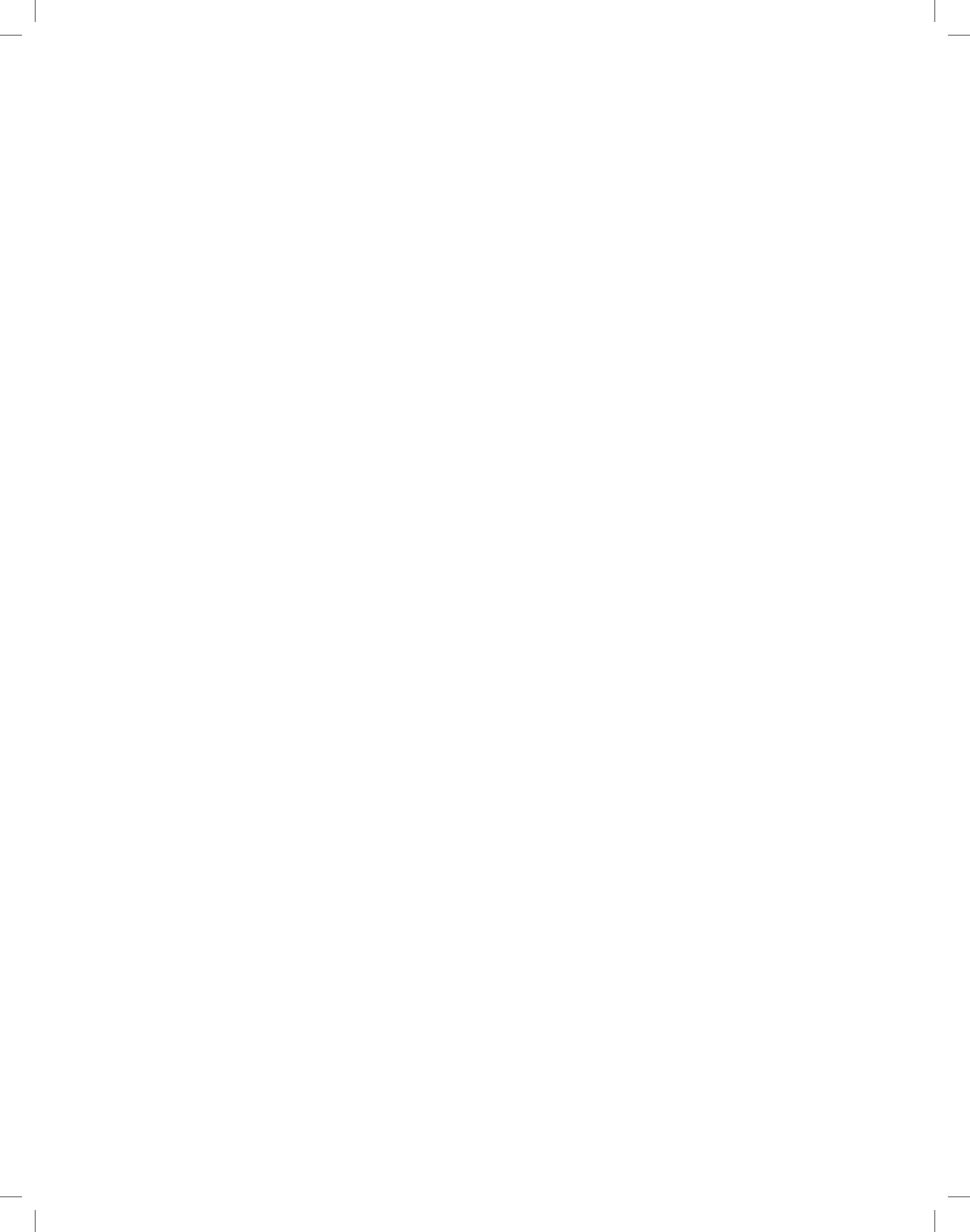


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**19TH ANNUAL
CELEBRATION OF
STUDENT RESEARCH,
SCHOLARSHIP
& CREATIVE WORK**

**JANUARY 25, 2019 | WABASH COLLEGE
DEATCHON CENTER**



Welcome and Introduction

Welcome to the 19th Annual Celebration of Student Research, Scholarship, and Creative Work at Wabash College. For the past 18 years, the College has recognized in a proud and public way the creative accomplishments of Wabash students. We celebrate not only the particular achievements of individual students, but also a deeply embedded ethos of the College. The impressive breadth and quality of student creative work is evidence of the challenge and change that marks the Wabash experience.

This program is dedicated to the memory of Paul Caylor McKinney, '52, who passed away in 2003 after a courageous battle with cancer. Dr. McKinney proudly served the College for more than half a century as chemistry teacher, department chair, division chair, and Dean of the College. He was an exemplar of the liberally educated person whose interests ranged from quantum mechanics to Plato, from playing the piano to pondering Nietzsche. He acted in Wabash College Theater productions and was often found backstage working on difficult equations in his notebook. He was my mentor and friend, a master teacher who helped countless Wabash students develop their creativity and love of the liberal arts. Among Wabash men, he would well understand and appreciate everything presented today; he would be the first to celebrate the successes of Wabash students and faculty members.

Close collaboration between Wabash students and faculty across the College is a hallmark of our culture, a labor of pedagogy and love that makes a difference for our students. It is a special pleasure to introduce some of the results of that collaboration in these presentations. Our thanks go to the students who are prepared to teach the Wabash community about their good work and to the faculty and staff members who have devoted considerable time helping students in their research and creative productions.

A conference of this size and scope would not be possible without the dedicated work of many people. I want personally to express my thanks to the planning committee: Chair Lon Porter, Jeff Beck, Bradley Carlson, Sara Mehlretter Drury, Michelle Janssen, Damon Mohl, and Erika Sorensen-Kamakian. Aaron Elam and ETS students contributed to the poster production, as have other ETS and IT Services staff; Becky Wendt formatted and prepared the program for printing; Mark Siegel authored the online event presentation application system; Campus Services, and Mary Jo Johnston and her Bon Appetit staff make the logistical support appear effortless. Finally, we are grateful to all of you whose attendance supports this community Celebration.

—Scott Feller, Dean of the College

Schedule for Oral Presentations

Oral presentations will begin at 1:30 p.m. and continue every 20 minutes with a ten-minute break at 2:30 p.m. The last sessions begin at 3:40 p.m. In general, students will present information for 12-15 minutes with a few minutes for questions and passing time. Please see the following three pages for a list of oral presentations by room location and time slot. Names of the presenters, as well as their sponsors and abstracts, are listed in alphabetical order beginning on page nine.

Schedule for Posters and Exhibits

Students will present and discuss their posters and exhibits in 90-minute increments beginning at 1:00 p.m. across Detchon International Hall. You will find a list of presenters and their locations—sorted by poster number—beginning on page seven. Names of the poster presenters and co-presenters, as well as their sponsors and abstracts, are listed by poster number beginning on page 19.

Schedule of Oral Presentations by Time Slot and Location

Detchon 109

1:30	Zachary Kintz	Epigraphic Practices among Households of Different Sizes in Herculaneum Jeremy Hartnett & Bronwen Wickkiser (Classics)
1:50	Austin Chivington	Distant Echoes and Views of Ancient Life in Pompeii: What Graffiti in the Grande Palestra in Pompeii Tell about Spatialized Social Activity Jeremy Hartnett (Classics)
2:10	Wade Haesemeyer	Wabash's Taj Mahal? A Podcast about the Origins of the Sparks Center Jeremy Hartnett (Classics)
2:30	Break	-----
2:40	Matthew Bailey	The Decline of Spain and its Repercussions: Pessimism in the Literature of Valle-Inclán and Baroja Gilberto Gómez (Modern Languages & Literatures)
3:00	Joseph Patacsil	The Mouth's Projection: The Faculty of Reality and Dreams in Surrealist Works <i>(Presented in Spanish)</i> Maria Cristina Monsalve (Modern Languages & Literatures)
3:20	Max Von Deylen	Abnormality: A Paradox of Praise in Julio Cortázar's <i>Hopscotch</i> <i>(Presented in Spanish)</i> Maria Cristina Monsalve (Modern Languages & Literatures)
3:40	William Osborn	Reality and the Importance of Verisimilitude in Fiction <i>(Presented in Spanish)</i> Maria Cristina Monsalve (Modern Languages & Literatures)

Detchon 111

1:30	Nhan Nguyen	Superposition of Macromolecular Electron-Density Maps in X-ray Solution Scattering (SAXS) Ann Taylor (Chemistry)
1:50	Nicholas Budler	How can Hume's Model of Sympathy Explain our Inability to Alleviate Distant Suffering? Can We Solve this with Technology? Matthew Carlson & Cheryl Hughes (Philosophy)
2:10	Vincent D'Angelo	New Amsterdam to Cape Town: Reflections on a Changing Common Law Lorraine McCrary (Political Science)
2:30	Break	-----
2:40	Keegan Kirkwood	Climate Change and the Humanities: Why Citizens are Culpable Natalie Aikens (English)
3:00	Samuel Stephenson	Societal Nonconformity in Joyce's <i>A Painful Case</i> Agata Szczeszak-Brewer (English)
3:20	Damion Davies	<i>Drown Me, Aphrodite: A Reading</i> Derek Mong (English)
3:40	Joseph Patacsil	<i>How To Use a Handkerchief</i> Derek Mong (English)

Detchon 112

1:30	Nathan Gray & Arthur Equihua	A Cure for Healthcare: A Survey of Approaches to Fix our Broken System Jill Rogers & Eric Wetzel (Global Health Initiative)
1:50	Neal Hayhurst	Community Paramedicine: The Proactive Approach to Emergency Medicine and Community Health Jill Rogers & Eric Wetzel (Global Health Initiative)
2:10	Matthew Hodges	Health Equity in Montgomery County Jill Rogers & Eric Wetzel (Global Health Initiative)
2:30	Break	-----
2:40	Hunter Jones	Small Town Actions towards a National Epidemic: Experiences with Combating the Opioid Epidemic at the Montgomery County Health Department Jill Rogers & Eric Wetzel (Global Health Initiative)
3:00	Eric Lakomek	A Patient's Perspective in Obtaining Mental Health Treatment Jill Rogers & Eric Wetzel (Global Health Initiative)
3:20	Joseph Lenkey & Joseph Whitaker	"The Best Way to Learn is to Teach" Eric Wetzel & Jill Rogers (Global Health Initiative)
3:40	Aaron Webb	Cultivating Healthy Communities: Using Principles of Civic Ecology to Understand Community Well-Being Jill Rogers & Eric Wetzel (Global Health Initiative)

Detchon 209

1:30	Keanan Alstatt	Zimbabwe and Taiwan: A Comparison and Contrast of their Musical Cultures James Makubuya (Music)
1:50	Joshua Brogi	K-Pop and Culture: The New Identity of South Korea James Makubuya (Music)
2:10	Weijia Li	Korean Traditional Music: A Discussion of the Most Popular Instruments James Makubuya (Music)
2:30	Break	-----
2:40	Griffin Hall	World Building: The Process of Creative Writing Lon Porter (Chemistry)
3:00	Christopher Diaz	<i>Diaz's Dimension</i> Michael Abbott (Theater)
3:20	Quinn Cavin	<i>Rain Dance</i> (A Short Film) Michael Abbott (Theater)

Schedule of Oral Presentations by Time Slot and Location

Detchon 211

1:30	Brock Heffron	Empathy and the #MeToo Movement: A Rhetorical Analysis of the Case of Aziz Ansari Jennifer Abbott (Rhetoric)
1:50	Kyle McAtee	A Critical Look at Brokeback Mountain: How it Shifts Society's Thoughts towards Equality Jennifer Abbott (Rhetoric)
2:10	Oliver Page, Jacob Helmer, & Christian Wirtz	Remembering a Queer Worldmaker: The Rhetoric of The Andy Warhol Museum Cory Geraths (Rhetoric)
2:30	Break	-----
2:40	John Janak	Donald Trump: A Rhetorical Enemy or a Rhetorical Genius? Todd McDorman & Sara Mehlretter Drury (Rhetoric)
3:00	Ronald Ryan	Language and Society: A Rhetorical Analysis of the Versatility of Language Using Donald Trump and LeBron James Sara Mehlretter Drury (Rhetoric)
3:20	Christian Wirtz	A Local Legend: Lew Wallace and the Significance of Small Museums Todd McDorman & Cory Geraths (Rhetoric)

Detchon 212

1:30	Jacob Riley	Whatever You Know about Pirates, You Likely AARRRR Wrong! Stephen Morillo (History)
1:50	Davis Lamm	Revolutionary Privateers: Asset or Liability? Stephen Morillo (History)
2:10	David Riggs	An Analysis of Commerce Giants, Past and Present Stephen Morillo (History)
2:30	Break	-----
2:40	Walker Hedgepath	Warring Brothers: A History of Sino-Vietnamese Relations in the Indochina Wars Sabrina Thomas (History)
3:00	Drew Buttrum	Jonestown: The Mystery of the Peoples Temple Robert Royalty (History)
3:20	Thomas Kenney	al-Qaeda: A Case Study of the Sociology, Ideology, and Theology of Religious Terrorism Gary Phillips & David Blix (Religion)

Schedule of Poster Presentations and Exhibits

(Detchon International Hall)

Session 1 — 1:00 p.m. to 2:30 p.m.

No	Presenters	Title
1	Miguel Aguirre Morales	Method Development for Detecting <i>Perkinsus</i> in the Water Column Bradley Carlson (Biology)
3	Joseph Ballard	Characterization of Triple Negative Breast Cancer Cell Clones to Better Understand the EMT Spectrum Erika Sorensen-Kamakian (Biology)
5	Colby Dunigan & Jorge Rodriguez	Cortically-Stimulating Gratings Reveal Non-Cardinal Colors Better than do LGN-Stimulating Spots Karen Gunther (Psychology)
7	Ian Finley	Divorcing Wealth from Crisis Sujata Saha (Economics)
9	Benjamin Grubbs & Nicholas Etter	Using Second Harmonic Generation Microscopy to Detect Crystallinity of Pesticides on Crop Leaves Paul Schmitt (Chemistry)
11	Koty Hall & Spencer Shank	Automated Calibration for the Modular Nuclear Array James Brown (Physics)
13	Brandon Arbuckle	Tied Hands: Parcelization's Constraints on Land Management Strategies in the Midwest's Northwoods Ethan Hollander (Political Science)
15	Keith Klein	Circulating Carotenoid Levels in Eastern Box Turtles Bradley Carlson (Biology)
17	Corey Leuters	The Cisterhood: Masculinity, Its Investment in Cisgender Men and the Effects on Single-Sex Institutions Adriel Trott (Philosophy)
19	Samuel Marksberry & Owen Doster	Montgomery County Health Department Mosquito Surveillance Jill Rogers (Global Health Initiative)
21	Zachary McKinney & Miles Barilla	Louis Orr's Journey through France: Capturing Humankind's Magnificent Creations Elizabeth Morton (Art)
23	Robert Reed	The Time Globe; Its Construction and Applications James Brown (Physics)
25	Wesley Slaughter	Testing the Correlation Between Trace Crystallinity and Decreased Drug Solubility in Model Amorphous Solid Dispersions Paul Schmitt (Chemistry)
27	Michael Tanchevski & Rithy Sakk Heng	Palmitate signaling in Gonadotropin-Releasing Hormone Neurons Induces Inflammation and Endoplasmic Reticulum Stress in a TLR4-Independent Manner Heidi Walsh (Biology)

Schedule of Poster Presentations and Exhibits (Detchon International Hall)

Session 2 — 2:30 p.m. to 4:00 p.m.

No	Presenter	Title
2	Thach Huynh, John Trebing, & Keanan Alstatt	Validation of a Translational Virtual Experiential Foraging Task for Humans Neil Schmitzer-Torbert (Psychology)
4	Maximilian Cobos	Paper Current Collectors Coated with V ₂ O ₅ /Graphene Oxide Composite for Rechargeable Flexible Electrodes for Lithium-Ion Batteries Ann Taylor (Chemistry)
6	James Eaton	The Role of Cell Proliferation During Tissue Regeneration in <i>Nematostella Vectensis</i> Patrick Burton (Biology)
8	Nicholas Fox	Investigation of Notch Target Genes Critical for Fertility Erika Sorensen-Kamakian (Biology)
10	Christopher Wilson & Lucas Soliday	Effects of a High Fat Diet on Rat Hypothalamus Neurons and a Possible Botanical Remedy Heidi Walsh (Biology)
12	Rithy Sakk Heng & Nhan Nguyen	Kinetics of Mutations in the Active and Allosteric Sites of Fumarate Hydratase Ann Taylor (Chemistry)
14	Brandon Johnson, Samuel Henthorn, Andrew Merced, & Cole Payne	A Formula for Love: Carving out a New Genre in Augustan Rome Bronwen Wickkiser (Classics)
16	Sopheara Koy	Loss of Genes Causes Notch Signaling Phenotypes and Defects in Cellular Proliferation Erika Sorensen-Kamakian (Biology)
18	Theodore Lupinski, Quan Chau, & Spencer Shank	Swarm Bots: Self-Converging Robots James Brown (Physics)
20	Cameron Martin	Regeneration of <i>Pristina Leidyi</i> Patrick Burton (Biology)
22	Bakhann Prom	Macroeconomic Effects on the Current Account Balance during the Asian Financial Crisis Sujata Saha (Economics)
24	Chaz Rhodes	Eye Color Change and Variation in Eastern Box Turtles Bradley Carlson (Biology)
26	Rourke Tollar & Chukwunalu Chukwuma	Synthesis and Testing of an Acid Phosphatase Substrate Laura Wysocki (Chemistry)
28	Paul Haesemeyer, Aaron Boyd, Deakon Doub, Samuel Stewart, James Williams, & Austin Yeomans	Puppets in Prague Andrea Bear (Theater)

Oral Presentations (Alphabetical by Presenter)

Presenter: Keanan Alstatt
Sponsor: James Makubuya (Music)
Title: Zimbabwe and Taiwan: A Comparison and Contrast of their Musical Cultures

Zimbabwe in southeast Africa and Taiwan in East Asia are countries that are geographically located on the opposite sides of the globe; but despite that, they share a number of similarities. Both countries prioritize music. What I found amazing is the fact that both countries seem to have different perspectives on music than what we do here in the United States of America. In this presentation, I will discuss different instruments and dances that are prominent to each country, and the contextual function as well as the cultural significance behind each instrument and dance. Instruments that will be covered include the: twin-pipe nose flute, *mbira*, jaw harp, *hosho*, and *marimba*. In addition to the instruments and dances, I will also discuss the attires and costumes, the meanings behind them, as well as how they compare and contrast between the two countries.

Presenter: Matthew Bailey
Sponsor: Gilberto Gómez (Modern Languages & Literatures)
Title: The Decline of Spain and its Repercussions: Pessimism in the Literature of Valle-Inclán and Baroja

This presentation investigates the “Zeitgeist” during the decline of Spain at the end of the 19th century and beginning of 20th century and how Spanish literature captured the pessimism and negativity during this time period. In an era of a lot of violence and anarchy, the Spanish literary works of *Luces de Bohemia* (1920), a tragic play by Ramón María del Valle-Inclán, and *El árbol de la ciencia* (1911), a novel by Pío Baroja, offer criticism of Spanish society and government. Both authors describe a revolution through literature and knowledge in order to combat the hardships of the era instead of a violent revolution like many of the anarchists of the period preferred. This presentation examines these revolutionary ideas of the main protagonists of *Luces de Bohemia* and *El árbol de la ciencia* and how Valle-Inclán and Baroja believed that these revolutions could only function in an ideal world.

Presenter: Joshua Brogi
Sponsor: James Makubuya (Music)
Title: K-Pop and Culture: The New Identity of South Korea

This presentation examines the impact the K-pop genre has had within the past several decades. By giving context to this phenomenon, I will display all of the facets of K-pop and the many roles involved in producing a viral song. The time period includes the late 1992 to the present day. The K-pop world has not only altered pop-culture forever but it also plays a major role in giving South Korea its international name recognition. The world of K-pop lies on the farthest frontier of technology and proves itself to be years ahead of any other form of music. K-pop is nothing like traditional Korean music; and in fact, it strives to be as inventive as possible, leaving behind the slower, acoustic sounds of musical genres like sanjo, and classical instruments like the gayageum, for purely electronic instrumentals with heavily produced vocals. K-pop is the quintessence of the power of marketing today, as the hypnotic choreography along with the addictively catchy beats is the genius of the record labels. This presentation seeks to provide information about a novel topic that is highly relevant and vital to the future of pop-culture and music.

Presenter: Nicholas Budler
Sponsors: Matthew Carlson & Cheryl Hughes (Philosophy)
Title: How can Hume’s Model of Sympathy Explain our Inability to Alleviate Distant Suffering?
 Can We Solve this with Technology?

Absolute poverty means a daily struggle to fulfill even the most basic needs: health, clean water, education, and sanitation for 1.3 billion humans around the world. Over 27,000 children die every day worldwide, mostly for these reasons. It’s hard to believe we would let anyone dear to us lack such fundamental resources. I argue that with a revision of our focus, and a revised reading of David Hume’s moral theory, we can make productive strides towards reaching the UN’s number one goal: no poverty by 2030. I build on the notion that we need to step back from “a belief that ethical deliberation ought to be based on reason and rationality…” into a better explanation – one that is founded in Hume’s theory of morality. I also look at Adam Smith’s notion of sympathy to raise a further potential issue, while possibly offering a better understanding of the current dilemma. Additionally, I use work of Harrison and Richardson in *Visions of Compassions* as a framework through which we can understand the differences between Hume’s ideas of altruism and those that are biological in nature. Combining these elements, the first section of this work is purely descriptive. I disregard the economic debate about how to alleviate poverty but instead look to explain, with reference to the conceptions of sympathy by Hume and Smith, why we have been unable to reach those UN goals. In the first, to be clear, I make no claims about what ought to be done, only focusing on what seems to happen. The second is prescriptive; I aim to offer a potential solution to the problem described in part one. The answer is technology. I want to do away with over-used, preacher-like analogies of African children, impoverished helplessness, and the like. Instead, I turn to the simple analogy of the exotic Tiger, around which I build a repeatable model for change in part two.

Presenter: Drew Buttrum
Sponsor: Robert Royalty (History)
Title: Jonestown: The Mystery of the Peoples Temple

My presentation will be over my final paper for Dr. Royalty’s history 200 class, history of the end of the world. I wrote about the anarcho-communistic millenarian characteristics present in Jim Jones’s infamous religious group, the Peoples Temple. On November 17, 1978, the United States incurred its single greatest loss of civilian life at the time. Over 900 people including Jones, his followers, and a United States congressmen were killed that day, either by drinking cyanide-laced kool-aid or being shot. I will be comparing the Peoples Temple to the Anabaptist at Munster, an anarcho-communistic millenarian group from the middle ages. I will also be exploring whether the “revolutionary suicide” was more suicidal or murderous.

Presenter: Quinn Cavin
Sponsor: Michael Abbott (Theater)
Title: *Rain Dance* (A Short Film)

This presentation will include a screening of Quinn Cavin’s theater capstone project, a short film, *Rain Dance*. The film features performances and creativity from an array of the Wabash College Theater Dept.’s finest: Prof. Michael Abbott, Austin Ridley, and Austin Yeomans. The first half of the presentation will be dedicated to the screening of the film, which runs about eight minutes. The film screening will be followed by a ten minute Q&A session with the director, Quinn Cavin. The presentation will hopefully be informative and inspire more students to experiment with narrative filmmaking and promote the film/digital media minor on campus.

Presenter: Austin Chivington
Sponsor: Jeremy Hartnett (Classics)
Title: Distant Echoes and Views of Ancient Life in Pompeii: What Graffiti in the Grande Palestra in Pompeii
 Tell about Spatialized Social Activity

Ancient Romans scratched all manner of messages and information, such as number tallies, into their cities’ walls, making graffiti a tremendously valuable primary source for studying ancient culture. Since the discovery of Pompeii in the 18th century, scholars have catalogued these scrawlings and examined their content, with fruitful results. This study contends that still more can be learned when we also factor in the spatial setting and context of graffiti. My particular case study is Pompeii’s Large Palestra, a four-sided colonnade that offered a public exercise ground and greenspace next to the city’s amphitheater. Mapping the locations of the Palestra’s graffiti allows insights into Pompeians’ activity within the structure

–where they may have congregated, how they undertook their graffiti creation, and whether graffiti were understood in the same manner as we consider “tagging” today. From literally sketchy drawings of gladiators to elegant portraits, the echoes of everyday life can be heard when studied in dialogue with their space.

Presenter: Vincent D’Angelo
Sponsor: Lorraine McCrary (Political Science)
Title: New Amsterdam to Cape Town: Reflections on a Changing Common Law

New Amsterdam and Cape Town both inherited first Dutch Law, and then English Common law; how could their trajectories be so different? The answer lies in the social and legal histories of these colonies. I will examine the differences and similarities among the adoption and rejection of common law traditions from the time of annexation and into contemporary legal work. This presentation argues that the law and civil rights disparity between South Africa and New York can be traced back to an environment of legal paralysis created by sustained violence in South Africa, and peaceful integration in New York; this process was further complicated by the procedural adoption of the English law in South Africa, and its rejection in favor of American constitutional ideas of checks and balances in New York. Perhaps we may be able to illuminate how the legal excesses of the American Experiment have been tempered by its unique structure of government in ways traditional common law could not have managed. Earlier this year, I had the privilege to present my original research, with this as my topic, to the Northeastern Political Science Association at its annual conference, in Montreal. I was also included in a panel discussion with other undergraduates, as well as professors from Lock Haven and Johns Hopkins Universities. For my presentation, I would like to present a synopsis of this research not only in its written form, but also what I was able to glean out of those discussions in Montreal.

Presenter: Damion Davies
Sponsor: Derek Mong (English)
Title: *Drown Me, Aphrodite: A Reading*

In an attempt to explore different facets of love and relationships ranging from across romantic, platonic, and familial backdrops, this poetry reading offers a first-person look into narrators who are embroiled in various stages of these. The poems were written over the course of three years, specifically in English 212, 312, and 498.

Presenter: Christopher Diaz
Sponsor: Michael Abbott (Theater)
Title: *Diaz’s Dimension*

Diaz’s Dimension is a little slice of Chris Diaz’s (me) life. This project is a music video about what I think it takes to be a successful person. This project was produced, written, edited, and directed by me. The genre is a rap/r&b. It’s approximately 7 minutes long.

Presenters: Nathan Gray & Arthur Equihua
Sponsors: Jill Rogers & Eric Wetzel (Global Health Initiative)
Title: A Cure for Healthcare: A Survey of Approaches to Fix our Broken System

For years, the healthcare system in America has grown increasingly expensive, fragmented, and ineffective. To make healthcare more accessible and to combat growing healthcare costs for both the individual and the industry, various groups are taking innovative approaches to reforming the healthcare sector. This summer, we spent time in Bloomington, IN and the Research Triangle of NC observing how such groups hope to impact the healthcare industry to make it more efficient, cost-effective, and available for all patients. One notable observation of this trend was the importance of interdisciplinary knowledge and a liberal arts approach to problem solving. This presentation seeks to provide a survey of the novel solutions we studied. To do so, we will use an imagined case study of a patient moving through the healthcare field to highlight where in the healthcare journey these solutions are targeted and how they transform the system. Our experiences emphasized not only the importance and the opportunities for innovation but also the need for critical thinking and an interdisciplinary skillset for generating compelling, humane solutions for one of our nation’s largest challenges: healthcare.

Presenter: Wade Haesemeyer
Sponsor: Jeremy Hartnett (Classics)
Title: Wabash's Taj Mahal? A Podcast about the Origins of the Sparks Center

From its creation, the Frank Hugh Sparks Center has provoked strong opinions on the part of Wallies. This presentation, in the form of an audio essay, traces the story of the structure's initial conception and fascinating backstory. Archival documents, old Bachelor articles, an episode of *This Is Your Life*, and an interview with Wabash archivist Beth Swift all help tell a series of stories: about how the architect of the West Wing of the White House was lured into the project; about student dismay at the structure's opulence when it was finished; about the placement, defacement, and removal of a statue; and about how a marble twin of the Sparks Center graces an American military cemetery in Italy. Even as this building's days are likely numbered, its lessons may bear fruit as we consider its successor.

Presenter: Griffin Hall
Sponsor: Lon Porter (Chemistry)
Title: World Building: The Process of Creative Writing

Storytelling is a process. Many people who are inexperienced or are new to creative writing don't know where to start. Some jump straight into writing the tale, stringing events together in order to form a narrative. Developing the world of your story, or World Building, allows you to more effectively tell your story and immerse your audience inside it. Within my presentation we will discuss the importance of creating the setting of the story to inspire the story itself. We will walk through and construct the major aspects of the world to weave together the beginning of our own narrative. Audience participation and input is encouraged!

Presenter: Neal Hayhurst
Sponsors: Jill Rogers & Eric Wetzel (Global Health Initiative)
Title: Community Paramedicine: The Proactive Approach to Emergency Medicine and Community Health

The Crawfordsville Fire Department is pioneering an innovative approach to community health and emergency medicine. The Community Paramedicine Program addresses a blind spot in emergency medicine. The program is a collaborative, innovative, out-of-hospital, patient-centered, holistic effort to proactively address health related issues in at-risk individuals in the Crawfordsville community. I am essentially working as an assistant to the community paramedics. I recently helped design and prepare a PowerPoint presentation given by Chief Paul Miller at the World EMS Expo at UCLA and I am currently writing case studies to exhibit the efficacy of the program. My job is to compile raw data and information from individual cases and compose intriguing narratives featuring the program's success in addressing community health issues. Within that framework, I am given the freedom to construct original, creative works. I am currently working on three different cases that present the program's improvement of prenatal care, particularly in smoking cessation and breastfeeding education for expecting mothers. The Crawfordsville program is one of a few pilot programs across the nation and the case studies that I am authoring are intended to be used at presentations across the country to procure funding and national support.

Presenter: Walker Hedgepath
Sponsor: Sabrina Thomas (History)
Title: Warring Brothers: A History of Sino-Vietnamese Relations in the Indochina Wars

Sino-Vietnamese relations span two millennia of a complicated history that came to global attention in the mid-twentieth century. In shortly over a span of twenty years, Vietnam and China regarded each other first as key allies and later as fierce enemies in the Indochina Wars against France and the United States. This paper will examine three geopolitical factors that drove this relationship: the historical geographic disparity between China and Vietnam, the 1956-1966 ideological split between the Soviet Union and the People's Republic of China, and diplomatic pressure from Western powers. These factors are key to understanding North Vietnam's success against France and the United States and China's success in diplomatically isolating the reunited Vietnamese state in the Sino-Vietnamese wars of the late 1970s and 80s.

Presenter: Brock Heffron
Sponsor: Jennifer Abbott (Rhetoric)
Title: Empathy and the #MeToo Movement: A Rhetorical Analysis of the Case of Aziz Ansari

Drawing on an analysis using the pentad and concepts from image repair, I claim that Bari Weiss defends Aziz Ansari by portraying him as the Scene, who was unfairly controlled by his female accuser, “Grace”, as the Agent. This formulation of the Agent: Scene ratio sculpts the article in a way that provides evidence to encourage the perceptions from the misbehavior of Ansari to change in favor of repairing Ansari’s image. This conclusion flips the initial narrative, encouraging a change to predisposed opinions and encouragement of agency for all. Through transformative and passive empathy, we are better able to understand how the #MeToo movement can continue to push to create a better atmosphere that encourages genuine engagement rather than sentimental attachment.

Presenter: Matthew Hodges
Sponsors: Jill Rogers & Eric Wetzel (Global Health Initiative)
Title: Health Equity in Montgomery County

There are many factors that influence our overall health. “Good health” is much more than the absence of disease or illness. Rather, health is a holistic measure of physical, emotional, and social well-being. Non-medical factors such as economic stability, education, social and community context, neighborhood and built environment, and access to care (collectively known as the Social Determinants of Health) can all affect the overall health of individuals in a community. A state of health equity is achieved when every member of a community has an equal opportunity to reach their full potential in terms of health regardless of social position or other demographic factors. The purpose of this research was to explore the relationship between the social determinants of health and various health outcomes within Montgomery County. By discovering disparities in health between social demographics (uneven health outcomes due to non-medical factors), the Montgomery County Health Department is able to identify opportunities for programs that reach the people who need them most.

Presenter: John Janak
Sponsors: Sara Mehlretter Drury & Todd McDorman (Rhetoric)
Title: Donald Trump: A Rhetorical Enemy or a Rhetorical Genius?

In the United States, the Inaugural Address plays a pivotal role in establishing expectations for a new presidency. As a result, rhetorical scholars have studied these speeches and recognized themes and ideas that constitute a rhetorical genre. However, in 2017, the United States witnessed their incoming President, Donald John Trump, adopt unique tactics that had never been seen before from a president and have brought some of the generic expectations of Inaugural Addresses into question. Through the use of genre criticism and enemyship, this presentation examines President Trump’s rhetorical techniques to better understand his unique rhetorical choices. I claim that in departing from several of the expectations of typical Inaugural Addresses, Trump set his rhetorical agenda and manipulates audiences into changing their perspectives of specific groups such as “Washing politicians” and immigrants. As a result, the address directs the focus away from Trump and towards “enemies,” in the process alleviating the pressure from him to implement positive change in society.

Presenter: Hunter Jones
Sponsors: Jill Rogers & Eric Wetzel (Global Health Initiative)
Title: Small Town Actions towards a National Epidemic: Experiences with Combating the Opioid Epidemic at the Montgomery County Health Department

In 2016, opioids were responsible for the loss of an estimated 42,000 American lives, a number almost 5,000 greater than the fatalities resulting from motor vehicle crashes that year. While numbers on a national scale provide a humbling scope of how large this epidemic is, the real battle is waged by local agencies every day. This presentation will reflect on what problems we are facing locally while combating this epidemic in addition to recent strides taken by agencies in Montgomery County, specifically the Montgomery County Health Department, to combat the opioid epidemic. Finally, while reflecting on what has already been done, this presentation will propose additional steps to further battling this epidemic.

Presenter: Thomas Kenney
Sponsors: Gary Phillips & David Blix (Religion)
Title: al-Qaeda: A Case Study of the Sociology, Ideology, and Theology of Religious Terrorism

Conversations surrounding Islam and the phenomenon of Islamophobia have exploded exponentially around the world in recent decades, especially since September 11th, 2001, though many without theological or ideological understandings of the extremist forms of Islam. Islam and its radical counterparts, such as al-Qaeda, are often lumped into the same categories of faith, though this is a disservice to almost two billion Muslims around the world. Thus, this topic of religious terrorism, specifically relating to al-Qaeda, will be explored through an analysis of its sociology, ideology, and theology. In order to understand the goals, purposes, and rationale of radical Islamic terrorism and violence, this presentation will take a step into the minds of al-Qaeda by studying the roots of radicalization in society, analyzing their understanding of God and religion, and learning about their perceived role in the world.

Presenter: Zachary Kintz
Sponsors: Jeremy Hartnett & Bronwen Wickkiser (Classics)
Title: Epigraphic Practices among Households of Different Sizes in Herculaneum

This presentation examines the messages scratched into the walls of houses at Herculaneum, a Roman city located in Italy near its more famous cousin, Pompeii. My main goal in this project is to identify whether or not there are any differences in epigraphic practices among households of different sizes. Many challenges arise in assessing the data, however, since they are subject to many factors, such as the history of the city's excavation, the non-uniform destruction of the city by the eruption of Mt. Vesuvius, and the haphazard interest in graffiti by previous generations of scholars. Consequently, I will walk the audience through these challenges before explaining my findings, notably that, while similar densities of graffiti occur in houses large and small, the density is lower for medium-sized houses. This conclusion leads me to consider the composition of households of different sizes as well as to interrogate the qualitative composition of the graffiti – did small, medium, and large households scrawl not only to greater and lesser degrees, but also did they scratch different things into their walls?

Presenter: Keegan Kirkwood
Sponsor: Natalie Aikens (English)
Title: Climate Change and the Humanities: Why Citizens are Culpable

Climate change is a massive issue with mitigating solutions apparent at all levels of government. But where does an everyman stand in the battle against rising temperatures, and why should citizens be responsible for doing their part in reducing their own carbon footprints? We have a civic duty to ensure the longevity of our nations, and climate change affects that longevity on multiple levels. The issue is that individual people have no statistically significant effect on climate change when they are in the minority. Saying that individuals have no measurable effect on climate change and carbon emissions does not mean that they are not trying to make a difference. Being mindful of one's energy efficiency is an important step in living a sustainable lifestyle. There are a handful of actions that people can take in order to slash their own carbon footprint, but these actions get in the way of people living their day to day lives. Even though citizens have a small overall impact, they still have a moral duty to do so. This is why local governments need to step in and impose laws that promote energy saving and energy efficient behaviors.

Presenter: Eric Lakomek
Sponsors: Jill Rogers & Eric Wetzel (Global Health Initiative)
Title: A Patient's Perspective in Obtaining Mental Health Treatment

Mental health is a topic that has dominated recent news and social media. Many advocates for treatment are beginning to speak out and challenge the stigma associated with having a mental health disorder. This, in turn, is having a direct impact on the type of care that many professionals are being required to provide. Many healthcare providers are faced with individuals coming into their clinics for disorders like anxiety, depression, etc. These providers are diagnosing mental health disorders; however, they do not necessarily navigate the process of receiving treatment themselves. As a result, many are unaware of the obstacles that a patient has to overcome to get the help they need. The purpose of this research project was to understand exactly what a patient encounters when seeking help for a mental health disorder both from a self-referral and a doctor's referral. It was my hope to understand the obstacles and troubles a patient goes through and truly delve into why mental health is such a crisis today. Receiving the proper treatment is not as easy to obtain as one may think.

Presenter: Davis Lamm
Sponsor: Stephen Morillo (History)
Title: Revolutionary Privateers: Asset or Liability?

During the Revolutionary War, the Continental Congress could not afford to build a navy strong enough to fight the British directly. Instead, it authorized thousands of privately held ships to maraud British merchant vessels and supply ships. My research found that privateers waged a successful war against British trade and captured the supplies needed for the Continental Army to win on land.

Presenters: Joseph Lenkey & Joseph Whitaker
Sponsors: Eric Wetzel & Jill Rogers (Global Health Initiative)
Title: “The Best Way to Learn is to Teach”

In more ways than one, teaching has taught me patience, empathy, research, and problem-solving skills that have contributed an integral part to my Liberal Arts education. Through leading classes at a local women’s drug addiction rehabilitative treatment center (Half Way Home), I argue how teaching is one of the best ways students can fulfill Wabash’s mission statement. In this presentation, we will break down our experiences with T.A.L.L. that include the challenges and successes of tailoring a presentation to a very different audience than our Wabash community. We will conclude by describing other opportunities in which Wabash students might get involved.

Presenter: Weijia Li
Sponsor: James Makubuya (Music)
Title: Korean Traditional Music: A Discussion of the Most Popular Instruments

Based on their cultural heritage, in the process of time, the Korean people have created various types of musical instruments. The musical instruments that have been documented and recorded in the chronicles from the primitive age up to now amount to one hundred and in various kinds of groupings. Using the Hornbostel-Sachs world music instrument classification system, the four groupings in which all those types of traditional musical instrumental resources are summarily classified include aerophones, chordophones, membranophones, and idiophones. For this presentation, I will list down and summarily discuss the musical and contextual functions of the most representative instruments in the four classifications mentioned. The ten most popular instruments in Korean traditional music to be presented and discussed will include the *gayagum*, *nagak*, *haegeum*, *pyeonjong*, *buk*, *yanggeum*, *daegeum*, *kkwaenggwari*, *bak*, and *taepyeongso*.

Presenter: Kyle McAtee
Sponsor: Jennifer Abbott (Rhetoric)
Title: A Critical Look at Brokeback Mountain: How it Shifts Society’s Thoughts towards Equality

Few movies in the 2000s had as much of a social impact as Brokeback Mountain. Its broad reach to different audiences proved to allow for a broad range of reactions and reviews of the film. Brokeback Mountain is a love story that gripped the hearts of both the queer community and the prominently straight societies around the globe. It is widely discussed in scholarly works throughout the fields of communication because of the deep themes that combat societal norms. Utilizing Critical Rhetoric’s dimensions of domination and freedom, I will look at the specific themes throughout the movies to ultimately show that Brokeback Mountain’s main goal is to normalize gay relationships in an effort to combat homophobia. With this type of rhetorical critique, I argue that the misconstrued reviews and reactions from audiences miss the intended goal of the film to fight against homophobia. I consider how a film like this can be a call to action for audiences and reviewers alike to fight against homophobia and treat people of the queer community fairly and equally to their straight counterparts.

Presenter: Nhan Nguyen
Sponsor: Ann Taylor (Chemistry)
Title: Superposition of Macromolecular Electron-Density Maps in X-ray Solution Scattering (SAXS)

Understanding the structure of biological macromolecules is important for determining their functions and cellular activities. With the growth of computational techniques in crystallography, X-ray Solution Scattering Data (SAXS) becomes more applicable to reconstruct a wide range of 3D biomolecular structures from a low-resolution profile by its easier use and simpler sample preparation. A novel program called (DENsity from Solution Scattering) resolves disadvantages of low-resolution data and retrieves 3D structural information of the complexes in solution. Due to the lack of information of 1D scattering data, these SAXS profiles require more modeling procedures and novel iterative algorithm to retrieve desired macromolecular structures. Our lab's previous publication in *Nature* elucidates the modeling algorithm using the Fast Fourier Transform to calculate and reconstruct 3D electron density maps of each profile. To obtain better 3D maps of macromolecules, we face another challenge of averaging method. The averaging step involves principal axis alignment, enantiomer selection, overlap score optimization among multiple (20) electron density maps. The updated version has been worked out by minimizing interpolation overuse and independently running with new Python codes that no longer require heavy EMAN2 installation as previous for the reconstruction purpose.

Presenter: Joseph Patacsil
Sponsor: Maria Cristina Monsalve (Modern Languages & Literatures)
Title: The Mouth's Projection: The Faculty of Reality and Dreams in Surrealist Works

This essay is an in-depth assessment of how Latin American artists Luis Buñuel and Julio Cortázar explore the intersection of reality and dream-state in their respective mediums. Utilizing their surrealist inspiration, Buñuel and Cortázar seek to put a narrative towards that inherently confusing space where cognizance and incognizance, perception and misperception, real and fake operate. The product is a psychological discovery which has a profound impact concerning one of the most philosophical questions in man's existence: What is a reality? What Buñuel and Cortázar show us in their respective projections, or visualized interpretations of this abstract realm, is that the human mind has the compelling and confusing ability to create narratives which are counterintuitive to logic yet convince us all the same that what is real and what is not is not a clear distinction. This project will be presented in conjunction with 2-3 others student, including the work of Professor Monsalve, and will be given in Spanish as a forum.

Presenters: Oliver Page, Jacob Helmer, & Christian Wirtz
Sponsor: Cory Geraths (Rhetoric)
Title: Remembering a Queer Worldmaker: The Rhetoric of The Andy Warhol Museum

What do you think of when you think of Andy Warhol? Soup cans? Portraits? The Andy Warhol Museum rhetorically positions the artist as a queer icon and, in doing so, curates a space that includes the queer elements of sexual identity, play, and archives. Through this collaborative independent study project, we analyzed the construction of Andy Warhol's public memory, as exhibited in the museum in Pittsburgh, PA bearing his name. By working with two archives of photos taken from the museum, we conclude that the museum's seven floors create a narrative that puts a face to an incomplete GLBTQ past--a move that both rhetorically empowers the current GLBTQ community and invites the audience to partake in future queer worldmaking.

Presenter: Joseph Patacsil
Sponsor: Derek Mong (English)
Title: *How To Use a Handkerchief*

How To Use a Handkerchief is a short story, written to contribute to my larger Senior Creative Writing Thesis. It traces the reunion of two brothers, who, after years of intermittent communication, convene at a nostalgic restaurant of their youth. What ensues are the conversations that only brothers can have, as the brutal reality of their quotidian lives rings deep within their ears. *How To Use a Handkerchief* is an exploration of family dynamics, of unarticulated emotion, and of self-created illusion as a means to mask discomfort. At its most effective, *How To Use a Handkerchief* is an exhibition of the threads that bind families together and the patchwork efforts made when those threads cease to be.

Presenter: David Riggs
Sponsor: Stephen Morillo (History)
Title: An Analysis of Commerce Giants, Past and Present

The British East India Company was a commerce and trade company like none other. I contend that this company saw the success that it did due to its specific management structures, business model, diversification of revenue streams with the utilization of maritime trade, and its relationship with Queen Elizabeth I and the British Government. I further argue that because of the success that the BEIC saw over the 17th, 18th, and 19th centuries, business analysts and commerce companies of today should take note of specific strategies that are implemented by the East India Company to ensure that their own companies see increased longevity and success.

Presenter: Jacob Riley
Sponsor: Stephen Morillo (History)
Title: Whatever You Know about Pirates, You Likely ARRRR Wrong!

This presentation takes an in-depth look at how pirates immediately became mystified as legendary beings during their golden age (1600-1750). This is mostly due to media portrayal, primary accounts, and fearmongering that led to such an exaggerated state that the public would believe anything. I will look at some of these primary accounts and dissect them with what is actually known to show this mystification taking place.

Presenter: Ronald Ryan
Sponsor: Sara Mehlretter Drury (Rhetoric)
Title: Language and Society: A Rhetorical Analysis of the Versatility of Language Using Donald Trump and LeBron James

Language use in America is intricate and powerful. It can be used to build camaraderie with fellow citizens, or be used to alienate those who may not look or think like you. My senior seminar paper revolved around examining the intricacies of language and how it can be used to oppress groups of people. Through the use of rhetorical theories fragmentation and critical rhetoric, this presentation will take an in depth look at the ways in which language use is shaped by race and social class through looking at the rhetoric of Donald Trump and LeBron James. I examined Tweets and interviews from both men on topics like Charlottesville, James's I Promise School opening, and the infamous "Shut up and Dribble" statement from Laura Ingraham. I claim that Trump has free reign and uses language as a means of establishing dominance over James, who must navigate language in restricted ways in order to resist, and their interactions are representative of societal views of whiteness and blackness.

Presenter: Samuel Stephenson
Sponsor: Agata Szczeszak-Brewer (English)
Title: Societal Nonconformity in Joyce's *A Painful Case*

Much of the scholarship surrounding Joyce's *A Painful Case* focuses on Mr. Duffy and the common themes of his neuroticism and homosexuality. Although Duffy is certainly a character worth analyzing, it is often done so at the expense and erasure of the other characters in the text, specifically Mrs. Sinico. By including Mrs. Sinico in my analysis, *A Painful Case* becomes less of a case study of one individual (Mr. Duffy), and more of a larger representation of the dismal realities of those who do not comply with the gender, moral, and civil codes that society places on them. The representation of Mrs. Sinico and Mr. Duffy in *A Painful Case* shows two characters who are both trapped, one by his sexual orientation and the other by her gender roles.

Presenter: Max Von Deylen
Sponsor: Maria Cristina Monsalve (Modern Languages & Literatures)
Title: Abnormality: A Paradox of Praise in Julio Cortázar's *Hopscotch*

Julio Cortázar is an abnormal author. *Rayuela* is an abnormal novel. With a unique interpretation of what classifies a novel as such and how it should be read, Cortázar channels a cultural appetite for experimentation to question the human experience. *Rayuela* is a challenge to the perception of normality and a "normal", in favor of one unbound and dedicated to the pursuit of answers to our metaphysical questions. However, such a charge is not left solely to the characters within the novel. Instead, Cortázar's unique presentation allows a sense of empowerment to reach the readers, hoping to illustrate the control they have over their own existence through the control over Rayuela that he imparts. Yet, the approach is paradoxical in the sense that Rayuela contains no answers, only questions. Cortázar does this to show the difficulty in an abnormal, free existence, but without disparaging its significance.

Presenter: William Osborn
Sponsor: Maria Cristina Monsalve (Modern Languages & Literatures)
Title: Reality and the Importance of Verisimilitude in Fiction

What is reality? What is fiction? Is there really that much of a difference between the two? Jorge Luis Borges, the renowned Argentinian author, wrote many stories that analyzed and exploited the similarities between reality and fiction. This paper seeks to analyze that relationship through the writings of Borges, ultimately arriving at the following question: why are authors able to manipulate their reader's perspective of reality? Ultimately, because authors create stories that seem believable and because humans innately trust others, this paper contends that readers are destined to be manipulated by authors. As such, readers must overcome these serious barriers. In a day and age where we consume so much biased information, this revelation becomes increasingly more important. Thus, as consumers of mass amounts of information, we must all be very critical of what we read and hear.

Presenter: Aaron Webb
Sponsors: Jill Rogers & Eric Wetzel (Global Health Initiative)
Title: Cultivating Healthy Communities: Using Principles of Civic Ecology to Understand Community Well-Being

The growing prevalence of mental illness and substance abuse threatens the future of rural communities as these places find themselves ill-equipped to generate creative, innovative, and long-term solutions to these problems. In this presentation, I use personal experiences gained in Crawfordsville, in my hometown of Huntington, and at The Painted Turtle, a SeriousFun camp in California, along with the core principles of civic ecology, to explain why some communities struggle while others prosper. The presentation delves into concepts of social capital, social connectivity, and community software as they relate to the question of community resilience. I reject the popular views that economic development or expanded access to social services create vibrant communities, and I assert that developing a community's civic ecology is the best way to build adaptive communities equipped with the tools to address their own problems.

Presenter: Christian Wirtz
Sponsors: Todd McDorman & Cory Geraths (Rhetoric)
Title: A Local Legend: Lew Wallace and the Significance of Small Museums

This is a rhetorical criticism of the Lew Wallace Study and Museum in Crawfordsville, Indiana: a small museum designed as a memorial to a Civil War General, diplomat, and author of the best-selling book of the 19th century: *Ben-Hur: A Tale of the Christ*. Wallace personally designed the Study, which was built in 1895 and opened as a museum 10 years later following its creator's death. In 1976, the Study came under federal protection when it earned the title of National Historic Landmark. In 2015, the Museum was renovated and refocused from Ben-Hur and onto Wallace himself—narrating his biography and the lasting impact he has on Crawfordsville. Through the use of monumental public memory and mythic criticism, this presentation analyzes the museum from a rhetorical perspective as a means of investigating how the museum memorializes Lew Wallace as a man and as a symbol of Crawfordsville. The presentation will also consider how local museums reflect the values of the society in which they exist.

Poster Presentations (Listed by Poster Number)

Poster 1

Presenter: Miguel Aguirre Morales
Sponsor: Bradley Carlson (Biology)
Title: Method Development for Detecting *Perkinsus* in the Water Column

Eastern oysters (*Crassostrea virginica*) are keystone species due to their role in improving water quality by reducing sediment resuspension and up-taking, sequestering, and filtering nutrients. This oyster species is also unique due to their reef-building ability that provides habitat and refuge for benthic biota. This oyster species has had a dramatic population decline in recent years. According to the National Oceanic and Atmospheric Administration (NOAA), eastern oyster harvests in Maryland decreased from approximately 70 million pounds in 1880 to less than 5 million pounds by 2000, with the discovery of dermo in the 1940s. Dermo is the disease associated with *Perkinsus marinus*, a parasite implicated in high mortality of populations. A large issue with studying the parasite is the cost associated with current detection methods, which involves genetic processing methods. To address this, we developed an affordable method to detect *Perkinsus* in the water column by adapting previous methods used to detect *Perkinsus* in oyster tissue. We found that the new method was successful in detecting *Perkinsus* across various oyster reefs, with 250 mL being the optimal filtration volume due to time constraints.

Poster 2

Presenters: Thach Huynh, John Trebing, & Keanan Alstatt
Sponsor: Neil Schmitzer-Torbert (Psychology)
Title: Validation of a Translational Virtual Experiential Foraging Task for Humans

Foraging tasks provide valuable insights into decision-making, as animals make decisions about how to allocate limited resources (such as time). In the “Restaurant Row” task, rodents obtain food rewards at several sites. In the “Web-Surf” task, humans are offered short videos from different categories. In both tasks, rewards are available after a variable delay. While rodents physically move between reward sites, humans transition to the next video type by pressing a button. Rodents and humans show similar patterns of behavior on these tasks, supporting their use to study decision-making across species. We tested a new human task (“Movie Row”), which combines elements of the Restaurant Row and Web-Surf tasks. In the Movie Row task, participants navigate through a 3-d virtual environment on a rounded track. A movie screen is positioned at each corner of the track, where 4-sec video clips are available from one of four categories (kittens, bike accidents, landscapes, and dancing). As participants arrive at a screen, the category and loading time (delay) is presented. Participants accept offers by stepping onto a platform and looking at the screen, or skip an offer by moving to the next reward site. Delays range from 3 to 29 seconds (though longer delays were possible in the second version). Two versions of the task were tested, the first in a sample of 30 male undergraduates who completed the Movie Row task in a laboratory. The second version was tested in an online sample of 51 participants (30 females, mean age = 42.2 years) recruited through Amazon’s Mechanical Turk. Behavior on the Movie Row was similar to that of the Web-Surf task. Revealed video preferences, assessed by delay thresholds (the delay below which they would accept, above which they would skip an offer) were positively correlated with stated preferences, with more than 64% of participants having a correlation greater than +0.75 with the average video rankings and with post-experiment rankings of each video category. Decision consistency (the proportion of offers where participants deviated from their delay threshold) was lower on the first (in-person) version ($M = 0.12$, $SD = 0.05$) than the second (online) version ($M = 0.20$, $SD = 0.11$), higher than the reported mean for the Web-Surf task ($M = 0.07$), but similar to the Restaurant Row task ($M = 0.12$). These data support the Movie Row task as translational tool to study foraging behavior in humans, providing convergent results with a rodent navigation task and a human stay/go foraging task. And, by including a virtual navigation component, the task may be useful in testing if behavioral measures identified in the rodent Restaurant Row task translate to human virtual navigation.

Poster 3**Presenter:** Joseph Ballard**Sponsor:** Erika Sorensen-Kamakian (Biology)**Title:** Characterization of Triple Negative Breast Cancer Cell Clones to Better Understand the EMT Spectrum

Triple Negative Breast Cancer (TNBC) presents a challenge to treat because it is not hormone-driven and has no targeted therapeutic option; therefore, patients must depend on chemotherapy as the only standard of care. TNBC cancers are aggressive, prone to metastatic progression (spreading to other body locations), and have poor clinical outcomes. Many of these properties are due to the epithelial-to-mesenchymal transition (EMT), which is a cellular reprogramming process that causes epithelial cells to lose characteristics such as cell-cell adhesion, cell polarity, and adherence to basement membrane and instead gain enhanced migratory and stem-like properties. Additionally, this transition confers therapeutic resistance to cells. This transition generates cells that exist on a spectrum of EMT states, as opposed to a binary switch. In the context of TNBCs, this spectrum results in heterogeneous tumors, making tumor-specific targeting a challenge. The goal of this project is to better understand the EMT spectrum for TNBC cancers by characterizing cell lines that represent different points along that spectrum. This careful characterization could reveal novel targets for treating patients with TNBCs.

Poster 4**Presenter:** Maximilian Cobos**Sponsor:** Ann Taylor (Chemistry)**Title:** Paper Current Collectors Coated with V_2O_5 /Graphene Oxide Composite for Rechargeable Flexible Electrodes for Lithium-Ion Batteries

A flexible electrode made with paper-based collectors coated with vanadium pentoxide (V_2O_5), and both graphene oxide (GO) and polyvinylpyrrolidone (PVP) as precursors, have been developed to fabricate flexible Lithium-ion batteries. These paper-based batteries are made out of wood microfibers coated with Polyethylenimine (PEI), polystyrenesulfonate (PSS), and graphene oxide (GO) using a layer-by-layer deposition method. As an electrode material, the V_2O_5 /GO/PVP hybrid was developed by making a sol-gel solution which provides improved Li^+ -ion diffusion and electronic conductivity. The as-prepared solution was accomplished by electrospinning the V_2O_5 composite over the paper-based collectors resulting in the formation of V_2O_5 nanorods, which increases the surface area of this material, improving the Li^+ -ion diffusion. As for the conductivity of the electrode, mixing the V_2O_5 with GO plays a prominent role as graphene oxide and its derivatives enhance the electronic and physical properties of the electrode. In the end, the cyclability and performance of the developed materials for flexible Lithium-ion battery applications and paper-based electrodes will be fabricated and tested.

Poster 5**Presenters:** Colby Dunigan & Jorge Rodriguez**Sponsor:** Karen Gunther (Psychology)**Title:** Cortically-Stimulating Gratings Reveal Non-Cardinal Colors Better than do LGN-Stimulating Spots

We are examining the ability of spots versus gratings to reveal non-cardinal colors. Neurons in the LGN respond better to spots, while cortical neurons respond better to gratings (DeValois, Cottaris, Elfar, Mahon, & Wilson, 2000). In addition, non-cardinal mechanisms are known to not emerge until the cortex (Gegenfurtner, 2003). Thus, non-cardinal mechanisms should be more likely to be revealed with cortically-stimulating gratings than LGN-stimulating spots. This has been shown in the isoluminant color plane in macaque monkeys (Stoughton, Lafer-Sousa, Gagin, & Conway, 2012) and in the RG/LUM color plane in humans (Gegenfurtner & Kiper, 1992). Recent reviews of non-cardinal mechanisms (Eskew, 2009) and S-cone vision (Smithson, 2014) do not report that this has yet been examined in the TRIT/LUM color plane. We are filling in this gap by testing all three color planes, using both spots and gratings, in the same study and in the same species (human). Thresholds to detect spot or grating stimuli are measured in aligned or orthogonal speckled noise. For example, an orange/turquoise grating may be presented in orange/turquoise or purple/lime noise. Evidence for separate underlying neural mechanisms is seen when the threshold to detect the stimulus in aligned noise is greater than in orthogonal noise. All stimuli in the isoluminant plane are individually isoluminant via heterochromatic flicker photometry. Non-cardinal colors are created in equal threshold space. We aim to test 10 subjects in each color plane; preliminary results with 5-6 subjects per color plane are largely following predictions.

Poster 6**Presenter:** James Eaton**Sponsor:** Patrick Burton (Biology)**Title:** The Role of Cell Proliferation During Tissue Regeneration in *Nematostella Vectensis*

Nematostella vectensis are anthozoan cnidarians that have the ability to regenerate damaged tissues following amputation. In general, most oral structures and tissues are completely regenerated 96 hours' post-amputation while the aboral region can regenerate in as little as 24 hours. Currently, the role of cell proliferation in the regeneration of oral structures in *Nematostella* is not fully understood. This research aimed to determine the role of cell proliferation throughout the various stages of *Nematostella* regeneration through the use of fluorescent tagging. Ultimately, it was determined that regeneration of oral, but not aboral, structures requires cell proliferation, which does not start until approximately 48 hours after amputation. Additionally, the mesentery tissue of *Nematostella* was determined to be the main location of cell proliferation, making it critical for the regeneration of oral structures.

Poster 7**Presenter:** Ian Finley**Sponsor:** Sujata Saha (Economics)**Title:** Divorcing Wealth from Crisis

Household data have been an important indicator for predictions of human behavior, especially when analyzing the Great Recession (2007-2009), which had major implications on the lives of everyday individuals. One of the important effects that many sources have documented has been a paradoxical decrease in divorce rates during the crisis. This paper attempts to look at this finding from a different angle, drawing on the logic of Modigliani's life-cycle hypothesis to see the effects of wealth and income on the probability of divorce, both before and during the economic downturn. It demonstrates income's adherence to the findings of recent literature that state, it should have a larger impact on the probability of divorce, and wealth's surprising decrease in influence during the time of the crisis. Furthermore, the results show that the effect of the economic downturn overpowers the extant cultural norms of different geographical regions.

Poster 8**Presenter:** Nicholas Fox**Sponsor:** Erika Sorensen-Kamakian (Biology)**Title:** Investigation of Notch Target Genes Critical for Fertility

Notch signaling regulates stem cells and differentiation during normal animal development and when dysregulated can lead to cancer. In the model organism *C. elegans*, Notch signaling maintains a population of germline stem cells (GSCs) in an undifferentiated and totipotent (capable of differentiating into all cell types) state by promoting the expression of target genes that function in stem cell maintenance. The maintenance of the GSC population is critical because it ensures that a continuous supply of gametes (eggs and sperm) are made, which give rise to the subsequent generation. Therefore, GSCs are directly tied to an animal's fitness. Although numerous studies support the role of Notch signaling in GSC maintenance, the identification and characterization of critical downstream effector genes and how they function to support animal fertility remains largely unexplored. Here we report an initial characterization of apoptotic (cellular suicide) genes as Notch target genes. Loss-of-function analyses, using RNA interference or genetic mutants, indicate that these genes are important for maintenance of proliferative germ cells (where stem cells reside), normal brood size, embryonic viability, and effective egg-laying. We propose that expression of Notch signaling is critical for the creation of functional eggs. Given that germline apoptosis is an important mechanism in egg development in many animals including humans, we propose that *C. elegans* may present a simplified model for how Notch signaling and its effectors regulate stem cells and egg development.

Poster 9**Presenters:** Benjamin Grubbs & Nicholas Etter**Sponsor:** Paul Schmitt (Chemistry)**Title:** Using Second Harmonic Generation Microscopy to Detect Crystallinity of Pesticides on Crop Leaves

The research presented focuses on detecting agrochemical crystallinity directly on leaf surfaces using second harmonic generation microscopy. When a pesticide is applied to the surface of a plant, crystals may form from the active ingredient causing the formulation to be less effective due to the decreased amount of active ingredient in its amorphous form to be absorbed into the plant. Through an imaging technique called second harmonic generation microscopy, the active ingredient was able to be selectively imaged. It has been found that adding a long chain polymer to the formulation reduces this crystallization. This could make the pesticide more effective leading to a reduced amount needed. This has many positive impacts on our environment that range from reduced harmful chemicals into our water and soil along with reducing the amount of harm to animals that feed or drink out of waterways.

Poster 10**Presenters:** Christopher Wilson & Lucas Soliday**Sponsor:** Heidi Walsh (Biology)**Title:** Effects of a High Fat Diet on Rat Hypothalamus Neurons and a Possible Botanical Remedy

Obesity is considered a risk factor for infertility in humans. Obesity promotes endoplasmic reticulum (ER) stress in many tissues, and ER stress in the hypothalamus causes many negative effects on obesity. We used rats as model organisms to study the effects of high fat and low-fat diets in which hypothalamic ER stress can be measured along with gonadotropin-releasing hormone (GnRH). GnRH is a hormone released from the hypothalamus which is essential to fertility. We investigated how high fat diet affected Gnrh1 gene expression in rat hypothalamus. We predicted that a high fat diet would increase markers of inflammation (Il6) and ER stress (Ddit3, Grp78); however, each of these markers actually decreased. Additionally, we sought explore whether natural remedies such as the medicinal root maca, native to Peru, impact GnRH neuron function. A compound found in maca root, macamide-5 was synthesized by Dr. Alicen Teitgen's lab and tested for effects on cell viability in the mouse hypothalamic cell line GTI-7. We found increased cell proliferation at lower concentrations of macamide-5, but further studies are necessary to determine the differences *in vitro* and *in vivo* and how maca affects fertility.

Poster 11**Presenters:** Koty Hall & Spencer Shank**Sponsor:** James Brown (Physics)**Title:** Automated Calibration for the Modular Nuclear Array

The Modular Neutron Array (MoNA) and Large Multi-Institutional Scintillator Array (LISA) are neutron detector arrays located at the National Superconducting Cyclotron Laboratory (NSCL) in East Lansing, MI. Their purpose is to explore the neutron drip-line and probe the structure of the most neutronrich isotopes. These experiments use invariant-mass reconstruction requiring accurate absolute times and positions of neutron detections. Calibrating large detector arrays can be a laborious process, and can be subject to both human mistakes and computer method failures. We will present a comparison of automated methods both to each other and more traditional fitting methods used by the Collaboration.

Poster 12**Presenters:** Rithy Sakk Heng & Nhan Nguyen**Sponsor:** Ann Taylor (Chemistry)**Title:** Kinetics of Mutations in the Active and Allosteric Sites of Fumarate Hydratase

Fumarase, also known as fumarate hydratase (FH), is an enzyme that catalyzes the reversible interconversion of fumarate to malate. Fumarase has two sites: active α -site and allosteric β -site. Mutations in these sites especially the active site may disrupt the enzyme's efficiency and activity. The main focus of this experiment was characterizing different fumarase mutations in both the active and allosteric sites. The kinetic parameters were determined in both forward and reverse reactions. Some mutants showed a decrease in both KM and Vmax while others showed an increase in either or both KM and Vmax. The experimental results suggest that different mutations can have different effects on fumarase efficiency and its overall activity. Further studies are required to address the specific interaction of these mutations in those changes in fumarase activity.

Poster 13

Presenter: Brandon Arbuckle
Sponsor: Ethan Hollander (Political Science)
Title: Tied Hands: Parcelization's Constraints on Land Management Strategies in the Midwest's Northwoods

Parcelization refers to land division stemming from demographic, economic, social, and policy changes. It's generally defined as an increased number of landowners within a specific area, leading to a decreasing average parcel size. This phenomenon creates economic and ecological challenges for forest owners and managers, and seriously limits their ability to respond to challenges such as wildfire prevention, biodiversity management, and invasive pest and disease control. We seek to characterize the contributing factors to this problem, how it affects how landowners manage their forests, and the landscape-wide outcomes of parcelization.

Poster 14

Presenters: Brandon Johnson, Samuel Henthorn, Andrew Merced, & Cole Payne
Sponsor: Bronwen Wickkiser (Classics)
Title: A Formula for Love: Carving out a New Genre in Augustan Rome

The poetry of Ovid, who lived during the reign of the Emperor Augustus, did not follow the typical model of poetry from antiquity - his "epic" breaks away from the style and subject of Homer and Vergil, his love poems do not match those of Catullus or Horace, and his didactic poems differ from the teachings of predecessors such as Hesiod. This breaking away of style made waves in the early Roman Empire, as demonstrated by the fact that Augustus exiled him because of his poetry (a "carmen") and some transgression (an "error," which remains a mystery to this day). Our research will focus on how Ovid's works -- particularly, his *Ars Amatoria* -- are diverse within themselves, incorporating a variety of genres. Furthermore, we will look at how his poetry is different from that of other ancient poets, and also how his poetry departs from Augustus' moral reforms. Another goal of this research will be to compare Ovid's *Ars Amatoria* to the modern genre of how-to manuals and self-help handbooks.

Poster 15

Presenter: Keith Klein
Sponsor: Bradley Carlson (Biology)
Title: Circulating Carotenoid Levels in Eastern Box Turtles

Animal behavior is a relatively new area of study that focusses on why animals behave the way they do, often by observing an animals response to different stimuli. Carotenoids are micronutrients derived from a diet and stored in body fat that can be quantified, giving insight into animals diet and behavior. We quantified circulating carotenoid levels eastern box turtle's blood before and after stressing them and analyzed them with regard to stress, sex, and size. Drawing blood from turtles before and after they were placed in a black nylon bag for thirty minutes (stressor) provided samples that were analyzed with a spectrophotometric assay. We found that stressing the turtles caused an increase in circulating carotenoid levels and a positive correlation between size and increased carotenoid levels. The metabolization of fat would result in carotenoid levels to increase, suggesting that the turtle's physiological response to stress causes the metabolization of fat. Understanding the stress response of these turtle's can give insight as to how they will behave when facing predators.

Poster 16

Presenter: Sopheara Koy
Sponsor: Erika Sorensen-Kamakian (Biology)
Title: Loss of Genes Causes Notch Signaling Phenotypes and Defects in Cellular Proliferation

The *C. elegans* roundworm is a powerful genetic model used to study genes important in human biology and disease because ~38% of worm genes have human orthologs most components in known biological signaling pathways are conserved (1). Given their small size, rapid life cycle, and transparent body, *C. elegans* is an excellent system for gene discovery (2). *C. elegans* exists primarily as a hermaphrodite that can generate both gametes (oocytes and sperm). The germline (the lineage of cells responsible for producing gametes) maintains a population of germline stem cells (GSCs) in order to create a continuous supply of gametes that can give rise to a new animal (3). A specialized microenvironment, a niche, maintains stem cells in an undifferentiated, self-renewable, and totipotent (capable of giving rise to all cell types) state. Disruption of stem cell maintenance and activity can result in tissue degeneration or hyperproliferation of tissue (a hallmark of cancer). In mammalian embryonic stem cells, stem cell functions are maintained by several niche initiated signaling pathways and downstream molecular effectors such as SOX2, OCT 4, Nanog, and poly complexes (3). In *C. elegans*, niche-initiated Notch signaling is the only pathway known to maintain totipotent GSCs; however, key molecular effectors are largely unknown (4). In the study, we investigated if cell cycle genes function as Notch signaling molecular effectors in GSCs by analyzing their expression pattern and loss-of-function phenotypes via RNA interference. Loss of these putative effectors results in smaller germlines, reduced number of proliferative cells (where stem cells reside), embryonic lethality, and defective egg laying. Given that Notch signaling maintains numerous stem cell pools in humans and that Notch signals have both cancer-promoting and tumor-suppressing capacities; characterization of new Notch effectors can inform cancer studies and may provide new therapeutic avenues.

Poster 17

Presenter: Corey Leuters
Sponsor: Adriel Trott (Philosophy)
Title: The Cisterhood: Masculinity, Its Investment in Cisgender Men and the Effects on Single-Sex Institutions

Cisgender men are the driving force behind most institutions. The patriarchal structure cisgender men operate in was constructed by and for their interests. The prioritization of cisgender men over others creates a hegemonic masculinity that can only be operated by cisgender men. All-men's colleges, like Wabash College, have admission policies that state no opposition to trans—or queer—identified students because their definition of a man is not up for question; it is a fact, not to be debated. The preservation of single-sex institutions has become a highly contested topic in the 21st century. In private, all-men's colleges lies an investment in hegemonic masculinity, more specifically, cisgender-hegemonic masculinity. With evolving definitions and understandings of gender and what it means to be a "man" and a "woman," all-men's colleges reinforce their idea of the man; they reinforce what and who can fit in at colleges for men—cisgender men. Cisgender men's investment in the immutability of being a man, and growing into a man, drives the narrative of who belongs and who does not. All-men's colleges are invested in a patriarchal order because it supports their perpetuation of cisgender-hegemonic masculinity.

Poster 18

Presenters: Theodore Lupinski, Quan Chau, & Spencer Shank
Sponsor: James Brown (Physics)
Title: Swarm Bots: Self-Converging Robots

Swarm bots is a term given to any system of robots that communicates with one another to perform a common function, in our case, to converge upon one another, and are useful to study swarms in nature. In our experiment, we are attempting to use a 3D printed model, as well as IR sensors, IR LEDs and small vibrating motors, to create several swarm bots that can communicate with one another and assemble themselves on a single point. To date, we have achieved the creation and reception of IR light and a proof of concept of motion and convergence with the bots.

Poster 19

Presenters: Samuel Marksberry & Owen Doster
Sponsor: Jill Rogers (Global Health Initiative)
Title: Montgomery County Health Department Mosquito Surveillance

Vector-borne illnesses are of increasing concern in the United States. According to the CDC, there were 2,475 cases and 124 deaths reported due to West Nile Virus in 2018. Indiana contributed 32 cases and 3 deaths. County Health Departments are now responsible for tracking mosquito types and monitoring the prevalence of diseases in their communities. As interns at the Montgomery County Health Department, we were responsible for carrying out mosquito surveillance throughout the county. We placed traps in strategic locations to accurately represent the most prevalent types of mosquitoes present in the most populated areas. These areas included towns such as the city of Crawfordsville, Ladoga, Waveland, Waynetown, and more. Upon collection, the mosquitos were counted and identified by their species before they were sent to the state for vector-borne disease testing. This poster will detail the types of mosquitos we collected and summarize data in Montgomery County.

Poster 20

Presenter: Cameron Martin
Sponsor: Patrick Burton (Biology)
Title: Regeneration of *Pristina Leidy*

Pristina leidy are segmented annelid worms capable of complete bidirectional regeneration. Previous experiments indicated that in the presence of cyclopamine, a Hedgehog inhibitor, *Pristina* is unable to regenerate their heads. However, the mechanism by which cyclopamine acts remains unknown. To investigate this, we looked at cell proliferation, cell death, and neural patterning in regenerating worms exposed to cyclopamine. We also used another chemical, AraC, that inhibited cell proliferation to see how it affected regeneration. We found that, in the presence of AraC, regenerating *Pristina* remain capable of replacing some head structures but complete regeneration did not occur. In contrast, worms exposed to cyclopamine fail to replace any missing anterior structures. Our data indicate that this is likely through inhibition of cell proliferation.

Poster 21

Presenters: Zachary McKinney & Miles Barilla
Sponsor: Elizabeth Morton (Art)
Title: Louis Orr's Journey through France: Capturing Humankind's Magnificent Creations

Louis Orr (1876-1966), one of America's most important printmakers, is renowned for capturing the scale and magnificence of historic architecture from the perspective of a human witness. In each of his etchings in this exhibition, Orr has juxtaposed humans with massive works of architecture in France. The buildings in these images were designed to surpass the life-spans of their creators, living on for generations to come. They suggest that architecture, the creation of humankind, is more boundless and stronger than humankind itself. In turn, Louis Orr's prints are grander than himself, capturing fleeting moments of the early 20th Century in France for us to see today.

Poster 22

Presenter: Bakhann Prom
Sponsor: Sujata Saha (Economics)
Title: Macroeconomic Effects on the Current Account Balance during the Asian Financial Crisis

This study explores the effect of Foreign Direct Investment, Gross Domestic Product, net national saving, and nominal effective exchange rate on the current account balance during the Asian Financial Crisis in the context of five East Asian countries. Using regression analysis for the period of 1995-2017, the results show that an increase in Foreign Direct Investment, Gross Domestic Product, and net national saving generate a current account surplus. However, nominal effective exchange rates are found to have no impact on the current account balance. Furthermore, the results show that the current account balance improved during the Asian Financial Crisis.

Poster 23

Presenter: Robert Reed
Sponsor: James Brown (Physics)
Title: The Time Globe; Its Construction and Applications

In 1905, Albert Einstein published a paper that would challenge many preconceived notions of physics at the time and introduced a relationship between time and space that completely defies our perception. In this poster, I present a demonstration device conceived by Henry Reich of the MinutePhysics YouTube channel, how it can be used in class to help students better understand the complex relationship between space and time, and how its construction can help drive further interest in physics.

Poster 24

Presenter: Chaz Rhodes
Sponsor: Bradley Carlson (Biology)
Title: Eye Color Change and Variation in Eastern Box Turtles

Eyes are not solely sensory organs: variations in eye color can be used to communicate. In eastern box turtles (*Terrapene carolina*), iris color in males tends to be bright-red/pink, while females tend to have a brownish-red iris. We tested how iris color depends on sex and body size and whether it was stable or variable within individuals. To test this, we photographically measured the eye color and any eye color changes. We found that males tended to have a brighter color than females, and as the turtles grew larger, the sexes diverged more in brightness, suggesting it has a role in communication among sexually mature turtles. We also found that males were able to change their eye color rapidly, indicating it is a dynamic signal. These findings suggest a role for eye color in communication among sexually mature turtles and that it prompts investigation of mechanisms for eye color change.

Poster 25

Presenter: Wesley Slaughter
Sponsor: Paul Schmitt (Chemistry)
Title: Testing the Correlation Between Trace Crystallinity and Decreased Drug Solubility in Model Amorphous Solid Dispersions

As an increasing number of new active pharmaceutical ingredients (APIs) in danger of being abandoned due to low aqueous solubility, new methods of crystallinity identification have been introduced to perform a holistic study of the effects of crystallinity on solubility. Second harmonic generation (SHG) microscopy, with a low (<0.001% w/w) crystalline limit of detection, is a promising new technique for identification of trace crystallinity. By pairing SHG microscopy with dissolution testing for APIs, a comprehensive study of trace (~1% w/w) crystallinity's consequences on solubility was completed. To obtain varying levels of crystallinity, polymeric amorphous solid dispersions (ASDs) consisting of API (griseofulvin) and a polymeric excipient (HPMCAS) were cast. Over time, these ASDs crystallize, and were imaged for SHG activity and subjected to dissolution to measure solubility. The correlation between the API's trace crystallinity and subsequent solubility was observed, showing no decrease in solubility across the relative crystallinities generated.

Poster 26

Presenters: Rourke Tollar & Chukwunalu Chukwuma
Sponsor: Laura Wysocki (Chemistry)
Title: Synthesis and Testing of an Acid Phosphatase Substrate

Fluorescein and its derivatives are known to have a wide range of applications in biochemical experiments, including as enzyme substrates. One attractive target for monitoring acid phosphatase activity is 2',7'-difluorofluorescein diphosphate. However, the phosphate groups on Oregon Green are unstable in water, making it unsuitable for experiments involving aqueous environments. This research is focused on synthesizing a fluorescein-based indicator with hydrolytic stability that will act as a continuous acid phosphatase sensor in aqueous environments. To realize this goal, we want to use phosphatoxymethyl ether (PME) groups on Oregon Green. In order to test the enzyme activity and aqueous stability of the PME group, we have synthesized a model compound, the masked derivative of p-nitrophenol. In preliminary testing, we found this novel target has comparable chemical stability and K_m values in an acid phosphatase assay to the commonly used p-nitrophenylphosphate (pNPP). These results suggest that the PME group will be a suitable substrate for acid phosphatase for the fluorescent probe. The bis(PME) derivative of Oregon Green has been synthesized and will be tested after careful purification.

Poster 27

Presenters: Michael Tanchevski & Rithy Sakk Heng
Sponsor: Heidi Walsh (Biology)
Title: Palmitate signaling in Gonadotropin-Releasing Hormone Neurons Induces Inflammation and Endoplasmic Reticulum Stress in a TLR4-Independent Manner

Hypothalamic gonadotropin-releasing hormone (GnRH) neurons are the final common pathway controlling fertility, and transcription of the gene encoding this peptide hormone (*Gnrh1*) is repressed by obesity-related cellular stressors such as endoplasmic reticulum (ER stress) or excess saturated fatty acids. To determine the intracellular signaling pathway utilized by the saturated fatty acid palmitate (PA) in GnRH neurons, we measured the expression of toll-like receptor 4 (TLR4) mRNA in an immortalized GnRH-producing cell line (GT1-7). In other cell types, TLR4 and its accessory protein MD2 can bind to PA and activate downstream inflammatory NF- κ B signaling; thus, we tested whether a TLR4 inhibitor (TAK-242) could block the effects of PA in GnRH-producing cells. Neither repression of *Gnrh1* expression nor activation of ER stress and inflammation-related genes were prevented by TLR4 inhibition, potentially supporting a role for PA metabolites such as ceramides in the regulation of GnRH neuron function by saturated fatty acids.

Poster 28

Presenters: Paul Haesemeyer, Aaron Boyd, Deakon Doub, Samuel Stewart, James Williams, & Austin Yeomans
Sponsor: Andrea Bear (Theater)
Title: Puppets in Prague

This presentation focuses on the work by Wabash students on their immersion trip to Prague. Each student researched an important Czech figure and designed a traditional Czech marionette based on their research. During an immersion trip, students traveled to Prague to learn from and work with professional puppeteers to build their own hand-carved marionettes based on their designs.

