Quinn*, High Point University
Mentor: Jason M. Pittman, Computer Science

Cybersecurity is the discipline of detecting and controlling threats to a system. We categorize attempted system penetration of honeynets by applying machine learning algorithms. Attacks are categorized based on whether or not the intent was malicious. This is a replication study based on prior research on the intent of honeynets.
http://symposium.foragerone.com/highpoint/project/e22c0803352c4ea981f1df05ab145f87

A Review of Turing Tests and the AI Passing Them
Grace Crockett*, Ashlyn Hanks*, and Jason Pittman, High Point University
Mentor: Jason Pittman, Computer Science

Turing Tests are used as the ultimate challenge in determining whether an AI is indistinguishable from a human. This work presents a novel review of extant Turing Test instruments, extant chat bots, as well as a delta of those AI chat bots reported to have passed a Turing Test.
http://symposium.foragerone.com/highpoint/project/0f85daf9501f4c18949156b29e5acfdb

Parallel Computing with Single Board Computers
Timothy Diaz, High Point University
Mentor: Roger Shore, Computer Science

Parallel computing leverages multiple systems to distribute processing, resulting in increased performance for computationally intensive tasks. We will compare clusters using two types of single board computers and a cluster of desktop computers. The advantages and drawbacks of leveraging graphical processing units to perform a computational task will be explored.
http://symposium.foragerone.com/highpoint/project/f1a0322ade054e0583dadfde4b8bdaf5

Visual Software for Amazon Devices
Blake Harrison, High Point University
Mentor: Roger Shore, Computer Science

Amazon's Alexa and Echo devices have seen widespread adoption in recent years, primarily due to their accessibility and usefulness. This presentation explores the use of AWS serverless lambda functions to pull media from an S3 cloud storage service in order to create a visual experience for users of such devices. http://symposium.foragerone.com/highpoint/project/0f71ea252e424f98a706283ff1dca4a3

Dynamic Honeypots Measures of Effectiveness
Kyle Hoffpauir*, Jason M. Pittman, Nathan Markle*, and Cameron Meadows, High Point University
Mentor: Jason Pittman, Computer Science

Cybersecurity is the science of making objects secure and involves detecting and preventing harm to systems. We employ honeypots to understand how attackers interact with computing systems. Existing research doesn't provide a set of measures to determine dynamic honeypot effectiveness. This work illustrates measures to quantify dynamic honeypot effectiveness.
http://symposium.foragerone.com/highpoint/project/e848067f0c3e45a0aa9945d73be28f80

Developing Procedures for MoE Testing Through Packet Capture
Nathan Markle* and Jason M. Pittman, High Point University
Mentor: Jason Pittman, Computer Science

Existing research doesn't provide a set of measures to determine dynamic honeypot effectiveness(MoEs). To measure the effectiveness of honeypots, procedures are required to develop packet capture files to recreate identical validation tests. This work creates an iterative procedure for developing packet capture files for dynamic honeypot MoE testing.
http://symposium.foragerone.com/highpoint/project/4bb9601788104a7f9ded65a2d3207bac

Port Knocking and Single Packet Authorization Performance in a Multi-User Environment
Kyle Wiseman* and Jason Pittman, High Point University
Mentor: Jason Pittman, Computer Science

The goal of this research is to measure the performance of port knocking and single packet authorization in a port address translation configuration. The future work of existing research points out that this should be tested but researchers have not accomplished such a goal as of yet.
http://symposium.foragerone.com/highpoint/project/4e703fce151a46c49cfb89310b04412a

English

Dr. Rebus and Mr. Reeve? An Investigation into the Genre of Knots & Crosses
Leslie Bosse, High Point University
Mentor: Matthew Carlson, English

Ian Rankin clearly connects *Knots and Crosses*, to Robert Louis Stevenson's *The Strange Case of Dr. Jekyll and Mr. Hyde*. However, Rankin's novel owes more to the classic detective story tradition than it does to Stevenson. This essay aims to analyze the influence of four foundational detective fiction authors to support this claim.
http://symposium.foragerone.com/highpoint/project/d49c65e330b24e008ff1b99b8786ab39

***Psychoanalyzing Robert Jr. in James Hogg's* Private Memoirs**
Sydney Daneman, High Point University
Mentor: Matthew Carlson, English

James Hogg's *Private Memoirs and Confessions of a Justified Sinner* explores the mind of religious zealot, Robert Wringham Jr., as he succumbs to oppressive religion. Robert's inability to reconcile his sin with his elite status within the Presbyterian Church leads to a psychological break and the mental creation of Gil-Martin. http://symposium.foragerone.com/highpoint/project/021c713902f346a499f6850379d17c68

My Side of the White Line
Meagan Pusser, High Point University
Mentor: Matthew Carlson, English

This creative nonfiction piece details my experience of my younger brother's brief "disappearance" when we were children. Through this experience, I began to develop a more mature understanding of the importance of family during periods of uncertainty.
http://symposium.foragerone.com/highpoint/project/fc23aadb960c49e0b0dcb4b353152fda

Deconstructing the Peter Pan/Captain Hook Binary
Raegan Thomas, High Point University
Mentor: Matthew Carlson, English

In *Peter and Wendy*, Captain Hook is the villain to Peter Pan's hero. By using Jacques Derrida's deconstruction of binary oppositions, Peter and Hook are both hero and villain, adult and child, and the completing half to the other's character. Upon binary deconstruction, one cannot be superior over the other. http://symposium.foragerone.com/highpoint/project/04ccc31d0b9f4ffaa7be60b4fb1b75a9

An Unsung Literary Father: How Buchan's Scottish Identity Is Key to the Modern Spy Genre
Christine Watt, High Point University
Mentor: Matthew Carlson, English

John Buchan's mystery-thriller, *The Thirty-Nine Steps*, was published in 1914, and has greatly influenced the modern spy genre. This presentation examines that influence, and especially the way in which Buchan's Scottish identity has informed famous spy characters such as James Bond, Ethan Hunt, and Jason Bourne.
http://symposium.foragerone.com/highpoint/project/197675d66b48454dabde2a37f68102db

Exercise Science

The Association Among Race, Socioeconomic Status and Proximity to Physical Activity-Promoting Park Amenities for Children
Monét Gilmore* and Kimberly Reich, High Point University
Mentor: Kimberly Reich, Exercise Science

Physical inactivity is a risk factor for chronic disease. Individuals of minority and low socioeconomic (SES) status are also at increased risk. For children, access to public park amenities is associated with increased physical activity. This study examines the relationship among race, SES, and proximity to park amenities for children.
https://symposium.foragerone.com/highpoint/project/1d14677adc78431cabbfba908bdc5269

Mathematical Sciences

KenKen Puzzle Domains
Justin Bell, High Point University
Mentor: Jenny Fuselier, Mathematical Sciences

We introduce KenKen puzzles, which are related to Latin Squares. We consider restricted domains (other than the integers), cage properties, methods of solving/building, and how to control puzzle difficulty in the building stage. Finally, we introduce a new type of spinoff puzzle, which is crossword style and inspired by KenKen. (30 min.)
https://symposium.foragerone.com/highpoint/project/97f451c0fa774cc19fea954edcbacadb

Drop It Like It's Hot: Optimizing Final Grade By Dropping One Score
Camarie Schmidt* and Adam Graham-Squire, High Point University
Mentor: Graham-Squire, Mathematical Sciences

When looking for an average of a given data set, it is common to remove outliers to avoid any kind of skew. In this research, we investigate the simplistic problem where, given scores, we wish to find which score is the biggest outlier in order to optimize final grade. (30 min.)
https://symposium.foragerone.com/highpoint/project/d7de594430964c2fa65e4c4c65287974

Psychology

Parent-Child Relationship Positively Correlates with Big 5 Personality Traits and Higher Theory of Mind
Grace Cush* and Amy Foss*, High Point University
Mentor: Dr. Stacy Lipowski, Psychology

Children's quality of relationships with their parents impact key personality traits and level of Theory of Mind. Theory of Mind, the ability to detect others needs and desires, is critical in daily social interactions. Constructive relationships with one's parents show a positive correlation with higher theory of mind and the personality traits extraversion, openness, and agreeableness.
https://symposium.foragerone.com/highpoint/project/5bc2c232221248f4aaf570c5584e555b

Religion and Philosophy

The Importance of Formation in a Narrative: An Examination of NeoAristotelian Ethics and Its Correction of Kant's Foundations of the Metaphysics of Morals
Jacob Lancaster, High Point University
Mentor: Chris Franks, Religion and Philosophy

This paper explores shortcomings in Immanuel Kant's *Foundations of the Metaphysics of Morals*. I seek to address these issues using a NeoAristotelian approach as provided by Alasdair MacIntyre to correct shortsightedness in Kant's work, advocating for understanding the human life as a process of transformation within a narrative.
http://symposium.foragerone.com/highpoint/project/1bdc38f7f0884b29bcbcacc36a975b62

Out of Babylon and into the New Jerusalem: Exploring Violent Imagery and the Understanding of Conquest in the Book of Revelation
Jacob Lancaster, High Point University
Mentor: Robert Moses, Religion and Philosophy

I explore the violent imagery in Revelation and demonstrate how the violent imagery is not promoting violence but is used to reinterpret what it means to conquest. I argue that Revelation calls people out of violence and into a new way of being, participating in God's work of new creation.
http://symposium.foragerone.com/highpoint/project/5365cee909c64edeaafc679da5207f19

How has the March for Life Rally Challenged, Disrupted, and Discarded the Perceptions Imposed on Roe V. Wade?
Ha'Leigh Warden, High Point University
Mentor: Ashley Dreff, Religion and Philosophy

Events and activism since 1973 have transformed and multiplied the meanings of Roe. This presentation will analyze how feminists used Roe as a reminder that abortion was a women's issue, and if the implications from Roe V. Wade have been compromised due to the March for Life Rally.
http://symposium.foragerone.com/highpoint/project/ea963170f1af4422a457cc94b17cfb7b

Spanish

***Sin Nombre* y *Blood in Blood Out:* La representación cinemática del latino en las pandillas**
Emily Burns, High Point University
Mentor: Hayden Carron, World Languages, Literatures, and Cultures

La estereotipación del latino es muy evidente en el cine, especialmente en las películas *Sin Nombre* (2009) y *Blood In Blood Out* (1993). Usando elementos fundamentales para entender el papel del latino como pandillero, podemos hacer una comparación entre su representación en el cine americano y el cine latinoamericano.
https://symposium.foragerone.com/highpoint/project/1a811673cbcb4bdeab01ba40c09d2bc2

La Salsa y La Importancia de Raza
Fabian Cajas, High Point University
Mentor: Hayden Carron, World Languages, Literature, and Culture

La salsa, sus orígenes y su significado se han interpretado erróneamente como un ritmo para celebraciones y entretenimiento. Por el contrario este ensayo explica como la salsa es un ritmo que unifica diferentes razas, religiones y comunidades. Salsa no solo demuestra unificarnos , sino también que importante es la cultura.
http://symposium.foragerone.com/highpoint/project/fa82a999c67241e69489f3e10c24a2b1

Un Jesús falso: el sincretismo religioso y como la tensión étnica influencia el conflicto religioso en Guatemala
Mikayla Johnson, High Point University
Mentor: Hayden Carron, World Languages, Literatures, and Cultures

En esta investigación, la autora analiza la pintura al óleo, "N'oj Glyph (2002)" de Hermelindo Mux Yool para demostrar el sincretismo en el catolicismo guatemalteco moderno. La autora argumenta que la utilización del sincretismo causa mucho conflicto religioso en Guatemala con el aumento del pluralismo religioso de los cristianos, los católicos y las indígenas.
https://symposium.foragerone.com/highpoint/project/a6f0cc6e60614c1d8b3949f0167d8350

Princesas: El Impacto de la Raza y la Inmigración para Las Mujeres Explotadas en España
Meghan Reed, High Point University
Mentor: Hayden Carron, World Languages, Literatures and Cultures

Las mujeres indocumentadas inmigrantes pueden enfrentar el abuso debido a su falta de derechos. La película, *Princesas* (2005), muestra las maneras en que se abusa de las prostitutas indocumentadas en Madrid. Este artículo analiza las causas de la explotación sexual femenina y cómo se usa su raza contra ellas. http://symposium.foragerone.com/highpoint/project/2ca018a66abe458ebe15eb243b6a37e3

Vendiendo el "Sueño Americano" a los Consumidores Latinos: Cómo los Comerciales Estadounidenses Venden Productos y una Identidad Americana a los Consumidores Latinos en los Estados Unidos
Caroline Schwarz*, High Point University

Mentor: Hayden Carrón, World Languages, Literatures, and Cultures
Debido a su poderoso tamaño, los latinoamericanos son un grupo de consumidores crucial para que las empresas en los Estados Unidos. Para este estudio, se examinarán cuatro comerciales de EE. UU en español con cómo están representados los latinos, el tipo de consumidor latino, y cómo la compañía vende una identidad estadounidense.
http://symposium.foragerone.com/highpoint/project/edf156f9feb14e57975d92be160d2015

PERFORMANCE ABSTRACTS

We Are Rising
Samantha Bridge* (Choreographer), High Point University
Performers: Chéyse Lattie*, Madison Mendyk*, and Quinn Van Popering*, High Point University
Mentor(s): Christine Stevens and Lindsey Howie, Theatre and Dance

This contemporary dance piece explores the power of people. Once united, we the people can, have, and will continue to overcome any obstacle, including the struggle for equality for all. Joined together in support, We Are
Rising. http://symposium.foragerone.com/highpoint/project/14f4ac58f204472fb5026b1661b63ba0

Life Goes On
Grace Ann Letzinger* (Choreographer), High Point University
Performers:, Alex Griswold*, Olivia Keider*, Jessie Homan*, Alyssa Sontag*,Cheyse Lattie*, Wesley Wilson*, High Point University
Mentor(s): Christine Stevens and Lindsey Howie, Theatre and Dance

This piece explores the reality that life always goes on and never stops for anyone or anything. One stage of life may hold a deep, meaningful relationship that seems like it will last a lifetime. The next stage will come along and that relationship turns into two strangers hardly even knowing each other anymore. No matter the circumstance, life goes on.
http://symposium.foragerone.com/highpoint/project/5637b1920cbe4ae3a173ffe778c01de8

Fabrications
Liv Huang*, (Choreographer), High Point University
Performers: Lauren Johnson*, Wesley Wilson*, Emily Johnson*, Katie Keever*, Addison Hartley*, Emily Durant*, Connie Quagliata*, High Point University
Mentor(s): Christine Stevens and Lindsey Bramham Howie, Theatre and Dance

We all remember the childhood game telephone. A simple phrase twists and turns its way through the hands of each individual until you are left with a distorted final product. Fabrications examines the relationship between origin and end.
http://symposium.foragerone.com/highpoint/project/2905f0215b3d4296a198c6faf9fc50d9

POSTER PRESENTATION ABSTRACTS

Biology

An Examination Of The Distribution Of Red-Eared Sliders (Trachemys Scripta Elegans) And Trachemys Hybrids Across The North Carolina Piedmont
Alexander Boulay* and Kasey Nichols*, High Point University
Mentor: Sandra Cooke, Biology

Co-occurrence of the invasive red-eared sliders (*Trachemys scripta elegans*) and native yellow-bellied sliders (*Trachemys scripta scripta*) has been observed. The objective of this research was to examine the distribution and occurrence of these two freshwater turtle species and their morphologically possible hybrids within the NC Piedmont region.
http://symposium.foragerone.com/highpoint/project/d8537df60aa84432a3df3571f8f1dbbe

Characterization of the Lumenal Domain of the Yeast Autophagy Protein Atg27
Liz Cabrera*, Meaghan Robinson*, Candyce Sturge, and Veronica Segarra, High Point University
Mentor: Veronica Segarra, Biology

Au**t**opha**g**y is a highly conserved eukaryotic process that recycles nutrients in cells during times of stress. One Atg protein, Atg27, contributes to autophagosome formation, but only the C-terminus has been defined. We are testing to see if the phenotype of the lumenal domain plays a role in autophagy as well.
https://symposium.foragerone.com/highpoint/project/7a39cd44f24e44948669dcdfe50b10b9

Estimating Carbon Storage and CO_2 Sequestration of High Point University's Campus Arboretum
Michaela Connors* and Emmi Palenbaum*, High Point University
Mentor: Sandra Cooke, Biology

The goal of this project is to estimate carbon storage and carbon dioxide sequestration of HPU's arboretum. The diameters of over 120 trees, comprising 21 species, were measured and allometric equations were used to estimate the biomass and amount of carbon sequestered for each tree.
http://symposium.foragerone.com/highpoint/project/7b0b1ef3ed3f4000b4654413094c838b

Characterizing winter herbivory in cranefly orchid, Tipularia discolor (Orchidaceae)
Sammi Harstad* and Kasey Nichols*, High Point University
Mentor: Nicole Hughes, Biology

Cranefly orchid leaves may exhibit silver or purple spots, solid purple or green coloration, or a combination of phenotypes. We compared herbivory on the phenotypes over one field season. Nearly all phenotypes had lost over half of their leaves by mid-winter, and coloration did not significantly impact herbivory choice.
https://symposium.foragerone.com/highpoint/project/7a39cd44f24e44948669dcdfe50b10b9

Distribution of Nicotinic Cholinergic Receptor Subtypes in the Adult Zebrafish
Karen Huezo* and Gianna Passarelli*, High Point University
Mentor: Heather Ahrens, Biology

Zebrafish are an important model organism for research on the central nervous system (CNS). We mapped the distribution of the cholinergic system in adult zebrafish, specifically the expression of nicotinic cholinergic receptor subtypes (α4, α6). Of note were high concentrations of α4 and α6 in visual areas of the CNS.
https://symposium.foragerone.com/highpoint/project/55bd716a07d145629afe067b45591b89

The Examination of the Nutrient Limitation of Phytoplankton in North Carolina Water Supply Reservoirs and an Inflowing Stream
Kennedy Jackson* and Petru Hadarau, High Point University
Mentor: Sandra Cooke, Department of Biology

We conducted phytoplankton growth bioassays to analyze the nutrient limitation status of Oak Hollow Lake, City Lake, and Boulding Branch. Further studies are needed to better understand the complexity of nutrient limitation, as well as examine seasonal and interannual patterns of nutrient limitation in these critical water supply reservoirs.
https://symposium.foragerone.com/highpoint/project/e880fb33e74f44989b018f15f5c6678a

Characterization of Chemical Senses in a Terrestrial Isopod
Tate Powell, High Point University
Mentor: Jackson Sparks, Biology

Isopods are members of suborder Oniscidea, which likely evolved terrestrial forms relatively recently. Here we establish the first antennae of an isopod as a chemosensory appendage by demonstrating its necessity for avoidance of plant-derived repellents. We found highly expressing antennal-specific transcripts in males and females through *de novo* RNA-seq analyses.
https://symposium.foragerone.com/highpoint/project/08a5f6feed6245f583f14b4507139584

Autophagy as an On-Ramp to Scientific Discovery
Candyce Sturgeon, High Point University
Mentor: Veronica Segarra, Biology

Not only can art inform science, but it can also allow us to recruit creative individuals to join the scientific community. We present evidence that shows how integrating art and science can serve as an on-ramp for students to develop an interest in science and scientific research.
https://drive.google.com/open?id=1om_Y8G9e_G4zvCPMnR0FPGVY0IxmRjMM

Using Molecular Data to Resolve Phylogenetic Relationships of Flowering Plants in the Liatris Genus
Leah Vadas*, and Claire Zanolli*, High Point University
Mentor: Cindy Vigueira, Biology

For the species of the plant genus *Liatris* (Asteraceae), we have created a phylogenetic tree based on maximum parsimony that improves upon previous studies. This project has the potential to reform what we know about *Liatris* and reveal the evolutionary relationships that underlie the classification of its species. https://symposium.foragerone.com/highpoint/project/35c4e0b0605d4b23bcd2fdde0e873c15

Cannabidiol Potentiates Oxidative Stress in Cultured Peripheral Neurons
N. Zanghi, High Point University
Mentor: Michael Grider, Neuroscience

Cannabidiol (CBD) can have pro- or anti-oxidant effects, depending on the model. We investigate the neuroprotective effects of CBD on an oxidative injury (H2O2). We find neurons treated with CBD have less viability compared to injury alone groups. This supports that CBD potentiates oxidative stress. We are further investigating the role of CBD by varying its concentration to test dose dependency. http://symposium.foragerone.com/highpoint/project/a5195c58e91b494185d46d89789f950a

Chemistry

Using a Biotage to Purify Rhodamine B Dimer Samples by Flash Chromatography
Elizabeth Riser* and Pamela Lundin, High Point University
Mentor: Pamela Lundin, Chemistry

A Biotage Selekt flash purification system was used to purify solid samples of rhodamine B dimers. The solid was loaded into a tube filled with silica gel and flushed with dichloromethane/methanol which allowed for separation of the product. The system tracked product elution in milli-Absorbance Units. NMR spectroscopy confirmed purity. http://symposium.foragerone.com/highpoint/project/73cacfbbcc674d529eecd54bf152a18b

***Identification of small molecules with antibiotic activity in M. smegmatis*.**
Mikaela Seemann, High Point University
Mentor: Meghan Blackledge

Mycobacteria have innate immunity to common antibiotics, and antibiotic development remains stagnant. To identify novel scaffolds for antibiotic development, several small molecules with varying structural components were screened for antibiotic activity against *M. smegmatis*. Through this screening, a structure-activity relationship was developed for a set of compounds. http://symposium.foragerone.com/highpoint/project/8404d4f480a147efa32d799bb8c3e850

Investigating Binding Interactions Between Tat-SF1 and HIV-1 RNA
Julia Trautman, High Point University
Mentor: Heather Miller, Chemistry

This study analyzed possible interactions between the human protein Tat-Specific Factor 1 (Tat-SF1) and HIV-1 RNA. EMSAs involving HIV-1 RNA probes and HeLa cell nuclear extracts were performed. Together with super shifts using anti-Tat-SF1 antibodies, we demonstrate in vitro binding between HIV-1 RNA and Tat-SF1. http://symposium.foragerone.com/highpoint/project/d87242f5e6e54458b95cf8c20e29e328

Computer Science

Parking Vision
Anthony DeMattos, High Point University
Mentor: Roger Shore, Computer Science

This presentation investigates the use of computer vision to locate vacant spaces within a parking lot then alert a user with a mobile app. Specifically, the effectiveness of different object detection algorithms to locate the empty spaces, storing the locations in a cloud database, then making the information available within an app will be addressed.
https://symposium.foragerone.com/highpoint/project/2aca95f21087444eb8d0d8ec2f716137

Real-Time Ray Tracing
Conor Rybacki, High Point University
Mentor: Roger Shore, Computer Science

For years ray tracing has been most commonly used in the animated movie industry as a rendering technique for accurately depicting the interaction of subjects and light sources within a scene. Due to its incredible complexity, real time applications of ray tracing have not been achievable with consumer hardware until now. This talk will present Nvidia's affordable approach to real time ray tracing.
http://symposium.foragerone.com/highpoint/project/665e9b45fad84a7090debe27e92e6f4f

Exercise Science

Co-ingestion of Dietary Nitrate and Caffeine Elevates Submaximal Oxygen Consumption and Oxygen-pulse Compared to Nitrate Or Caffeine Alone
Phillip Armentrout*, Kennedy Marshall, James M. Smoliga, and Colin R. Carriker, High Point University
Mentor(s): Colin Carriker, Exercise Science and James Smoliga, Physical Therapy

The combined effects dietary nitrate and caffeine have on submaximal intensity exercise is unknown. However, this study found that co-ingestion of dietary nitrate and caffeine elevated submaximal oxygen consumption compared to a placebo control; both overall (main effect) and at individual time points of 10 and 30 minutes.
http://symposium.foragerone.com/highpoint/project/d76f6dc127d649b68b6e8018b3396d29

Analysis of Physical Activity-Related Smartphone Apps for Behavior Change Potential
Kayla Gustek* and Kimberly Reich, High Point University
Mentor: Kimberly Reich, Exercise Science

Physical inactivity is a disease risk factor and a common problem facing many adults Americans. Smartphones are used by most adult Americans, and many apps are advertised to promote physical activity. This research investigated the prevalence of evidence-based app features their relationship to app store popularity.
http://symposium.foragerone.com/highpoint/project/2e8eda305c664574a3a2dc4009c182bc

Seasonal Variations in Vertical Stiffness and Jump Height in NCAA Division-I Soccer Athletes
Michelle E. Ramsey*, Brett S. Pexa, Kevin R. Ford, and Justin P. Waxman, High Point University
Mentor: Justin Waxman, Exercise Science

The purpose of this study was to examine seasonal variations in vertical stiffness and maximum vertical jump performance in Division-I soccer athletes, to assess whether seasonal variations in stiffness are associated with changes in vertical jump height. There were differences between genders and changes with jump height and stiffness.
http://symposium.foragerone.com/highpoint/project/af13c5fbfed74e909107d41f639151f1

Home Furnishings and Interior Design

Programming Proposal for High Point University Library
Felicia Enos*, Alannah Van Horn, and Casey Thurston, High Point University
Mentor(s): Jane Nichols, Interior Design, and Brandon Jones, Interior Design

This programming proposal for the new High Point University Library summarizes research conducted on the students' vision for the new library, emphasizes field research performed in the existing libraries on campus, and features key opinions from librarians we interviewed. Potential furniture selections and floor plan layouts are included as well.
https://symposium.foragerone.com/highpoint/project/d5d29e2dd6c44e67a30df18ac9a5e7ab

Smith Library Research
Lauren Geiger* and Delaney Matthews, High Point University
Mentor: Jane Nichols, Home Furnishings

Our pre-design research team discovered that not everyone will agree on what High Point University's new library should look like and incorporate. Our team researched pre- existing libraries and precedents to see what a library truly needs to offer to succeed. We conducted interviews that concluded a traditional environment felt more scholarly, which encouraged students to get work done.
https://symposium.foragerone.com/highpoint/project/30d1fedd7ad34c289a26ac57242a0f96

HPU Library Programming Proposal
Virginia Jesselson*, Adrianna Tingley and Maria Saldarriaga, High Point University
Mentor: Emily Reynolds, Interior Design

Our programming proposal for the new High Point University Library outlines research and precedents of existing library spaces. We highlighted what makes a successful library. We also interviewed students and librarians to hear what they are looking for in a new library space.
https://symposium.foragerone.com/highpoint/project/9965d5e0baaf46bea7b0d7496ebd3785

High Point University Library Programming
Ashlyne McComb* and Morgan Humphreys, High Point University
Mentor: Jane Nichols, Interior Design

The pre-design research study was summarized in a programming document for a new library using a variety of research methods. Based on the collected and analyzed data, findings indicate that the space needs to be versatile to accommodate multiple user types. The design needs to have a traditional feel while incorporating innovative design elements.
http://symposium.foragerone.com/highpoint/project/fd9f05ebd235410dafc1a14225170a34

Technology in Fashion
Olivia Mascatello, High Point University
Mentor: Kathryn Brandt, Interior Design

The world of technology has impacted almost all aspects of popular culture. This study explores the implementation of technology within the fashion industry and its' influence on the retail environment. This includes the use of Virtual and Augmented Reality, which are being used to create immersive and personalized shopping experiences.
http://symposium.foragerone.com/highpoint/project/f4be4928a52143afbf6b6683b34f4e05

Filipino Textile and Pattern Exploration
Kayla Prado, High Point University
Mentor: Emily Reynolds, Home Furnishings and Interior Design

Within the Philippines there are many major indigenous tribes, each one having their own unique pattern motifs, colors, and aesthetic style. Following this historical textile research, a new design collection was created to honor the history of these native Filipino tribes.
https://symposium.foragerone.com/highpoint/project/b81b6cfd660c4e12ae0a3157d20ee418

Library Programming For High Point University
Rachel Tegen*, Emily Sarkisian*, and Cynthia Battaglia, High Point University
Mentor: Jane Nichols, Interior Design

Our poster highlights our research completed about the current High Point University Smith Library and other libraries worldwide. We researched what makes a successful library by interviewing students and faculty, interacting with the space, and observing human patterns in the space. Our poster presents our findings and proposal for a new library.
https://symposium.foragerone.com/highpoint/project/50bf0b68a2f6494eba63c2e607468b80

Precedent Research on Best Practices of Historic Preservation Being Applied in the Triad Area of North Carolina
Kayla Wattenbarger, High Point University
Mentor: Emily Reynolds, Home Furnishings and Interior Design

Precedent research on two North Carolina Triad buildings on the National Historic Registry reveal what preservation techniques are considered best practices for the area. Data gathered during interviews with community preservationists from the Triad area were analyzed; a condensed best practices list was created for historic buildings in the area.
http://symposium.foragerone.com/highpoint/project/c79577553941424b8bd75805b47c521f

Human Relations and Nonprofit Studies

Creativity as Key to Becoming A Superboss: How Tapping Into Creative Expression Enhances Your Most Effective Leadership Skills
Chloe Hasden, High Point University
Mentor: Elizabeth Jeter, Human Relations

Through extensive review of leadership literature, the benefits of creativity and self-expression in the workplace were examined. The most effective leadership skills that come from creative practices were dissected and led to the conclusion that participating in creative practices enhances leaders' factors for success through discovery, passion, and holistic approaches.
http://symposium.foragerone.com/highpoint/project/911abc801bbd469b993c10b56f1df35d

Pharmacy

Impact of a Multidisciplinary Educational Training Program (OverdosED) on Knowledge and Perceptions of Depressant Substance Use on a College Campus.
Christina Carilli*, Shaina Musco, Brenden Hargett, Tara Shollenberger, and Jackson Kicklighter, High Point University
Mentor: Shaina Musco, Pharmacy

Substance use on college campuses in the United States is a documented issue. There is minimal educational programming in place to teach students about the use and misuse of depressant substances. OverdosED was developed to increase college students' ability to appropriately recognize and respond to suspected overdose on depressant substances.
http://symposium.foragerone.com/highpoint/project/fe2b323e3c654501aa6da678d9069ad6

Physics

The Effects of Surface Patterning on the Growth of Bacteria
Sam Mycroft, High Point University
Mentor: Briana Fiser, Physics and Astronomy

We are investigating the effects of micron-sized surface patterns on the growth of bacteria. These patterns could be implemented in implants to reduce bacterial infections. We present our fabrication process and discuss future work to measure bacterial growth on them and modify patterns to include nanometer and micrometer-sized features.
https://symposium.foragerone.com/highpoint/project/64ac04c058e54e36b02cc8f1f0f087b3

Gradient-Based Algorithm for Characterizing the Structure of Fibrin Clots
Nolan Roth* and Briana Fiser, High Point University
Mentor: Briana Fiser, Physics and Astronomy

Irregular blood clotting causes diseases which lead to thousands of deaths each year. Understanding how various clotting mechanisms affect the properties of a blood clot's fibrin network is integral to prevent these diseases. A novel algorithm using gradient-based thresholding was implemented in Python to quantify the network's structural characteristics.
http://symposium.foragerone.com/highpoint/project/cc6caf8b3cbb420a9f6cc758cf796a43

Updates From The EREBOS Project: The First Deeply-Eclipsing Hot Subdwarf Binary
Stephen Walser*, Brad Barlow, Veronika Schaffenroth, Kyle Corcoran, and EREBOS Collaboration, High Point University
Mentor: Brad Barlow, Physics

The EREBOS project aims to obtain spectroscopy and photometry of eclipsing hot subdwarf binaries. The resulting companion mass distribution will allow us to determine whether there is a lower mass limit for objects to survive red giant engulfment. Additionally, we discuss the discovery of a deeply eclipsing hot subdwarf system.
http://symposium.foragerone.com/highpoint/project/70608118f277497a82a7a8ee2fe22464

Psychology

Why Doesn't My Doctor Understand?: Psychological Experiences of Women with Hyperemesis Gravidarum
Jacqueline Hallerman*, Mackenzie Crow*, and Kiersten Carper*, High Point University
Mentor: Elizabeth Bennett, Psychology

Hyperemesis gravidarum, or severe vomiting during pregnancy, is a complicated medical phenomenon. Despite its severity, HG is a largely understudied phenomenon. We are particularly interested in the psychological implications of HG focused on medical error or misunderstanding. Our project is of interest to psychologists who practice from a feminist or advocacy role.
http://symposium.foragerone.com/highpoint/project/3a19713c60494d778132baf330a0aade

Woke to the Me Too Movement
Sammi Harstad*, Kiersten Carper*, Brianna Hernandez*, and Courtney Taylor*, High Point University
Mentor: Elizabeth Bennett, Psychology

Multi-method study explored quantitative perspectives of college students towards the #metoo movement through Greek affiliation, socioeconomic status, gender attitudes, and feminist identification, with qualitative exploration regarding #metoo. Participants engaged in a quantitative survey assessing demographics and variety of psychosocial variables. Participants also had the opportunity to complete a focus group.
http://symposium.foragerone.com/highpoint/project/a6b33c1535404190a3388ed7ef1bd1c8

Examining the Relationship Between Rumination and Non-Suicidal Self-Injury: A Meta-Analysis
Samantha N. Harstad* and Sara Seaford*, High Point University
Mentor: Laura Nagy, Psychology

Meta-analytic study between rumination and NSSI denotes correlational, longitudinal, and experimental designs. Literature searches (PsycINFO and PsycARTICLES) used search-terms and synonyms ("brooding," "self-harm," "self-mutilation," and "parasuicide."). 127 articles identified. Eliminated articles lacked original data, English, or not peer-reviewed. 89 articles remained for inclusion. Results provide direction for designing NSSI interventions.
http://symposium.foragerone.com/highpoint/project/412af3a15632424d9844a8d200d6376a

Giving Up Me for You: Hyperemesis Gravidarum and the Complex Notion of Self-Sacrifice
Sophie Kestner* and Vivian McAllister*, High Point University
Mentor: Elizabeth Bennett, Psychology

Hyperemesis gravidarum (HG) is a complex, rare medical complication of pregnancy. We are focused on the experiences of women who became voluntarily pregnant after a hyperemetic pregnancy to better explore the notion of self-sacrifice, particularly as it is situated within a Christian theology.
http://symposium.foragerone.com/highpoint/project/19d5c9898e11424eaf4c62db26a2ae9f

Characteristics of First Exposure to NSSI: An Exploratory Study
Jaxtyn Osborn, High Point University
Mentor: Laura Nagy, Psychology

Non-suicidal self-injury (NSSI) is defined as intentionally damaging one's body without suicidal intent. One in five individuals report engaging in NSSI in their lifetime. In this exploratory study, the characteristics of individuals' first exposures to NSSI behaviors were examined. Participants' cognitive and affective reactions to NSSI are
iscussed. http://symposium.foragerone.com/highpoint/project/1b87e588d5e84bdd863668eef4569cb7

GAME DESIGN EXHIBIT ABSTRACT

Knights: A Multicultural Puzzle Game
Chance Coelho*, Alex Coelho*, Mark Garfinkle*, and Noah Gilston*, High Point University
Mentor: Brian Heagney, Game & Interactive Media Design

Knights is a puzzle game our team of senior Game Design majors developed for Android this semester. On your way to the goal, you must switch between two maps, representing two different themes: American Chess and Japanese Shogi. These two cultures come together to make an immersive experience.
https://symposium.foragerone.com/highpoint/project/7b8cf127104844c4baba2097c66fcadc

Learning how to conduct my own research has allowed me to become proficient in Political Science statistical analysis software and has given me a deeper understanding of the many drivers of political opinion. Now when I am presented with data and findings from surveys I am able to analyze the process by which the results were found to see if they are accurate and can be generalized.

Shirley Garrett- author in *Innovation: Journal of Creative and Scholarly Works 2020*

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Junior, Strategic Communication

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Mentorship Matters.

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