

**Celebration of Summer Research and Scholarship
Poster Session Program
Allegheny College
Monday, August 28, 2023
12:00PM-1:30PM**



**ALLEGHENY
COLLEGE**

Welcome

The Offices of the Provost, Community Engaged Learning, Community-Engagement, Watershed Conservation Research Center, Career Education, and URSCA are pleased to welcome you to the **Celebration of Summer Research and Scholarship Poster Session**. The purpose is to bring students, faculty, staff and community partners together to celebrate and learn about the research, scholarship and experiences that have been conducted throughout the 2023 summer. The poster session is being held during the Gator Week of Welcome on the day of Matriculation in the Lobby and Second Floor of the Campus Center from 12:00PM-1:30PM.

Photo and Video Footage release:

Video footage and/or photos will be taken during this event, which may or may not include your recognizable image. Please be advised, by participating in this event, you agree to allow Allegheny College to use the images for promotional and archival purposes. If you do not wish to have us use your image, please notify the photographer or event organizer.

Agenda

Time	Session	Location
11:30-12:00PM	Registration and Poster Set-up	Campus Center Main Entrance/Lobby
12:00-12:15PM	Welcome Remarks/Guest Speaker: Jamie Kinder, Mayor of Meadville	Campus Center Lobby
12:15-1:30PM	Poster Session	Campus Center Lobby and Second Floor

Guest Speaker: Jaime Kinder - Mayor of Meadville



Mayor Kinder is a 46 year old single mother of 3 who was raised on the same streets as her mother and her grandmother, and she chose to raise her kids in the same places. Mayor Kinder's work is motivated by "...a deep love for my people and the city that they choose to live and share with me. I believe in people, and I believe in humanity. I am grounded each day by the struggles of this life and I am moved by the people who continue to thrive through these struggles. I know there is a better way to move into the future that includes dignity, equity and access to everyone, I know the only way to achieve this is together."

Celebration of Summer Research and Scholarship
Poster Session
Campus Center Lobby and Second Floor
Monday, August 28, 2023
12:00PM-1:30PM

1. Student Name(s): Jahmaya Adamson, Isaiah Romain & Nigel Williams
Faculty Mentor: Heather Moore Roberson
Title of Poster: Analyzing The Experiences of Black Caribbean Students
Abstract: Researching the experiences of Black Caribbeans Students through the time period of 1960s-90s. Through Archival Research, I examine students' experiences in newspapers, yearbooks, etc. The overarching theme was the importance for students to have a sense of belonging on campus in order to flourish on campus.

2. Student Name(s): Charlotte Allen, Elle Carpenter, Evelyn Connor, Leah Ungashick
Faculty Mentor: Lydia Eckstein
Community Partner: Jan Hyatt, Creating Landscapes
Title of Poster: A Toolkit for the Huidekoper Summer Park Program
Abstract: Extant research has suggested that summer programs can be beneficial for children's development and growth (Burdette & Whitaker, 2005) and bridge the gap between lower and higher-income students (McCombs et al., 2011). We collaborated with the Summer Parks Program, an 8-week program in Meadville, PA, in partnership with the YMCA and Creating Landscapes of Meadville, that offers roughly 20-30 children a day an opportunity to play, learn, and grow. We each worked as play facilitators on-site and queried the literature on different components of summer programs and what makes them effective. In this poster, we will report on our experiences on-site and share our research findings on what makes summer programs for children successful (Leah Ungashick), how art (Evelyn Connor) and mindfulness (Elle Carpenter) can be used as tools to facilitate social and emotional growth in summer programs, and the benefits of unrestricted outdoor play for children (Charlotte Allen). Challenges, limitations, and implications, as well as sample activities for the community partner, are discussed.

3. Student Name(s): Caleb Alters
Faculty Mentor: Mahita Kadmiel
Title of Poster: Effects of Estrogen on human corneal epithelial cells treated with an inflammatory agent

Abstract: Estrogen (E₂), a sex hormone predominantly found in females, has been shown previously to have a dose-dependent response on growth in the cornea, and on inflammatory responses in many types of cells. E₂ is known to increase growth at low concentrations, and has anti-inflammatory effects at high concentrations, such as during pregnancy. To further understand the effects of high-concentration E₂, we tested these effects on Human Epithelial Corneal cells (HCET cells) either treated with or without an inflammatory agent called lipopolysaccharide (LPS). Our results from the in vitro wound healing assays show that E₂ delays migration of HCET cells and this delay in migration can be inhibited by LPS, suggesting that estrogen in corneal cells may influence how corneas respond to inflammation.

4. Student Name(s): Sam Ault

Faculty Mentor: Irem Kurtsal

Title of Poster: Beloved Community in the Classroom

Abstract: Dr. Martin Luther King regularly referred to an idea he called the beloved community, a society where “men live together as brothers.” With this community, King believed people could contribute to its creation by embodying five principal virtues: Love, Hope, Courage, Nonconformity, and Impatience. In this research project, I defend King’s virtuous prerequisites of beloved community and analyze what beloved community in the context of the liberal arts classroom means and looks like. In pursuit of a beloved community in the liberal arts classroom, I draw on the works of bell hooks and other thinkers in the fields of education and justice to determine how King’s virtues can be manifested within the classroom.

5. Student Name(s): Batbayasgalan Bat-Amgalan and Caleb Kendra

Faculty Mentor: Douglas Luman

Title of Poster: chompchain: a labor-based blockchain reward system for computer science education

Abstract: Blockchain technologies suit themselves well to a wide variety of applications from financial systems to historical preservation; however, while blockchain has been applied in education, it has not been used widely in identifying, gamifying, evaluating, and rewarding student labor. Prior blockchain use in education has been limited to issuing broad microcredentials that imply skills, rather than aim of cultivating individual student skills through interactive and creative means. In addition, few undergraduate programs maintain an active full-scale, home-grown blockchain system intended for the purpose of producing students with commensurate professional skills in blockchain. We focus on creating a system

that tracks individual student performance on discrete tasks, with the goal of creating a long-term open-source initiative developed and maintained by students at Allegheny, with the intent to share with peer institutions. chompchain presents a prototype for developing and applying blockchain to capture and incentivize student achievement in addition to normalizing regular, iterative effort to complete assignments while also providing a production-scale system for extracurricular education.

6. Student Name(s): Daniel Bekele

Faculty Mentor: Janyl Jumadinova

Community Partner: Jackie Roberson, Family and Community Christian Association

Title of Poster: FCCA Website rebuild

Abstract: The summer research program focuses on aiding a nonprofit organization in revamping their website for improved functionality and user experience. The initiative aims to analyze the nonprofit's current website, identify shortcomings, and implement necessary updates. Through a combination of design enhancements, content restructuring, and technical optimizations, the program aims to provide the nonprofit with a modernized online platform to better communicate its mission and engage its target audience.

7. Student Name(s): Mary Boepple

Faculty Mentor: Stan Kolek

Title of Poster: The What, The Why, and The Where do we Go From Here with EMDR

Abstract: Eye Movement Desensitization and Reprocessing (EMDR) therapy is an effective treatment for a variety of populations, with the most common being adults who experienced a traumatic life event and are suffering with Post Traumatic Stress Disorder (PTSD). Consistent with Adaptive Information Processing (AIP) theory, the therapy includes use of bilateral stimulation during reprocessing of maladaptively stored traumatic memories. A systematic literature review revealed that EMDR is associated with a reduction in physical and cognitive symptoms as well as changes in functional connectivity of the brain. EMDR has been successful in treating a variety of conditions, but particularly when there is a memory linked to behavioral symptoms of a condition. Current research into EMDR is exploring its utility outside of treating PTSD, such as with phobias, stress, and chronic trauma. The present research aims to explain how and why EMDR is effective as a therapy

and to diagram its use with alternative populations and with neuro-cognitive as well as behavioral disorders.

8. Student Name(s): Gunnar Brettell

Faculty Mentor: Doros Petasis

Title of Poster: Development and Evaluation of a Force Balance Magnetometer

Abstract: Magnetic susceptibility is a physical quantity that indicates how a material responds to an applied magnetic field. Measuring this property helps us understand the magnetic properties of materials which is essential in the study of important real world applications such as magnetic storage and metalloprotein function. In this research, a force balance was designed and constructed to study the susceptibility of magnetic samples by measuring the change in mass when the sample experiences a force when placed inside an external magnetic field. Initial measurements of the change in mass vs magnetic field squared were performed at room temperature to obtain susceptibility values of various samples and ensure the instrumentation was working properly. We are currently in the process of adding a cryostat which will allow us to reach temperatures close to 77K (-200°C) to study the magnetic properties of samples over a range of temperatures.

9. Student Name(s): Leslie Briseno and Joel Pszczolkowsk

Faculty Mentor: Caryl Waggett

Title of Poster: Teach Global Health Summer Institute

Abstract: Teach Global Health is a professional development initiative designed to support global health educators at undergraduate-serving institutions through community building and various workshops. The Teach Global Health summer program focuses on providing an understanding of global health when pertaining to various disciplines. One of the goals within the program is expanding the global health curriculum to encompass several aspects of health, not only from an individual's physical well-being but to understand how emplaced policies, the built environment, culture, and power each contribute to an individual's and populations well-being.

10. Student Name(s): Eden Brody

Faculty Mentor: Mark Kirk

Title of Poster: Restoration of Lower Woodcock Creek: A Multi-Year Assessment of Biotic Changes

Abstract: Woodcock Creek is a sub-basin of French Creek and has a significantly altered watershed. Historic deforestation and changes to stream hydrology from damming have caused a decrease in habitat quality and a decrease in biological integrity. Several streambank and stream crossing restorations have occurred in lower Woodcock Creek and its associated tributaries as a means to improve habitat, reduce sediment pollution, and improve the integrity of biological communities. We collected data on water chemistry, sediment levels, macroinvertebrate communities, and fish communities at 5 restoration sites and 8 control sites (i.e., no restoration) in the Woodcock Creek watershed. We then compared the data on habitat parameters and biotic communities at restoration sites to non-restoration sites which allowed us to determine the effects of these restorations on improving the health of these streams.

11. Student Name(s): Pallas-Athena Cain and Trang Hoang

Faculty Mentor: Janyl Jumadinova

Title of Poster: Underwater Robotics: Developing Tethered Remotely Operated Vehicles for Water Quality Management

Abstract: “Underwater Robotics: Developing Tethered Remotely Operated Vehicles for Water Quality Management” is aimed to create an accurate and cost-effective way to measure the water quality of bodies of water in the Northwestern Pennsylvania Region and create detailed analytics for future research. As of the time of this project, the Northwestern Pennsylvania Region, an area prone to toxic algae blooms such as the ones plaguing Lake Erie, lacks sufficient instruments for water quality data collection. The goal of this project is to offset that by creating affordable robots capable of traversing underwater to collect data on the water’s pH, conductivity, temperature, dissolved oxygen, and oxygen-reduction rate. With these values combined the software developed for this project can create analytics to be used as an alert to possible contamination in the water or other concerns. This project demonstrates the possibility of these Remotely Operated Vehicles being used for education, data collection, and affordable water quality management and outlines future development.

12. Student Name(s): Kent Cervantes, Jacob Folaron, Alexis Furbush, Renee Tetlow, & Ethan Vollant

Faculty Mentor(s): Matthew Venesky, Caryl Waggert

Title of Poster: Managing the Growing Risk of Lyme Disease in Northwestern Pennsylvania

Abstract: Lyme disease is a vector-borne disease that is caused by the bacterium *Borrelia burgdorferi* and is transmitted to humans through the bite of an infected blacklegged tick (*Ixodes scapularis*). Lyme disease has become the most common vector-borne disease in the United States and is continuing to grow, including in our study region of Pennsylvania, where the number of Lyme disease cases exceeded 9,000 each year from 2015 to 2018. Ticks can become infected with Lyme disease when feeding from a reservoir species, the most common in this region being the white-footed mouse (*Peromyscus leucopus*), leading ticks to become more dangerous to humans. Our research aims to develop an anti-tick vaccine to be distributed to reservoir species in an attempt to minimize the transmission of Lyme disease, as well as evaluate the impact of targeted tick spraying on reducing tick burden and tick-borne illnesses in white-footed mice and ticks in Pennsylvania.

13. Student Name(s): Emma Chambers and Hans Vanderzyden

Faculty Mentor: James C. Lombardi Jr.

Title of Poster: Collisions Between Main Sequence Stars and Binary Black Holes

Abstract: Black holes are small but massive objects that produce gravitational waves when they accelerate through space. Gravitational waves can be detected from here on Earth using LIGO (Laser Interferometer Gravitational-Wave Observatory), and the intensity and shape of these waves give us information about the object(s) that created them. When a star interacts with a black hole, mass from the star is stripped off and partially accreted, which can alter the spin of the black hole. Our research aims to explore how the spins of two black holes orbiting each other (a binary black hole) can be affected by the mass transfer of an incoming star that is torn apart by the gravitational forces of the binary black hole.

14. Student Name(s): Yanqiao Chen

Faculty Mentor: Gregory M. Kapfhammer

Title of Poster: GatorTracer: A Tool for the Automated Collection and Analysis of the Completion Data for Programming Projects

Abstract: As an essential section of learning, practice enables learners to reinforce what they've already learned and identify what they missed or what they thought they've already handled but they haven't in fact. In the undergraduate education stage, practice is implemented by assignment in most classes (will add a resource to support it). For this reason, analyzing and learning the states of assignments are critical for learning students' mastery and for the success of students in class as long as instructors and students are able to utilize the data of assignments well. For the

computer science students at Allegheny College, who highly rely on GitHub, a cloud-based code package platform, it's relatively hard to get customized reports of their assignments like other students who use web-based learning management systems like Canvas as GitHub doesn't support essential assignment-related features like Canvas. It's even harder for them to gather reports to do data analysis on assignments as their coding assignments in GitHub are discrete and isolated from each other. To break this challenge and allow students and instructors in the Computer Science department to fetch an organized all-in-one database of separate assignments and make data analysis and learning possible, Prof. Kapfhammer and I published a software tool called GatorTracer this summer. GatorTracer is a software bound with GitHub and downloads desired data in a clean format with a series of user-specified rules. It is an attempt of getting tidy and valuable assignment data out of discrete assignment data across assignments, across students and across classes.

15. Student Name(s): Marrin Crist, Celia Cocca, Isaiah Davidson

Faculty Mentor: Mark Kirk

Title of Poster: An Evaluation of Trout Distributions in Sugar and Little Sugar Creek

Abstract: The goals of the Unassessed Waters Initiative (UAW), led by the Pennsylvania Fish and Boat Commission, are to locate streams that provide habitat to naturally reproducing trout populations. Furthermore, UAW actively works to conserve and protect these streams so that trout can continue to inhabit them. This summer, we worked with the Watershed Conservation Research Center (WCRC) to sample unassessed streams in the Sugar and Little Sugar Creek sub-drainages of the French Creek watershed. Trout sampling was conducted via backpack electrofishing to evaluate abundance and diversity of the fish populations in each stream. Water chemistry and habitat quality were also assessed at each stream. We found a greater abundance of Brown trout in the East and West Branch sub-drainages of the Sugar Creek watershed compared to the Little Sugar Creek sub-drainage. A number of environmental factors may explain these results, such as high temperatures and low quality stream bank habitat in Little Sugar Creek, both of which adversely affect trout abundance.

16. Student Name(s): Brayden Devinney

Faculty Mentor: Bradley Hersh

Title of Poster: CRISPR Investigations of the Regulatory DNBRaA Controlling Hox Gene Colinearity

Abstract: Hox genes are a family of transcription factors that regulate the development of animal shape. Hox genes regulate how our and many other species' bodies are formed. While the regulation of the expression of these genes is not yet fully understood, a unique association between the physical location of a gene on a chromosome appears to correlate with the location of expression of the gene in the body. This phenomenon has been called collinearity and has been observed across animals. We identified specific regions within the Hox gene clusters in fruit flies for which the function is unknown, to determine their regulatory effects. We designed five CRISPR targeting constructs to delete these DNA sequences. We successfully generated three of the five designs and prepared them for injection into fruit flies. After the mutated fruit fly embryos develop, the resulting changes to the fly can be characterized and compared to changes within the Hox gene regulatory DNA regions. Future studies could also explore how removing multiple DNA sequences could affect physical variation, potentially yielding a quantitative representation of how these sequences interact to regulate genes.

17. Student Name(s): Samantha Dzierba

Faculty Mentor: Heather Brand

Community Partner: Andy Walker

Title of Poster: Bessemer Interpretive Trail Project

Abstract: This Community Based Research Project focused on the creation and implementation of different interpretive signs along a newly-approved loop trail.

These signs cover a range of specific topics under the umbrella of both history and ecology. The signs themselves will be put alongside the trail, giving users informative and interesting context to the area which they are using.

18. Student Name(s): Emily Eshleman

Faculty Mentor: Christopher Normile

Title of Poster: Juror Decision-Making in Gun Violence Cases: The Impact of Victim Race and Sexuality

Abstract: This study investigated the impact of victim race and sexuality, as well as victim blaming, on mock-juror sentencing behaviors in gun violence cases.

Participants were presented with a one-page case summary in which the victim's race and sexuality was varied. After reading the summary, participants rated their perceptions of the victim, their likelihood of suggesting a sentence of life in prison without parole, and explained the rationale behind the sentence. Results indicated

that victim sexual orientation impacts sentencing outcomes, and the relationship between race and sentencing is moderated by victim blaming.

19. Student Name(s): Beatrice Foley

Faculty Mentor: Jesse Swann-Quinn

Title of Poster: Investigating the Political Ecology of the Toronto Public Transportation System

Abstract: The field of political ecology aims to understand the ways political, social, economic and environmental spheres interact and shape one another, including in spaces not typically considered 'natural.' For example, the political ecology of subways has received little academic attention, yet they offer compelling insights to the systems shaping our urban environments. Subways in fact rely on many intersecting environmental conditions in their effort to streamline urban transportation: dangerous noise exposure, high-frequency vibrations, proper air ventilation and managing the spread of bacteria, and the geological considerations of the earth's subterranean layers. My research applies a political ecology framework to my home subway system, the Toronto Transit Commission (TTC), to ask the question: What drives the TTC's increasingly rapid expansion over the last 5-10 years and what might this continued trajectory mean for Toronto's diverse neighborhoods and ecosystems? I answer this question through a document and textual analysis of the four TTC expansion business cases and environmental project reports. Through this analysis I identify key themes represented in these documents and construct a timeline of recent TTC history. My preliminary findings suggest that the key drivers and themes most important in this analysis of the rapid TTC expansion include increasing community development and employment opportunities, creating a larger and more concentrated network, and making a concerted effort to solve the capacity issues currently plaguing Toronto public transportation. These various factors outlined in the documents and further identified through my analysis are crucial for understanding the environmental and social impacts of future transportation network developments in Toronto.

20. Student Name(s): Dilani Frorup and Katleen Lynch

Faculty Mentor: Tim Chapp

Title of Poster: Towards Synthesis of Biomimetic Hydrogenase Catalysts

Abstract: Hydrogenase enzymes are known to produce hydrogen gas, a potential alternative energy source, but they do not have the necessary stability outside their biological environment to be viable for this use on the industrial scale. Synthesis of

hydrogenase mimics may allow for identification of molecular motifs that improve stability, while also enhancing our understanding of how these catalysts produce H₂. The progress towards synthesis of two new hydrogenase mimics, [Cp*Ni(dppf)]BF₄ (Cp* = pentamethylcyclopentadiene), dppf = bis(diphenylphosphino)ferrocene), and Cp*Ni(MesP(CH₂)₃PMes)NiCp* (Mes = 2,4,6-Me₃C₆H₂), and preliminary characterization of these compounds by NMR spectroscopy is reported.

21. Student Name(s): Emily Hindle

Faculty Mentor: Tricia Humphreys

Title of Poster: Effects of Lifespan and Oviposition in *Callosobruchus maculatus* in Four Types of Legumes

Abstract: Bean Beetles, or *Callosobruchus maculatus*, are a plant pest which terrorizes various types of beans. There are many factors that can contribute to their varying lifespan and oviposition, including bean type, temperature, and humidity. Over 8 weeks, bean beetles were observed on four types of beans, and their life span and egg laying patterns were observed and recorded.

22. Student Name(s): Hannah Hinterleiter

Staff Mentor: Micheal Williams

Community Partner: Jackie Roberson, Family and Community Christian Association

Title of Poster: The Rebirth and Rebranding of FCCA

Abstract: Since 2022 Family & Community Christian Association has looked to restructure its mission statement, resources available, and what FCCA is doing to promote inclusivity and reach everyone throughout Crawford County. With prospects in rebranding, some critical tools cultivated to aid in the process were feedback surveys, categorization of events that have taken place, and developing an annual report to reflect on the accomplishments of FCCA. With these tools created in a community partnership, FCCA can now look forward to the rebranding and rebirth of their organization.

23. Student Name(s): Isabella James, Sophie Larson, & Rebecca Pechmann

Faculty Mentor: Lauren Paulson

Title of Poster: Community Voices: Assessing the Community Partnership in Community-Engaged Projects Part 2: A follow-up study

Abstract: The purpose of this mixed-methods follow-up study was to gain an understanding of the Allegheny-Meadville relationship and the impact of

community-engagement on partners who engage with the college. Despite several decades of scholarship on the positive impacts of CE on undergraduate students and faculty, only recently have studies focused on community partners' perspectives, with even more limited research in rural communities. The goal was to provide an opportunity to amplify the voice of community partners, to develop a better understanding of the community partner's experience, and improve future practice.

24. Student Name(s): Simon Jones

Faculty Mentor: Douglas Luman

Title of Poster: Midicara: A facially deterministic MIDI controller

Abstract: The majority of musical instruments assume full motor capability, restricting play by individuals with disabilities. While numerous accessibility adaptations of musical instruments exist, few have emerged into widespread use; many require additional equipment or hardware, further prohibiting adoption. This project, Midicara, implements free, open software which uses the Musical Instrument Device Interface (MIDI) protocol and a computer webcam to create an opportunity for musicians to use facial gestures to control devices with MIDI capability. Midicara enables users to play instruments such as hardware or software synthesizers and digital audio workstations (DAWs) by triggering pitches and determining their relative volume based on user nose and mouth position, respectively. Though a prototype, this work aims to provide a sufficiently high-quality real-time controller for musicians to use in recording or public performance.

25. Student Name(s): Kyle Kennedy and Nicholas Ingerson-Meacham

Faculty Mentor: Caryl Waggett

Community Partner: City of Meadville (Renna Wrubleski - Community Development Coordinator); Peter Grella - City Planner, and Consultant (Wyatt Schroeder - Bowling Business Strategies) and Common Roots

Title of Poster: Pulmonary Rehabilitation Education

Abstract: The pulmonology department at Meadville Medical Center focuses on diseases of the respiratory tract. The goal of the pulmonary rehabilitation program is to help individuals breathe better while improving their overall health and strength. We aided in the education portion for patients in pulmonary rehab by helping create videos on various topics to meet patient needs while providing consistent information to each patient over time.

26. Student Name(s): Ryan Kennedy

Faculty Mentor: Caryl Waggett

Community Partner: Kinorea Tigri, Crawford County Food Alliance

Title of Poster: Crawford County Food Alliance Website

Abstract: Food insecurity has increasingly been recognized as a common problem amongst residents of Crawford County. The Crawford County Food Alliance aims to assist those in need of food by collecting and providing information on qualified food banks, pantries, and trucks. However, this information must be sufficiently accessible to as many residents as possible to get the proper help they may need. Creating a website allows for one central location that anyone can access, which includes information such as a food map, calendar, and other necessary food resources.

27. Student Name(s): Heather Landis and Travis Dear

Faculty Mentor: Chris Shaffer

Community Partner: Luke Brooks, The French Creek Valley Conservancy (FCVC)

Title of Poster: FCVC Land Parcel Prioritization

Abstract: The French Creek Valley Conservancy (FCVC) is a local land trust that protects and conserves land within the French Creek watershed. The FCVC would benefit from a more efficient way to prioritize property acquisitions based on landscape criteria deemed important to their conservation and protection efforts. Through the power of geographic information systems (GIS), several criteria such as soil type, core forest, and proximity to water were integrated such that each plot of land received a cumulative favorability score. The FCVC can use the scores to make informed choices when land becomes available.

28. Student Name(s): Camoren Leshner

Faculty Mentor: Ian Carbone

Community Partner: Jamie Kinder, Mayor, City of Meadville

Title of Poster: Community Gardens of Meadville

Abstract: Community gardens serve people that engage with them by connecting individuals together and strengthening the entire community. In Meadville the community gardens form a connection between local agencies and community groups that is overall beneficial. In order to promote the success and sustainability of community gardens in Meadville, this project attempts to take an inventory of the existing gardens and outline of the overarching organizational structure. Using information on the current system to analyze the strengths and weaknesses of

Meadville community gardens informed by outside research of other community garden policies in order to direct what actions can be taken to reinforce the existing garden system.

29. Student Name(s): William Lowthert

Faculty Mentor: Christopher Normile

Title of Poster: Why Are Interrogation Recording Laws Not Universal - What Drives This Policy Gap?

Abstract: Since at least the 1980s, legal psychologists have recommended that police officers record all interrogations from beginning to end. However, as of 2023, only 29 states have, either through legislative or court mandate, answered this call.

Therefore, this research project aimed to explain why the universal call from legal psychologists to mandate interrogation recordings in their entirety has been unheeded by politicians in 21 states. One possible explanation is that a state's legislative makeup influences whether an interrogation recording law is instituted. However, by looking at the political makeup of the legislatures and governorships—and at times, Supreme Courts of each state—it was determined that there was no clear indication that one political party exclusively initiated the passage of recording interrogation laws; despite this, Democratic Politicians were more likely than Republicans to pass these laws. Furthermore, since 2003, states that do not have an interrogation recording law on record are more likely to be controlled by Republican Legislatures. To address this policy gap, we offer solutions that advocates and experts can use to advance and pass interrogation recording laws in states where such laws are absent.

30. Student Name(s): William Lowthert and Isabel Loch

Faculty Mentor: Rebecca Oliver

Title of Poster: What Do Unions Do For Outsiders?

Abstract: This research project evaluates the strategies and actions employed by labor unions in advanced, affluent democracies to advocate, organize, or at times possibly exclude labor market outsiders in their organization and contract negotiations. Labor market outsiders in this project were classified as young workers, recent immigrants, gig workers, and women. Investigating the various strategies and types of action that unions take toward outsiders in Norway, the United Kingdom, the United States, Sweden, Spain, Finland, Italy, and Germany allowed for the creation of a systematic qualitative and usable database on the topic. In this database, countries were scored in seven categories based on different inclusion criteria on a

scale from zero to five. Five being that unions implemented many successful inclusion initiatives, and zero being that they implemented none.

31. Student Name(s): Chloe MacLaren
 Faculty Mentor: Rachael Hoey
 Community Partner: Dan Slozat, Meadville Public Library
 Title of Poster: Devised Theatre and Storytime with Meadville Youth
 Abstract: For several weeks we worked with local kids from Meadville to create theatre. We started with reading them stories and then they turned them into plays. Using the skills they learned over the course of this camp, they created a final play on their own that they performed for staff of the library and their families.

32. Student Name(s): Gary Murray
 Faculty Mentor: Andrew Bloeser
 Community Partner: Don Goldstein
 Title of Poster: Crawford County v. PA Clean Slate Law
 Abstract: As research volunteer for the Crawford County Clean Slate Initiative, I've been able to familiarize, broaden my connections, and use research based on Pennsylvania's Clean Slate Law to better the process for assisting certain formerly incarcerated individuals in Crawford County. Based on my in-depth research assisted by Don Goldstein, I was able to notice a clear difference in the approach to the Clean Slate law by county. The summer consisted of building well structured documents and research to better help build Crawford County clean slate initiatives.

33. Student Name(s): Jordan O'Reilly
 Faculty Mentor: Ryan Pickering
 Title of Poster: Navigating and Negotiating Multiple Social Identities: A Literary Review
 Abstract: ALIC Workshop Series is a comprehensive project designed to meet the increasing complex relationship between social class and other social identities is one that is often overlooked in psychological and sociological research in the US, and as a result, there is a limited amount of established measurements for exploring said relationship. The goal of this month-long literature review was to identify already established scholarly measurements of both social class and social identities in general, and compile the common ideologies and frameworks at work to advance research on the complex topic. The results suggest to us that there is a mosaic of social theories that offer possible explanations for how individuals navigate and

negotiate their various social identities, ranging from how central each identity may be to the solidarity one feels with each in-group.

34. Student Name(s): Nathalie Paz Saucedo and Julie Hoffman
 Faculty Mentor: Richard D. Bowden
 Title of Poster: Tree Growth following Long-Term Nitrogen Addition to a Temperate Deciduous Forest
 Abstract: Continuing anthropogenic deposition of atmospheric nitrogen (N), derived primarily from fossil fuel combustion, will alter forest carbon (C) storage and cycling in trees and soil. At the Bousson Experimental Forest, we added N to a temperate hardwood forest from 1993-2021 to assess how N deposition altered forest biomass and growth by tree species. Overall, N additions did not alter overall forest growth, however N addition plots showed lower growth rates in later years ($p=0.003$), and beech and maple trees indicated possible declines in growth due to N addition.
35. Student Name(s): Chi Pham
 Faculty Mentor: Heather Brand
 Title of Poster: ALIC Workshop Series: Empowering Creative Expressions through Inclusive Digital Art Workshop for All Levels
 Abstract: ALIC Workshop Series is a comprehensive project designed to meet the increasing demand for digital art skills and foster creativity among college students. With a focus on project-based learning, the workshop offers sessions tailored to both beginners and advanced learners. Participants benefit from engaging presentations, comprehensive handouts, and hands-on projects, enabling them to create visually captivating content for professional or personal purposes. The project's progress includes meticulous planning, material development, and upcoming trial sessions, with the long-term vision of establishing a tradition of knowledge-sharing and expanding the workshop's content through student-led workshops.
36. Student Name(s): Steffi Puthenpurayil and Leslie Briseño
 Faculty Mentor: Becky Dawson
 Community Partner: Julie Hyde, Morgan Tunney, and Joy Mitchell, Meadville Medical Center Respiratory Department
 Title of Poster: Pulmonary Rehabilitation Education
 Abstract: The pulmonology department at Meadville Medical Center focuses on diseases of the respiratory tract. The goal of the pulmonary rehabilitation program is to help individuals breathe better while improving their overall health and strength.

We aided in the education portion for patients in pulmonary rehab by helping create videos on various topics to meet patient needs while providing consistent information to each patient over time.

37. Student Name(s): Elizabeth Readshaw

Faculty Mentor: Kelly Pearce

Community Partner: Andrew Sipple, Goodell Gardens and Homestead

Title of Poster: Horticulture at Goodell Gardens and Homestead

Abstract: Summer research at Goodell Gardens and Homestead consisted of identifying and keeping an inventory of the organization's plants. I used iNaturalist and many wildflower books to identify each plant in the gardens. By the end of the summer I identified nearly 300 plant species on Goodell Gardens and Homestead's property.

38. Student Name(s): Sabrina Rodriguez and Anastasiia Kityk

Faculty Mentor: Shanna Kirschner

Title of Poster: Peacekeeping and Public Health

Abstract: Do peacekeeping missions affect public health? While peacekeeping can improve a range of conditions in post-conflict countries, less is known about how missions can affect the quality of life. This project explores one important dimension of well-being, investigating whether expanding security and infrastructure reconstruction can improve public health.

39. Student Name(s): Eleanor Rochford

Faculty Mentor: Jesse Swann-Quinn

Community Partner: Amara Geffen, The Arc of Crawford County

Title of Poster: The Arc Community Greenspace: Celebrating Mill Run

Abstract: Over the summer I helped Amara Geffen with the design and creation of the new Arc Community Greenspace. During the 8 weeks I was able to create a banner design and 3 separate color ways to be displayed at the front of the site, I was able to help gather table-top mural designs with the use of a handmade template (as well as making a few of my own), and creating a rough draft for the education signage that will be featured in the site. During these 8 weeks I also helped Professor Jesse Swan-Quinn in preparation for his fall 2023 course ENVSC 290 Counter-Ecologies: Storytelling, Power, and the Environment. During my time spent with him, I frequented the Crawford County Historical Society to go through and find old newspaper articles, photos, letters, and documents that will be useful sources for his

class; I then scanned and summarized these documents so the class will have easy access to everything we found!

40. Student Name(s): Bridgette Reeb

Faculty Mentor: Irem Kurtsal

Title of Poster: Fred McFeely Rogers: A Beloved Neighborhood Philosopher

Abstract: The unlikely cultural icon and children's television show host Fred McFeely Rogers ("Mister Rogers") isn't usually thought of as a philosopher, but I show that his "neighborhood philosophy" shares a focus on "loving your neighbor as you love yourself" with the 19th century Danish philosopher Søren Kierkegaard that isn't highlighted elsewhere. I illustrate that a neighborhood is not a solely geographical entity but a potentiality that exists wherever a person can put agape (or neighborly) love into action with another living being. In addition to defending Rogers' rightful place as a philosopher, I demonstrate how his philosophy is necessary in order to face our challenges today.

41. Student Name(s): Isaiah Romain

Faculty Mentor: Heather Moore Roberson

Title of Poster: The Structural Installation for Minority Students at Allegheny

Abstract: This is Archival research on the structural installation for minority students at Allegheny College. This research shows and uncovers the shift of a predominately white Allegheny during the 60's up to mid 70's that allowed for a more diverse Allegheny campus.

42. Student Name(s): Danielle Aira Savellano and Kayla Scott-McDowell

Faculty Mentor: Annie J. Lee, PhD from the Department of Neurology, Columbia University Irving Medical Center

Title of Poster: Genetic Association Between Alzheimer's Disease and Cardiovascular Risk Factors

Abstract: Acute Myeloid Leukemia (AML) affects roughly 500,000 individuals annually worldwide. The study explored the genetic association between Alzheimer's Disease (AD) and cardiovascular risk factors (CVRFs) in African American and Caribbean Hispanic individuals. Using biostatistics and R techniques such as Principal Component Analysis and Logistic Regression, the researchers identified significant interactions associated with AD between single nucleotide polymorphisms (SNPs) of the FMNL2 gene and the CVRFs. Understanding these

genetic interactions may offer insights into potential therapeutic targets for preventing or treating AD.

43. Student Name(s): Julietta Schworm

Faculty Mentor: Chris Finaret

Community Partner: Julie Wilson, Common Roots

Title of Poster: Designing Common Roots' Community Contracting and Workforce Development Program

Abstract: Meadville is in a time of change, and with this change brings updates to properties, businesses, and the community as a whole. Common Roots' is a nonprofit organization trying to create affordable, accessible, and sustainable housing in Meadville. Through this assessment, they are trying to understand the support needed and available to property owners. Additionally, Keystone Development Center is working with Common Roots to help assess the needs of property owners when it comes to maintenance and rehab.

44. Student Name(s): Jonathan Sharp and Laine Swanson

Faculty Mentor: Tricia Humphreys

Community Partner: Dr. David Duriancik, LECOM and Erie Food Policy Advisory Council

Title of Poster: Analysis of Retinoic Acid Signaling in Flt3-ITD Human Myeloid Leukemia Cell Lines

Abstract: Acute Myeloid Leukemia (AML) affects roughly 500,000 individuals annually worldwide, making research of treatment options prominent. Utilizing two AML cell lines (PL-21 and MV4-11), we investigated the metabolism of a type of Vitamin A, all-trans retinoic acid (atRA), to observe the effects Vitamin A has on human AML cells with an ITD mutation in the FLT3 gene. Our data revealed that an atRA treatment modeling physiological conditions (concentration of 1 nM) significantly reduced PL-21 cell proliferation after 5 days, suggesting that atRA may have induced differentiation in the PL-21 cell line. However, the same treatment in the MV4-11 cells resulted in significant cell death after 5 days, suggesting that atRA may be cytotoxic to the MV4-11 cell line.

45. Student Name(s): Nickel Spartz

Faculty Mentor: Brad Hersh

Title of Poster: Identification of Ultrabithorax Binding Sites

Abstract: Key genes work with each other during the development process of animals to create diverse shapes and structures. The Ultrabithorax HOX gene regulates wing differentiation in fruit flies and other insects and is similar to genes that pattern the nervous system, muscles, and bones of vertebrates like ourselves. UBX protein regulates other target genes by binding to a TAAT DNA sequence, but that sequence alone does not provide enough specificity to explain the effects of UBX. Our project explores other possible binding sequences for UBX. We produced UBX protein in bacterial cells and purified the protein to combine with fluorescently-tagged DNA sequences. We observed the movement of the tagged DNA on a gel to determine which sequences were bound by the UBX protein. The information gained from this research can provide a deeper understanding of the binding behavior of HOX proteins and how that might affect evolutionary processes.

46. Student Name(s): Inayah Toussaint

Staff Mentor(s): Sarah Young and Autumn Parker

Community Partner: West Park Kamm's Neighborhood Development

Title of Poster: A Glance at Cleveland

Abstract: This summer I was a part of the SOTC program; this internship brings together 50–70 students. Its goal is to provide interns a chance to learn about the professional, civic, and social opportunities available in the Cleveland region. I worked for 'West Park Kamm's Neighborhood Development' as their Marketing, Events, and Community Outreach intern. This was a great chance for me to practice my graphic design/editing skills by creating flyers, newsletters, and managing social media.

47. Student Name(s): Caro Vázquez-Blanco

Staff Mentor: Sarah Young

Community Partner: Gabby Miller, Meadville Public Library

Title of Poster: Summer at the Meadville Public Library

Abstract: My summer at the Meadville Public Library consisted of gardening and creating programming regarding bringing community science kits to the library. My gardening work was mostly based on maintaining the library's outdoor spaces and creating a community garden. My work with community science required researching the implications of introducing community science kits to the library and making them available to the local community.

48. Student Name(s): Milo Watson

Faculty Mentor: John Miller

Title of Poster: Ethics and Aesthetics in the Contemporary Field Guide

Abstract: MField guides, a multimedia form of self-paced environmental education, communicate scientific understandings about the natural world to millions of Americans. But this interdisciplinary genre has inspired very little scholarly research, despite its widely-acknowledged impact on how members of the public experience the outdoors, comprehend the environment, and engage with conservation. Using comparative literary analysis, I examined in-print field guides published between 2000 - 2023 to assess how their authors attend to audience, history, culture, politics, ecology, and environmental degradation. I applied insights from scholarly and popular work to understand what others value, wish was different, and analyze about the genre. While my research displays that some field guides are experimenting widely with media, focus, interactivity, aesthetics, and increased conservationist attitudes, there's a lot of room for improved ease-of-use, inclusivity, and further development.

49. Student Name(s): NealeyClare Wheat

Faculty Mentor: Andrew Bloeser

Community Partner: Mayor Jaime Kinder

Title of Poster: The Feasibility and Design of a Grant Writing Partnership Between The Center for Political Participation and the City of Meadville

Abstract: After the "National League of Cities" conference in Washington D.C. in March of 2023, The Mayor of Meadville, Mayor Kinder, the Assistant City Manager, the Director of the Center for Political Participation, and an Allegheny College student discussed the potential for a partnership between the City of Meadville and Allegheny College in which students would be trained in grant research, grant-writing, and data collection and volunteer those services to benefit the nonprofits in town. My job, over the last eight weeks, was to examine the feasibility and design a student-based program that could mutually benefit both the City of Meadville and Allegheny College in this program. Under the direction of Professor Bloeser, I conducted interviews with nonprofits throughout Meadville, PA., in which I discussed their current needs and future goals/plans so that I could build the program around the community. After the interviews, I compiled my data and analyzed it looking for general trends and similarities in responses so I could target the program to their needs.

50. Student Name(s): Dietrich Williams & Julia Schworm
Faculty Mentor: Chris Finaret
Community Partner(s): Julie Wilson
Title of Poster: Common Roots: Affordable Housing Through Cooperation
Abstract: My community based learning revolved around the organization Common Roots. The goal of this research was to reinforce the concepts learned in the classroom by experiencing the real life applications. During my time with Common Roots I observed the importance of environmental health and learned how much work it takes to maintain a healthy community environment. The tasks I performed on and off site was only a part of Common Root's attempt to improve the quality of life in Meadville.
51. Student Name(s): Nigel Williams
Faculty Mentor: Heather Moore Roberson
Title of Poster: AC Revolution in 1990s
Abstract: For my research this summer I spent about 5-6 hours a week researching in the Archives in the Library looking over things that were going on for minorities at Allegheny. Through this time a name that I kept seeing pop up was Pablo Pagan the Director/Dean of Multicultural Affairs from 1993-1998. In his brief time with the institution Allegheny started making great strides towards its goals of Multiculturalism but also made great strides in making space for minorities.
52. Student Name(s): Zachary Wyse
Faculty Mentor: Steve Onyeiwu
Title of Poster: Inequality and Structural Transformation in Africa
Abstract: There is a consensus in the literature that structural transformation is a precondition for sustained and inclusive economic growth in Africa. Analysts attribute the high poverty rate and growing inequality in Africa, despite respectable economic growth, to lack of structural transformation. A number of factors have been identified in the literature as drivers of structural transformation, including trade, FDI, infrastructure, human capital and institutions. A question that has been inadequately explored in the literature, however, is whether inequality is a constraint to structural transformation in Africa. This is an important question, considering the high level of inequality in the region. This paper uses panel regressions, and data for 48 African countries during 2010-2019, to investigate the role of inequality in structural transformation in Africa. Using four indicators of structural transformation, the paper found that inequality is a constraint to structural

transformation in resource-endowed African countries. In other words, inequality per se is not a constraint to structural transformation, but only when it is combined with resource endowment. Other variables that are robustly and positively significant for structural transformation in Africa include institutional quality, infrastructure, and non-agriculture share of employment. The paper concludes by identifying some of the channels through which inequality affects structural transformation, and proposes policy measures for addressing this constraint.

53. Student Name(s): Aria Zong

Staff Mentor: Sarah Young

Title of Poster: Allegheny Bonner Program Handbook

Abstract: The Allegheny Bonner Program Handbook is the first ever comprehensive guide of the program designed to provide Bonner students with valuable resources and insights into training and enrichment, community building, and community engagement opportunities within the Bonner Program network. This fully online handbook offers a diverse array of program policies, networking opportunities, and Allegheny Bonner Program community partners, informing Bonners on how to build capacity and sustain projects at their respective service placements in the Meadville community. This Handbook will be continuously evaluated year by year and updated with new and relevant resources and information.

Thank you for your participation!

Special thanks to the Celebration of Summer Research and Scholarship Planning Committee: Dr. Matthew Venesky, Mike Williams, Dr. Lauren Paulson, Dr. Kelly Pearce, Brian Collingwood, Colin Hurley, and Dr. Casey Bradshaw Wilson.

PARKING ASSIGNMENTS

- Allegheny Commons (pink)
- Allegheny Hall (lt blue)
- Baldwin Hall (dk blue)
- Brooks/Walker (red)
- Cafisch Hall (dk green)
- College Court (yellow)
- Commuters (orange)
- Crawford Hall (purple)
- Edwards Hall (brown)
- Employees (gold)
- North Village (black)
- Ravine Hall (lt green)
- Schultz Hall (silver)

Color dots indicate lot number. Refer to color coded signs upon entry—lots may be sectioned off by permit.

ACADEMICS

- 25 Alden Hall
- 30 Arnold Hall of Music
- 21 Arter Hall
- 6 Carnegie Hall
- 15 Carr Hall
- 32 Doane Hall (Art)
- 16 Doane Hall of Chemistry
- 27 Montgomery
- 29 Murray Hall
- 18 Oddfellows
- 19 Quigley Hall
- 9 Ruter Hall

ADMINISTRATION/GENERAL

- 48 454 House
- 10 Bentley Hall
- 4a East Alcove Meeting Room
- 2 Financial Services
- 8 Ford Memorial Chapel
- 33 Henderson Campus Center
- 7 Newton Observatory

ATHLETICS

- 28 Academic Commons
- 5 Physical Plant
- 22 Reis Hall
- 4 Schultz Banquet Hall
- 31 Shafer Auditorium
- 26 Tippie Alumni Center at Cochran Hall
- 3 Winslow Health Center
- 37 Mellon Recreation Building
- 41 Robertson Athletic Complex
- 36 Wise Sport & Fitness Center

DINING

- 13 Brooks Dining Hall
- 34 McKinley's Food Court

RESIDENCES

- 47 Allegheny Commons
- 45 Allegheny Hall
- 23 Baldwin Hall
- 24 Cafisch Hall
- 38 College Court
- 35 Crawford Hall
- 39 Edwards Hall
- 12 Hulings Hall
- 44 North Village
- 49 North Village II
- 46 Phi Kappa Psi Building
- 40 Ravine-Narvik Hall
- 1 Schultz Hall
- 42 South Highland Hall
- 20 Special Interest House
- 14 Walker Hall



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