



25TH ANNUAL SYMPOSIUM

of

UNDERGRADUATE RESEARCH & CREATIVE SCHOLARSHIP

Thursday, April 24, 2025 - 10:00 am-3:30 pm

Pierson Auditorium

OFFICE OF
UNDERGRADUATE RESEARCH
& CREATIVE SCHOLARSHIP

umkc.edu/undergraduate-research



Office of Undergraduate Research and Creative Scholarship

www.umkc.edu/undergraduate-research/

The Office of Undergraduate Research and Creative Scholarship supports high-impact learning opportunities by funding the work of undergraduate researchers, scholars, and artists; linking students with research opportunities; providing opportunities for students to enhance intellectual and career-building skills; and supporting faculty mentorship.

Staff

Jane Greer, PhD, Director

Alicen Lundberg, Assistant Director

Laura Bohlman, Administrative Assistant

Faculty Advisory Board

Shuhao Cao, Mathematics & Statistics

Alison Graettinger, Earth & Environmental Sciences

Jane Greer, English

Amanda Grimes, Health Sciences

Lani Hamilton, Music Education

Kimberly Johnson, Multicultural Student Affairs

School of Education, Social Work, & Psychological Sciences

Debra Leiter, Political Science

Jesse Lowe, Computer Science

Hillary McGraw, Biological Sciences

Zahra Niroobakhsh, Mechanical Engineering

Paul Rulis, Physics

Jeff Rydberg-Cox, Classical Studies

Maria Spletter, Biological Sciences

Westley Youngren, Psychology

Student Ambassadors

Fardowsa Ahmed, Health Sciences, 2025

Julia Bruno, Environmental Science, 2025

Yasmeen Hanon, Political Science & Environmental Studies, 2025

David Keltner, Physics, 2026

Isabelle Schroeder, English, 2025

25TH ANNUAL SYMPOSIUM OF UNDERGRADUATE RESEARCH & CREATIVE SCHOLARSHIP

Thursday, April 24, 2025

- 10:00-3:30 p.m.** Poster Session, Pierson Auditorium, ASSC
- 10:00 a.m.-12:30 p.m.
 - 1:00-3:30 p.m.
- 11:45 a.m.-3:30 p.m.** Oral Presentations, Chancellor's Dining Room, ASSC
- 4:00-5:00 p.m.** Reception, Student Union, Room 401
- 5:00-6:00 p.m.** Awards Ceremony, Student Union, Room 401
- Welcome
 - Keynote Speaker
 - Recognition of
 - UR Ambassadors
 - EUREKA Faculty & Students
 - UR Associates & Mentors
 - Emerging Research Scholars
 - UR Fellows
 - Awards for Excellence in Mentoring
 - Awards for Presentations of Distinction

AWARDS CEREMONY KEYNOTE SPEAKER

Steve Revare

Co-Founder, Tom's Town Distilling Company

Academic Alumni Achievement Award, School of Humanities & Social Sciences, 2025
M.A., 2004



Steve Revare is a lifelong Kansas City resident and a passionate storyteller with a diverse career spanning creative writing, digital media, and entrepreneurship. As the co-founder of Tom's Town Distilling Company, he helped bring Kansas City's rich Prohibition-era history to life by crafting award-winning spirits.

Before his venture into distilling, Steve co-founded BlairLake New Media, one of Kansas City's first digital ad agencies, and worked as an independent consultant specializing in web strategy and branding. His early career in television and advertising earned him national accolades for promotional campaigns and collaborations with high-profile celebrities.

A graduate of the University of Missouri-Kansas City's English Department, Steve holds an M.A. in Creative Writing and is a recipient of the prestigious Gary William Barger Memorial Scholarship and Stanley Durwood Fellowship. He has also written a published novel.

When he's not crafting a story, developing a brand, or exploring Kansas City's cultural legacy, Steve enjoys pursuing his passion for photography.

AWARDS FOR EXCELLENCE IN MENTORING UNDERGRADUATE RESEARCHERS, SCHOLARS, & ARTISTS

Kelsey Gardiner

Assistant Professor of Health Sciences



With experience working on community and public health nutrition initiatives, Dr. Kelsey Gardiner joined UMKC in 2022. She quickly linked undergraduate students to research in food security, nutrition, and food is medicine projects, including with UMKC's Roo Pantry. In fact, last year, one of her students received the KC Works award, which recognizes community engaged research presented at UMKC's Annual Symposium of Undergraduate Research & Creative Scholarship. Students and colleagues describe Dr. Gardiner as empathetic, passionate, collaborative, and impactful. She supports her students' personal and professional development in reaching their goals. Dr. Gardiner energetically advocates for her mentees—pursuing avenues of funding to help them attend national conferences, writing letters of support for their grant and award applications, and teaching them new tools and networks to enhance their experience.

Hillary McGraw

Assistant Professor of Biology



An assistant professor of biology, Dr. Hillary McGraw studies nervous system development and how cells regenerate following damage, using zebrafish as a model organism. She takes a very hands-on approach in helping new researchers learn the skills and processes necessary in the lab, encouraging them as they grow in confidence and knowledge to conceive of their own research questions. She has supported students in publishing as first authors and recognized undergraduate researchers in her own presentations at national conferences. Indeed, her generosity, patience, curiosity, and dedication are recognized by her students and colleagues. Dr. McGraw routinely nominates undergraduates to present their research to state legislators; recommends students apply for competitive internships and graduate programs; and supports students in applying for SEARCH grants here at UMKC. She is truly an invaluable resource to students, and undergraduates who have been fortunate enough to work with her have gone on to the Stowers Institute for Medical Research and KU Medical Center.

RECOGNIZING UNDERGRADUATE RESEARCH FELLOWS

Students who have been deeply involved in the process of research, scholarship, and artistic production from the point of inquiry to the point of presentation, publication, or performance can be recognized with the transcript designation of Undergraduate Research Fellow. The following students were awarded the Undergraduate Research Fellow transcript designation this semester.

Claire Covert

Health Sciences, Class of 2025

Daze Creamer-Ellecamp

Criminal Justice & Criminology, Psychology, and Sociology, Class of 2025

Andrew Custis

Earth & Environmental Science: Geology, Class of 2027

Max Diaz

Biology, Class of 2025

Z Kemp

Civil Engineering, Class of 2025

Sudhiksha Kumar

Mathematics & Statistics, Class of 2025

Vanessa Menz

Biology, Class of 2025

Nina Mitchell

Biology, Class of 2025

Ben Nelson

Chemistry, Class of 2025

Isabelle Schroeder

English, Class of 2025

CELEBRATING EUREKA COURSES

Experiences in Undergraduate Research are available to students early in their academic careers through EUREKA! Courses. In these courses, students build a relationship with a faculty mentor, learn and practice research skills and scholarly methods, complete a research project, and present their work at a campus-wide symposium.

BIOLOGY H206 - Genetics

Instructor: Saul Honigberg, Biology

ENGLISH 225 - English II: Intermediate Academic Prose

Instructor: Dana Hoffmann, English

ENGLISH 242 - Women Writing/Women Reading

Instructor: Jane Greer, English

GECRT-SC 101 - How Do I Live in A Changing World: Viruses & Immunity Arms Race

Instructor: Julia Synder, Biology

GECRT-AH 113 - Text Technologies

Instructor: Spencer Keralis, University Libraries

KC WORKS

As Kansas City's research university, UMKC seeks to partner with local constituencies and to leverage the expertise of the university's faculty, staff, and students in addressing community needs. At the Annual Symposium of Undergraduate Research & Creative Scholarship, we celebrate the work of students whose research, scholarship, and artistry is deeply engaged with the greater Kansas City area.

Thank you to our alumni judges for this category: Ashley Griffin, Natalie Lovgren, & Dan Ryan.

10:00 a.m-12:30 pm

Poster #63 **Spencer Norman** Urban Planning + Design
Transportation Adjacent Development Within Kansas City

1:00-3:30 p.m.

Poster #13 **Emily Shoemake** History and English
The Correspondence that created Sacred Circles

Poster #67 **Lyba Khawar, Dallas Welch, Katelyn Erce, & Aqeel Malik** Psychology
Depression and Health Behaviors Among UMKC Undergraduate Students

Poster #61 **Judy Batts** Health Sciences and Spanish
A Research Protocol for Healthy Housing

Poster #33 **Sy Cartwright** English
Marketing a Professional Persona: the Cultivated Charm Behind Patricia Stevens

Poster #17 **Claire Covert & Thomas Bellman** Health Sciences
Kansas City Racial and Ethnic Approach to Community Health: Exploring the Food is Medicine Landscape within Kansas City

Poster #59 **Rachel Marquart** Earth & Environmental Science: Geology
Characterization of the Elm Branch Shale in the Kansas City, Missouri Area

Poster #37 **Nevaeh Vang & Fardowsa Ahmed** Health Sciences
Measuring Nutrition Insecurity and Diet Quality in College Students

25TH ANNUAL SYMPOSIUM OF UNDERGRADUATE RESEARCH & CREATIVE SCHOLARSHIP

Thursday, April 24, 2025, 10:00 a.m.-12:30 p.m.

POSTER PRESENTATIONS

- Poster #1** **Yasmeen Hanon** Political Science and Environmental Studies
Swimming Upstream: Water Conflicts as Resource War Outliers
- Poster #2** **Phoebe Murphy, Sienna Ficken, & Samuel D. Herman** BIOLOGY H206
A Genetic Construct to Enhance Thermal Tolerance in Symbiodinium
- Poster #3** **Ben Nelson** Chemistry
Bromination of Acetone Kinetics
- Poster #4** **Emily Shoemake, Amira Ahmed, Isabel Velazquez,** GECRT-SC 101
(10:00 - 11:15) **Robin Deimerly, & Lacey Braun**
How Does The World Respond? A Comparative Analysis of National Reactions to Mpx and COVID-19
- Poster #4** **Daniela Castro-Carrera** GECRT-AH 113
(11:30 - 12:45) *La Virgen de Guadalupe, a Guide for the People or Form of Control?*
- Poster #5** **Olivia Fritz** Biology
Evaluation of Lomitapide as an Inhibitor for Ceramide Transfer Protein
- Poster #6** **Meilan Cobb** ENGLISH 242
(10:00 - 11:15) *The Connective Tissue of Reading and the Disconnect of Writing*
- Poster #6** **Tonie Cloutier** ENGLISH 242
(10:00 - 11:15) *Stories That Bind: Women's Reading and Writing as a Mirror and a Bridge*
- Poster #6** **Haley Bowman** ENGLISH 242
(10:00 - 11:15) *Oral History Project*
- Poster #6** **Emily Balentine** GECRT-AH 113
(11:30 - 12:45) *Beyond the Badge: Enhancing Ethics and Reducing Bias in Kansas City Policing Through Training Manuals*
- Poster #7** **Shelby Donnell & Sienna Ficken** Biology
Role of SNF3 and RGT2 Genes in Regulating Satellite Budding Frequency in Saccharomyces Cerevisiae Under Differential Glucose Conditions
- Poster #8** **Sophia Liperuote** ENGLISH 225
(10:00 - 11:15) *Ethnography's on the Human Brain.*
- Poster #8** **Phuong Le** ENGLISH 225
(10:00 - 11:15) *Cross-cultural Academic Writing: Difficulties and Adjustments in a Globalized Educational Environment*

Poster #8 (11:30 - 12:45)	Janet Hernandez <i>Ideology or Machismo: Insights into Campaign Rhetoric and Latino Men's Political Engagement</i>	GECRT-AH 113
Poster #9	Jaidy Sudduth <i>Heat of Combustion</i>	Chemistry
Poster #10 (10:00 - 11:15)	Naomi Gonterman <i>Grandmotherly Literacy</i>	ENGLISH 242
Poster #10 (10:00 - 11:15)	Brianna Hardesty-Biondo <i>A Difference in Perspectives: How Motherhood Bleeds into the Personal Pursuit of Reading</i>	ENGLISH 242
Poster #10 (11:30 - 12:45)	Julia Bourquin <i>Pop Quiz: Affirmations in Education</i>	GECRT-AH 113
Poster #12	Gianna Cado, Anna Cranston, & Wylie Putnam <i>Using Recombinant DNA Technology to Reduce Spread of Invasive Species <i>Lonicera maackii</i></i>	BIOLOGY H206
Poster #13	Mya Thomas <i>Field and Remote Identification of Small Diameter Lava Tubes from 1961 Lava Flow at Askja, Iceland</i>	Geology
Poster #14 (10:00 - 11:15)	Abdullah Almutairi <i>The Role of Digital Literacy in Modern Education</i>	ENGLISH 225
Poster #14 (10:00 - 11:15)	Logan Hodson <i>How artists A\$AP ROCKY and Kanye West have shaped pop culture</i>	ENGLISH 225
Poster #14 (11:30 - 12:45)	Brandon Castillo <i>How Do Cultural Differences Affect the Way People Play and View Soccer Around the World?</i>	ENGLISH 225
Poster #14 (11:30 - 12:45)	Jordyn Beaupre <i>How Films Affect Public Perception</i>	ENGLISH 225
Poster #15	Wylie Putnam <i>Characterization of <i>Malassezia pachydermatis</i> Isolates from the Oral Cavity of Kansas Canines</i>	Physics, Chemistry, and Biology
Poster #16 (10:00 - 11:15)	Lauren Heath, Bethany Zierbarth, Constantin Williams, Lizbeth Carera-Garcia, & Leo Taveres-Mercado <i>Spanish Flu</i>	GECRT-SC 101
Poster #16 (11:30 - 12:45)	Molly Benton <i>Psychological Strategies in Social Media Advertising and Marketing</i>	ENGLISH 225

Poster #16 (11:30 - 12:45)	Camden Freeman <i>Rhetoric in Social Media Activism</i>	ENGLISH 225
Poster #16 (11:30 - 12:45)	Toni Gooden <i>The Influence of the Writers' Strike on Film Quality and Audiences' Enjoyment of Films</i>	ENGLISH 225
Poster #17	Jayda Paul <i>The PEEK of Endodontics: The Resilience of Mechanical Stress of Root Canals</i>	Biology
Poster #18 (10:00 - 11:15)	Taylor Hackett-Kemp, Brooke Henderson, Ashley Rosales, & Kenia Herrera <i>Hantavirus</i>	GECRT-SC 101
Poster #18 (11:30 - 12:45)	Annita Dube <i>Enhancing Cancer Patient Care through Natural Language Processing: Extracting Insights from Electronic Health Records</i>	GECRT-AH 113
Poster #19	Cadao Nguyen <i>Investigation of Anti-Fogging Properties of Surfactants</i>	Chemistry
Poster #20 (10:00 - 11:15)	Charlie Sauer <i>How Does Writing in Social Media Affect the Sport of Golf?</i>	ENGLISH 225
Poster #20 (10:00 - 11:15)	Fatima Reyes <i>The Emotional Cost of a Creative Industry</i>	ENGLISH 225
Poster #20 (11:30 - 12:45)	Wendy Reyes <i>Through the Media's Eye</i>	GECRT-AH 113
Poster #21	Nermeen Salamed <i>Bru1 Isoforms Mitigate Developmental Muscle Damage in IFM</i>	Biology and Chemistry
Poster #22 (10:00 - 11:15)	Fatuma Mohamed, Emma Murray, Vanessa Rimpson, & Marissa Woodruff <i>Adenovirus</i>	GECRT-SC 101
Poster #22 (11:30 - 12:45)	Jerson Lopez <i>Research Project</i>	GECRT-AH 113
Poster #24 (10:00 - 11:15)	Araceli Valle, Tracee Woodard, Maria Barreto-Juarez, & Jazmin Zepeda <i>Respiratory Syncytial Virus (RSV)</i>	GECRT-SC 101
Poster #24 (11:30 - 12:45)	Grace Hensley <i>Rethinking Resume Screening: The Negative Effects of AI in Human Resources</i>	GECRT-AH 113
Poster #25	Alan Karnes <i>The Electron Slide</i>	Chemistry

Poster #26 (10:00 - 11:15)	Gavin Salzsieder <i>Translating Physical Activity Benefits to the General Public</i>	ENGLISH 225
Poster #26 (10:00 - 11:15)	Maria Sandoval Ojeda <i>Depiction of Mental Illness in Video Games</i>	ENGLISH 225
Poster #26 (10:00 - 11:15)	Creighton McKenna <i>Head Trauma In Combat Sports</i>	ENGLISH 225
Poster #26 (11:30 - 12:45)	Shruthika Uduthuri <i>Influence of AI in Professional Email Communication</i>	ENGLISH 225
Poster #26 (11:30 - 12:45)	Nikitha Mandla <i>How AI Tools Are Effecting Students' Writing, Creativity, and Original Work</i>	ENGLISH 225
Poster #26 (11:30 - 12:45)	Rasagyna Peddapalli <i>AI and Technical Communication: Comparing Human and Machine-Generated Writing</i>	ENGLISH 225
Poster #27	Taylor Nevez <i>Yeats2 Regulates Embryonic Development in Zebrafish</i>	Biology
Poster #28 (10:00 - 11:15)	Chaw Yatana, Kya Mwen, Leilani Bustamante, & Maddie Parker <i>Varicella-Zoster Virus Across Ages: Understanding the Impact on Children and Adults</i>	GECRT-SC 101
Poster #29	Chinecherem Ihenacho <i>Parents' Endorsed Barriers to Behavioral Health Service Access for their Children</i>	Psychology
Poster #30 (10:00 - 11:15)	Vanessa Macharia, Yaretzi Alaffa-Corona, Corinne Fogarty, Zach Hardee, & Vincent Spriggs <i>Vaccination Status and the Effects on Texas Measles Outbreak</i>	GECRT-SC 101
Poster #30 (11:30 - 12:45)	Liam Funk <i>The Effects of Translation on the Interpretation of the Bible</i>	GECRT-AH 113
Poster #31	Jordan Paxton <i>"Corporate Worship": The WSCS and Women's Governance in The Missouri United Methodist Church, 1950-1952</i>	English
Poster #32 (10:00 - 11:15)	Lauryn Justiss <i>Struggle to Passion: The Path of Overcoming Reading Difficulties to Embrace Literature.</i>	ENGLISH 242
Poster #32 (10:00 - 11:15)	Audriana Lagares <i>ChatGPT and Its Intellectual, Emotional Rewards for Women</i>	ENGLISH 242
Poster #33	Adrienne Ly <i>Heat of Capacity Ratio</i>	Chemistry

Poster #34 (10:00 - 11:15)	Janissa Martinez <i>Pages of Her Own Making</i>	ENGLISH 242
Poster #34 (10:00 - 11:15)	Daisey Maldonado <i>Behind from the Start": Socioeconomic Status, Early Literacy, and Lifelong Self-Perception</i>	ENGLISH 242
Poster #34 (11:30 - 12:45)	Mark Rigoli <i>Protecting Water: Impacts and Solutions</i>	ENGLISH 225
Poster #34 (11:30 - 12:45)	Daniel Wink <i>Is Music a Medium for Social Change?</i>	ENGLISH 225
Poster #35	Erica Ludy, Vanessa Menz, & Gabriel Gonzalez <i>Understanding Yeast Cell Division: Budding Behavior of rlm1 and rlm1-bud6 Mutants in Stress Conditions</i>	Biology
Poster #36 (10:00 - 11:15)	Levora Shelby, Keeli Austin, Megan Myers-Weary, & Marelyn Rivas Perez <i>Federal Viral Funding in the Past Decade</i>	GECRT-SC 101
Poster #36 (11:30 - 12:45)	Mariana Fierro <i>Hashtag Power on BLM Movement</i>	GECRT-AH 113
Poster #37	General Dorsey & Valentina Oseguera <i>Satellite Cell Formation in Yeast Mutants</i>	Biology
Poster #38 (10:00 - 11:15)	Sam Justice, Bianka Morgan, Jadan Smith, Hailey Liu, & Jacqueline Fernandez-Patlan <i>Research on Smallpox's History and Vaccine</i>	GECRT-SC 101
Poster #38 (11:30 - 12:45)	Shelby Jackson <i>Gender and Standardized Testing: Examining Differential Impacts on Learning and Behavior</i>	GECRT-AH 113
Poster #40	Ivey Siles & Alexis Reed <i>Using PCR to Inhibit Invasive Species Reproduction</i>	BIOLOGY H206
Poster #41	Roslyn O'Leary <i>Heat of Combustion</i>	Chemistry
Poster #42 (10:00 - 11:15)	Madeline Knapp, Daniela Castro-Cerrera, Samantha Molina, Ingrid Rosales & La'Raeza Williams-Pierce <i>The Fight Against Yellow Fever: A Century of Medical Innovation</i>	GECRT-SC 101
Poster #42 (11:30 - 12:45)	Madeline Knapp <i>Exploring the Marketing Strategy Differences Between McDonald's and Burger King: Impact on Advertising Effectiveness</i>	GECRT-AH 113

Poster #43	Kailynn Barnt <i>Applications of AI in Medicine and Substance Use Disorder</i>	Computer Science
Poster #44 (10:00 - 11:15)	Kaleb Jaegers <i>Electric Vehicles and their Hidden Impact</i>	ENGLISH 225
Poster #44 (10:00 - 11:15)	Maddox Hoover <i>Rhetoric in Court Documents</i>	ENGLISH 225
Poster #44 (10:00 - 11:15)	Tehaguas Kibrom <i>How AI Affects Writing Studies</i>	ENGLISH 225
Poster #44 (11:30 - 12:45)	Sai Bindhu Javvaji <i>Digital Shift: How Blogs, Social Media and Online News Changed Communication</i>	ENGLISH 225
Poster #44 (11:30 - 12:45)	Mitul Neerubai <i>The Digital Shift: How Social Media, Blogs, and Websites are Transforming Writing Style</i>	ENGLISH 225
Poster #46 (10:00 - 11:15)	Ace Britton, Brianne McGovern, Eli Vogt, Lia Smith, & Hannah Woods <i>Rabies: The Transmission From Animals to Humans</i>	GECRT-SC 101
Poster #46 (11:30 - 12:45)	Adalea R.S. Vaughn <i>Left Behind Before They Begin</i>	GECRT-AH 113
Poster #47	Coral Tracy <i>Determination of the Kinetic Order for the Bromination of Acetone</i>	Chemistry
Poster #48 (10:00 - 11:15)	Kierra Hurd <i>Deathpiea and "The Land of God": Necro-politics, Colonization, and Eiichiro Oda's One Piece</i>	ENGLISH 225
Poster #48 (10:00 - 11:15)	Dominique Smith <i>Living Stories: Oral Tradition and Symbolic Writing in Contemporary Native American Literature</i>	ENGLISH 225
Poster #48 (11:30 - 12:45)	Akaria Clark <i>The Power of Color</i>	ENGLISH 225
Poster #48 (11:30 - 12:45)	Hailey Liu <i>How Culture Differences Affect Eastern and Western Writing</i>	ENGLISH 225
Poster #49	Alec Butler <i>Voltammetric and Chronoamperometric Study of Electrochemical Solketal Oxidation Catalyzed by ACT</i>	Chemistry
Poster #50 (10:00 - 11:15)	Allison Martinez, Betsaida Romero-Agustin, Isabella Fernandez-Adame, Linda Whitsell, & Natalia Rosales <i>Carcinogenic Potential of Human Papillomavirus (HPV)</i>	GECRT-SC 101

Poster #51	Jackie Gildo	Business Administration
	<i>Bridging Cultures: Culturally Appropriate Foods for UMKC Students</i>	
Poster #52 (10:00 - 11:15)	Sophie Roach	ENGLISH 242
	<i>Navigating Language and Literature</i>	
Poster #52 (10:00 - 11:15)	Flor Ramos	ENGLISH 242
	<i>Women's Educational Experiences in Marginalized Communities</i>	
Poster #52 (11:30 - 12:45)	Julian Matras	GECRT-AH 113
	<i>The Necessity of Transparency from Social Media Companies: Social Media Privacy Policies and User Data Privacy</i>	
Poster #53	Jessica Olaby	Chemistry
	<i>Kinetics: Bromination of Acetone</i>	
Poster #54 (11:30 - 12:45)	David Zahnter	GECRT-AH 113
	<i>The Impact of In-Vehicle Car Voice Recognition Systems on Driver Safety: Accents, Tasks, and Performance</i>	
Poster #55	Abhinav Krovvidi, Nina Mitchell, & Hieu Phan	Biology
	<i>Appetitive Olfactory Short-Term Memory Detection Utilizing Y-Maze Paradigm in Drosophila melanogaster</i>	
Poster #56 (11:30 - 12:45)	Mariana Simental Grijalva	GECRT-AH 113
	<i>Translated Tales: Aiding Spanish-Speaking Students' Success in the Classroom</i>	
Poster #57	Ainsley Pickering	Psychology and Criminal Justice & Criminology
	<i>At What Frequency Do Nightmares Effect Suicide</i>	
Poster #58 (10:00 - 11:15)	Yusuf Suleiman	ENGLISH 225
	<i>How Music Impacts Black Social Justice</i>	
Poster #58 (10:00 - 11:15)	Kedryn G. Whittington	ENGLISH 225
	<i>AI ethics in digital art</i>	
Poster #59	Kyndall Robinson	Chemistry
	<i>Heat Capacity Ratios for Gases</i>	
Poster #60 (10:00 - 11:15)	Sol Disney, Grace Hensley, Desye Stewart, & Kam Yarbrough	GECRT-SC 101
	<i>The Different Effects of Ebola on Humans and Non-Human Primates</i>	
Poster #60 (11:30 - 12:45)	Eli Vogt	GECRT-AH 113
	<i>Website Cookies: A Sweet Treat or a Sour Taste on the Web?</i>	

Poster #62 (10:00 - 11:15)	Keziah Torres <i>Wanderlust: An Escape Hidden in Plain Sight</i>	ENGLISH 242
Poster #62 (10:00 - 11:15)	Bella Taffner <i>Fostering Community through Reading and Writing</i>	ENGLISH 242
Poster #62 (11:30 - 12:45)	Beck Zaitz <i>Do Unions Dream of Electric Sheep?: The Implications of the Rise of AI in Film and Television</i>	GECRT-AH 113
Poster #63	Spencer Norman <i>Transportation Adjacent Development Within Kansas City</i>	Urban Planning + Design
Poster #64 (10:00 - 11:15)	Meaghan Vandehey <i>Remembering Reading, Rediscovering Reading: A Librarian's Tale</i>	ENGLISH 242
Poster #64 (10:00 - 11:15)	Nevaeh Whaley <i>Power of Reading Literature</i>	ENGLISH 242
Poster #64 (10:00 - 11:15)	Lyric Westley <i>Reading and Writing Experiences: Intersectional Effects</i>	ENGLISH 242
Poster #64 (11:30 - 12:45)	Genesis Diosdado <i>The Affects AI has in the Human Resources Department</i>	GECRT-AH 113
Poster #65	Marc Herman <i>An Epigenetic Approach to Controlling CAR-T Cell Function</i>	Liberal Arts: Six Year Medicine
Poster #66 (10:00 - 11:15)	Aiden Young, Angelica Lam, Christion Wynn, Emmylou Swan, & Yuliana Galindo <i>Avian Influenza/Bird Flu</i>	GECRT-SC 101
Poster #66 (11:30 - 12:45)	Maria Barreto-Juarez <i>Improving High School Students' Literacy and Writing with Narrative Writing</i>	GECRT-AH 113
Poster #67	Yaser Sadeqi <i>Heat of Combustion</i>	Chemistry
Poster #69	Sudhiksha Kumar <i>Habitat Relationship between Sigmodon hispidus and Microtus ochrogaster</i>	Mathematics & Statistics
Poster #70 (10:00 - 11:15)	Steven Bhakta, Mohammad Alqattan, Alyssa Rankins, Kathryn Ross, & Dannah Warner <i>Impact of Antigenic Drift and Shift on the Influenza Virus</i>	GECRT-SC 101
Poster #70 (11:30 - 12:45)	Sai Sindhu Javvaji <i>Understanding and Improving the Clarity of Data Science Tutorials: A Writing Studies Approach</i>	ENGLISH 225

Poster #70 **Scott Brown**
(11:30 - 12:45) *Peer Reviews and its Effect on Literacy*

ENGLISH 225

Poster #70 **Miracle Crawford**
(11:30 - 12:45) *Gender Differences in Literacy*

ENGLISH 225

ORAL PRESENTATION

11:45 a.m. **Robert Songer** History and Political Science
Unexpected Hindrance: A Visually Impaired Researcher and His Tutor's Findings about the Implementation of the Americans with Disabilities Act

25TH ANNUAL SYMPOSIUM OF UNDERGRADUATE RESEARCH & CREATIVE SCHOLARSHIP

Thursday, April 24, 2025, 1:00-3:30 p.m.

POSTER PRESENTATIONS

- Poster #1** **Alessandra Smith** Biology: Clinical Laboratory Science
Faster Embryonic Jaw Elongation Correlates with Less Bone Resorption
- Poster #3** **Olivia Vella** English
Queer, Cut, and Pasted: The Radical Rhetoric of Lesbian Zines
- Poster #5** **Johnny Diep & David Keltner** Physics
Linking the Atomic and Electronic Structure of Amorphous Silicon Rings
- Poster #7** **Key'Rra Moore** Psychology
Assessment of LBGTQ Youth Experiences with Crime
- Poster #9** **Sienna Ficken** Biological Sciences
Bruno1 Isoforms have Distinct Subcellular Localization Patterns in Developing Indirect Flight Muscle of Drosophila
- Poster #11** **Abdallahman Bashir** Computer Science
UAVIDS-2025: A Comprehensive Dataset for UAV Network Intrusion Detection and Machine Learning Evaluation
- Poster #13** **Emily Shoemake** History and English
The Correspondence that Created Sacred Circles
- Poster #15** **Andrew Custis** Earth & Environmental Science: Geology
Microplastic Concentrations along the Little Blue River
- Poster #17** **Claire Covert & Thomas Bellman** Health Sciences
Kansas City Racial and Ethnic Approach to Community Health: Exploring the Food is Medicine Landscape within Kansas City
- Poster #19** **Amgad Benkhadra** Biology
Analysis of Toe1 and Parn in Zebrafish Embryos
- Poster #21** **Sam Golladay** Mathematics & Statistics
Assessing the Accuracy of Large Language Models on Mathematics Competition Problems
- Poster #24** **Mahrukh Aamir, Himmat Sandhu, Brock Dobbie,
& Nesyah King** BIOLOGY H206
Increasing Protein Content in Soybeans Using Gene Gun
- Poster #25** **Aubry Kleinsorge** Physics
Modeling Silicon Surfaces in OLCAO

Poster #27	Aurelia Collette <i>Implications of REDD</i>	Economics and Sociology
Poster #29	China Polfer & Ryan Gilliland <i>Budding Mutations in Different Growth Media of <i>S. cerevisiae</i></i>	Biology
Poster #31	CJ Kreeger <i>Assessment of Macro- and Microplastic Pollution at Veaches on San Salvador island in The Bahamas</i>	Environmental Science
Poster #33	Sy Cartwright <i>Marketing a Professional Persona: The Cultivated Charm Behind Patricia Stevens</i>	English
Poster #35	De'Vine Robinson <i>Unveiling Hidden Optical Transitions in Si and Ge: A DFT Based OLCAO Approach</i>	Physics
Poster #37	Nevaeh Vang & Fardowsa Ahmed <i>Measuring Nutrition Insecurity and Diet Quality in College Students</i>	Health Sciences
Poster #39	Shree Khambekar <i>Analysis of the Effectiveness of AI Cloned Voice Detection</i>	Computer Science
Poster #41	Julia Bruno <i>The Eruptive Deposits of Dotsero and Cerro Overo Maars</i>	Geology
Poster #43	Ruweyda Hassan <i>Media Framing and Its Impact on Muslim Political Ambition and Participation</i>	Chemistry and Political Science
Poster #45	Chloe Craig <i>A Record of Paleohurricanes from Grain-size Analysis of Sediment Cores: Clear Pond, The Bahamas</i>	Environmental Science
Poster #47	Annabelle Griffin <i>A Novel Use of Photogrammetry for 3D Underwater Imaging of Patch Reef Biodiversity, San Salvador Island, The Bahamas</i>	Biology
Poster #49	Alexander Rose <i>Solar Powered Reactor: The Clean Energy Solution You Can Make at Home</i>	Biology and Chemistry
Poster #51	Samantha Carr <i>The Provenance Problem: Unequal Ethics of Art Repatriation and Provenance Research in Global Institutions</i>	Art History
Poster #53	Brian Marrs & Emily Turner <i>How the Mutated Genes <i>Mks1</i>, <i>Aqr1</i>, and <i>Snf3</i> Influence the Production of Satellite Cells in Brewer's Yeast</i>	Biology
Poster #55	Samuel D. Herman <i>Role of <i>Robo3</i> in Specific Hemi-lineages during Pupal Development</i>	Biology

- Poster #57** **Rebecca Hartman** History
The Complex Journey of Albert Czul
- Poster #59** **Rachel Marquart** Earth & Environmental Science: Geology
Characterization of the Elm Branch Shale in the Kansas City, Missouri Area
- Poster #61** **Judy Batts** Health Sciences and Spanish
A Research Protocol for Healthy Housing
- Poster #63** **Sudhiksha Kumar** Mathematics & Statistics
Visualization of NIH NCBI and CDC NORS datasets of Escherichia Coli
- Poster #65** **Z Kemp** Civil Engineering
Angle of Repose of Burned Soil: A Continuation of Research
- Poster #67** **Lyba Khawar, Dallas Welch, Katelyn Erce, & Aqeel Malik** Psychology
Depression and Health Behaviors Among UMKC Undergraduate Students
- Poster #69** **Madison Mitchell** Biology and Earth & Environmental Science
A 5,000-year Paleoenvironmental Record Based on Macro- and Microfossil Analyses of Cores from Clear Pond, San Salvador Island, The Bahamas

ORAL PRESENTATIONS

- 1:30 p.m.** **Daze Creamer-Ellecamp** Psychology
Herbal and Dietary Supplement Use Among Living Adult Kidney Donors: The SALAD Study
- 2:00 p.m.** **Julius Ziyonzima** Computer Science
The Potential of ML/AI to Early Detection Non-Small Lung Cancer
- 3:00 p.m.** **Catalina Melgarejo-Melivilu** Political Science
Subnational Authorities in La Araucanía, Chile: A First View at Roles, Performance, and Gender Representation, 2021-2025

ARTS & HUMANITIES

Samantha Carr

Faculty Mentor: Joseph Hartman

Academic Unit/Department: Art History

The Provenance Problem: Unequal Ethics of Art Repatriation and Provenance Research in Global Institutions

Imagine this: one day, you decide to explore your cultural heritage by viewing the art and artifacts that embody your history. You visit your local museum, expecting to see these treasures, only to find them missing. Later, you discover that in order to view them, you must travel across the world—only to see them displayed in the very museums of those who stole them from your history. In the age of the Universal Museum, the question of who truly owns history remains a complex ethical issue, one that directly shapes the moral standing of cultural institutions. The looting and displacement of artifacts, particularly during the colonial era and World War II, have left a lasting impact, with many pieces now homed in institutions far from their original cultural and historical contexts. These institutions often present themselves as global stewards of art and heritage. However, their justifications frequently overlook the violent histories behind these acquisitions and the lasting harm inflicted on source communities. By holding onto these objects, museums continue to uphold power structures rooted in colonialism. At the heart of the debate is provenance research, a vital tool used for uncovering an artifact's ownership history. However, the way institutions approach this work is often influenced by a continued Eurocentric bias. More resources tend to go toward recovering looted Western artifacts, particularly from World War II, while claims from non-Western communities, particularly from the roots of colonialism, frequently encounter greater resistance. A close examination of the British Museum in London, England, reveals how colonial legacies persist in modern museum practices. As an institution deeply tied to Britain's imperial past, it houses numerous contested artifacts, such as the Benin Bronzes, and continues to resist repatriation efforts, falling back on a law that was created in recent history. The Metropolitan Museum of Art in New York City, New York serves as a bridge between European and American museum practices, highlighting key differences between institutions directly responsible for looting and those that later acquired displaced artifacts. Meanwhile, the Nelson-Atkins Museum of Art provides a regional perspective, demonstrating how even smaller institutions have been shaped by historical patterns of unethical collecting and unequal power dynamics. By analyzing the policies and actions of these institutions, this paper seeks to highlight the ethical responsibilities of museums and explore pathways toward more just and equitable practices. Further research will examine the ways non-Western art is portrayed within these spaces and propose ethical standards that address past injustices while guiding museums toward a more responsible, globally inclusive approach to cultural heritage.

Sy Cartwright

Faculty Mentor: Jane Greer

Academic Unit/Department: English

Marketing a Professional Persona: the Cultivated Charm Behind Patricia Stevens

The Patricia Stevens Modeling School was founded in the 1940s, and soon after its establishment was run by Flo “Patricia” Stevens. Flo took on the name Patricia and effectively became the face of the school. The modeling school quickly grew to support dozens of franchise schools run across the country. By the end of the 1950s, the Stevens family had chosen Kansas City as the school’s headquarters.

As the head of the Patricia Stevens Modeling School, operating both literally as the CEO and figuratively as the public face, Flo played an important role in drawing students and clients to the school. Many advertisements featured Flo's face and highlighted the Kansas City location as the only one run by Patricia Stevens herself, or included a short message from the “real” Patricia Stevens. Employees of the Kansas City branch were trained to sell the Patricia Stevens image to prospective students; the modeling school promised students they would learn the same charm and behavioral skills displayed by Patricia Stevens. Flo utilized several different tactics to create her professional persona and build an image that could be sold to prospective students. The school’s local advertisements and employee pedagogy, particularly training manuals and sales pitch scripts, are used to deconstruct this persona and reveal how Flo aimed to communicate, market, and sell her persona to a clientele of young women.

Rebecca Hartman

Faculty Mentor: Andrew Bergerson

Academic Department/Unit: History

The Complex Journey of Albert Czul

“1939 was a tragic year for millions of people. And I was one of them.” This is how Wojciech Anton “Albert” Czul began his memoir, documenting his experience during WWII. Born in Jelesnia, Poland, Albert Czul documented his capture by the German Nazis, his escape from a train to Auschwitz, and his journey to France, where he joined the Polish Home Army. Using this memoir, family interviews, legal documents, and family records, my research tracks his journey from Poland into Hungary, Slovenia, Italy, and ends in France. Through the mentorship of historian Andrew Bergerson, this research will create an educational tour on The Clio, a virtual tour website created by historian David Trowbridge. This work is done with the collaboration of University of Wroclaw undergrad Eryk Dziegielewski, and his mentor, historian Joana Wojdon. Dziegielewski painstakingly transcribed and translated Czul’s memoir from Polish into English and provided vital research on the locations and people discussed in the memoir. With the permission of Czul’s grandson, Daniel Chule, this project provides primary research into WWII, with an emphasis on the people who risked their security to help others and resist the Nazis. Further research will explore Czul’s experience in the war following the conclusion of his memoir.

Spencer Norman

Faculty Mentor: Sungyop Kim

Academic Unit/Department: Urban Planning & Design

Funding: SEARCH Grant

Transportation Adjacent Development within Kansas City, Missouri

The objective of my SEARCH project is to explore how public transportation resources in Kansas City, Missouri, can be optimized to better serve local communities through transportation-adjacent development. While socioeconomic factors influence transit ridership, their application has largely been limited to demographic analysis rather than land use and infrastructure improvements. Elements of the built environment, such as public transportation stop amenities and surrounding land use, have great potential to influence transportation mode choice. However, historically disadvantaged neighborhoods often lack sufficient transit infrastructure and pedestrian connectivity, despite a greater need for accessible and reliable transportation.

This project evaluates opportunities to improve public transit stops in the Kansas City Metropolitan Area by analyzing how surrounding land uses impact ridership and service efficiency. Through data analysis and field studies, it examines the relationship between transit stop conditions, adjacent development patterns, and transit ridership to provide actionable design and policy decisions for transportation planners.

The research integrates data from the Kansas City Area Transportation Authority (KCATA), KC Streetcar Authority, and the U.S. Census Bureau to assess transit ridership patterns and infrastructure conditions. A correlation between transit stop features, land use patterns, and ridership trends is determined through data analysis. Additionally, site visits capture factors not reflected in existing datasets, such as pedestrian accessibility, transit-oriented development potential, and urban design elements that influence transit usage.

By identifying infrastructure gaps and opportunities for improvement, this project can inform strategies that align public transportation investment with land use planning. The findings will help shape policies that promote efficient, equitable, and transportation-oriented development, ultimately enhancing mobility and accessibility across Kansas City.



High-density residential development adjacent to the KC Streetcar
Source: Spencer Norman

Jordan Paxton

Faculty Mentor: Jane Greer

Academic Unit/Department: English

“Corporate Worship”: The WSCS and Women’s Governance in The Missouri United Methodist Church, 1950-1952

In the early 1950s, men were widely recognized as the primary preachers, spiritual leaders, and financial authorities within the United Methodist Church. The pulpit was a masculine domain, with women often confined to auxiliary positions. Women were expected to support their husbands’ ministries and participate in church life from the margins. For women, participating in the Church was merely seen as a volunteer effort—but what happens when women seek to establish themselves as professionals rather than volunteers? How do they navigate a space that expects their labor yet does not always recognize it as leadership? How do women balance the perception between ‘volunteer’ and ‘worker’ when they manage church finances, organize events, and hold business meetings? These questions are central to my research on the women of the Women’s Society of Christian Service (WSCS) and their work within the Missouri United Methodist Church, 1950-1952.

In the archives, I found that the women of the WSCS structured their monthly business meetings rigidly, adhering to the business meeting principles in “A Guide for the Women’s Society of Christian Service (1948-1952).” In these sessions, the women operated under an executive board with women serving as Presidents, Vice Presidents, Treasurers, Secretaries, etc., even organizing a committee on “The Status of Women.” I argue that by applying the guidebook’s twelve “Order of Business” rules, the society functioned as a governing body and a congregation of its own. The women’s adherence to the guidebook showcased their desire for organization and authority within a space that enabled them to develop their professional capabilities. In researching the WSCS business meeting in conjunction with their central guidebook, I maintain that the women of the Missouri United Methodist Church positioned themselves as both spiritual leaders and church administrators within a religious framework that traditionally excluded them from formal power.

The women of the WSCS established a leadership system that challenged the idea that professionalism was solely a masculine pursuit. Mrs. Slater Valentine, President of the WSCS in 1952, wrote that “Since time women have been organized, the Women’s Society of Christian Service is the largest and most powerful of all leaders, the women are *consecrated workers*” (emphasis added). The WSCS was more than just a volunteer group—they were consecrated workers, and they knew it. By emphasizing the WSCS’s use of formalized procedures and spiritual rhetoric, my research demonstrates how mid-century Methodist women actively redefined the boundaries of religious and administrative authority.

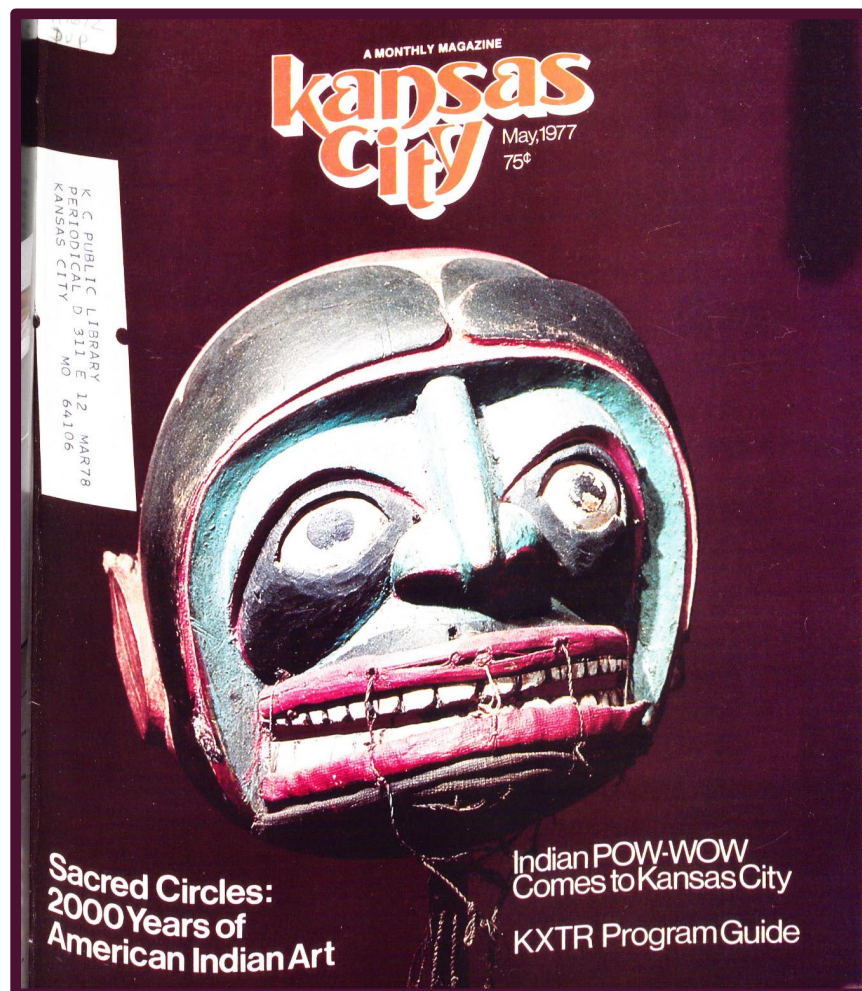
Emily Shoemake

Faculty Mentor: Marcus Meade

Academic Unit/Department: English

The Correspondence That Created *Sacred Circles*

Introducing the true impact of the famous exhibition *Sacred Circles: Two-Thousand Years of Native American Art* and how it came to be. The Assistant Director of the Nelson-Atkins Museum of Art, Ralph T. Coe, initiated correspondence with Britain's Hayward Museum Director Norbert Lynton. Between the two curators, the intentions and impact of the exhibitions—specifically its claim for Native American representation as art over artifact—can be called to question. In this article, you can expect to find a variety of scholarly perspectives on museum curatorship and exhibition practices. Along with an analysis of the efficacy of these representations of Native American art and proper conduct.



K.C. Public Library, Periodical Jan-June 1977

Robert A. Songer

Faculty Mentor: Benjamin Woodson

Academic Unit/Department: Political Science

**Unexpected Hindrance: A Visually Impaired Researcher and
His Tutor's Findings About the Implementation of the
Americans with Disabilities Act**

In 2023, upon assigning a significant Political Science research project, it quickly became clear that educators, librarians, and archivists were unaware of the limitations of blind and visually impaired students. This led to an analysis of the well-intended 1990 Americans with Disabilities Act. Research revealed tremendous achievements for some disabilities and a lack of comprehension about others. Thirty-four years after it was written, the legislation is lagging behind the increasingly rapid technological curve.

Access to information is essential for the research process. Databases, archival data, and even some websites are inaccessible without significant funds to hire a research assistant or the help of a like-minded individual(s) willing to work pro bono.

One challenge of the ADA is the wide variety of disabilities. Another is the ability of entities to withhold implementation of accommodations due to expense. Short-sightedness and out-of-date assumptions in understanding the needs of the blind and visually impaired have a direct causal relation in creating an under-educated and under-employed segment of the population. This limits the ability of blind and visually impaired people to fully participate in the democratic process and, in effect, becomes a violation of the Fourteenth Amendment.

Olivia Vella

Faculty Mentor: Jane Greer

Academic Unit/Department: English

Queer, Cut, and Pasted: The Radical Rhetoric of Lesbian Zines

The voices of those on the outskirts of society have long fought for a platform to stand on. Through protests, poetry, and music, minority communities have searched for a way to not only speak about issues close to their hearts but pave a path to a community. In the early twentieth century, zines emerged from the cracks of counterculture, and in the latter half of the century, they evolved into a way for women, queer individuals, and people of color to stand up and speak out. Zines have become a popular medium for individuals to express their views and artistic protest to the norms of society. These small booklets, composed of handwritten accounts and radical art, serve as a guidebook for many who may feel alone in the sea of mainstream culture.

Lesbian zines specifically have served as a radical rhetorical tool for individuals. Employing various elements of DIY craft and persuasive rhetoric, these zines push the boundaries of dominant discourse by expressing sexuality openly, challenging the patriarchy, and unleashing the power of radical love. While radical and empowering, these zines, often created by white, cisgender females, tend to also exclude other minorities and members of the queer community. This study will examine the unique ways that lesbian zines from the early 1980s to early 2000s pushed the bounds of counterculture through their rhetorical elements and physical components, while also examining the erasure of other minority voices.

BEHAVIORAL & SOCIAL SCIENCES

Aurelia Collette

Faculty Mentor: Sirisha Naidu

Academic Unit/Department: Economics

The Neocolonial Implications of the United Nation's Reducing Emissions from Deforestation and Forest Degradation Program

This work offers a fresh perspective on the environmental economic and social reproductive theory (SRT) analyses of Indonesia in the wake of the United Nation's (UN's) Reducing Emissions from Deforestation and Forest Degradation (REDD+) program. Modelling from existing literature and information from Indonesia's Central Bureau of Statistics, this paper argues that the economic benefits of the REDD+ program pale in comparison to the social reproductive and environmental immiseration caused by the transnational developments carried out under the auspices of the UN. This is deteriorating the conditions for indigenous people and women. Utilizing case studies from the East Kalimantan region, we can see Indigenous people are facing expulsion from their lands without any tangible way to represent themselves despite UN regulations stating otherwise. Further, we're witnessing women in Indonesia retreating from the formal to informal labor markets because of the deterioration of social reproductive systems. Despite the UN's stated goals, most people working in the wake of the REDD+ program are not able to obtain the livelihood promised to them. This case study is attempting to reframe the conversation surrounding the REDD+ program's effects as an extension of neocolonialism.

Yasmeen Hanon

Faculty Mentor: Rebecca Best

Academic Unit/Department: Political Science & Philosophy

Swimming Upstream: Water Conflicts as Resource War Outliers

A non-substitutable critical resource, water has become a matter of dispute and civil conflict at regional, domestic, and international levels. Vital to agricultural industries, community health, energy production, and various economic sectors, potential threats to water access holds several implications for human and state security which are arguably greater than those of non-water resources.

States with restricted access to water are dependent on neighboring countries, in some cases undertaking an economic loss to ensure its presence. Unlike other resource wars, water conflicts are regional conflicts with little input or exploitability by state elites. Consumption of contested water is localized to the conflict area, while other resources are exported for external processing and sale. These behaviors are atypical of those seen in other resource wars.

The political presentation of water conflicts and their anticipated acceleration and increase in frequency due to climate change necessitates reevaluation of how resource conflicts are understood. Using a mixed-methods approach, I argue that water conflicts evoke deviation from typical cost-benefit assessments made by warring parties due to the vitality of the resource in basic societal functions, and therefore cannot be categorized and evaluated using methods intended for dissimilar natural resources.

Ruweyda A. Hassan

Faculty Mentor: Debra Leiter

Academic Unit/Department: Political Science

Funding: SEARCH Grant

Media Framing and its Impact on Muslim Political Ambition

This study explores how media framing shapes public perception of Islam and its influence on the political aspirations of the Muslim community. Media framing plays a powerful role in shaping discourse, often reinforcing stereotypes that misrepresent certain groups. Islam, in particular, is frequently misunderstood and misrepresented by mainstream media.

Communication frames influence how individuals interpret issues based on personal relevance (Druckman & Chong, 2007). For example, a media frame emphasizing the economic costs of climate change may shape the opinions of small business owners differently than a frame focusing on environmental consequences. Applying this theory to perceptions of Islam, negative frames associating Islam with terrorism contributes to Islamophobia and impacts how Muslims engage in politics. This study examines the intersection of media framing and political behavior, asking: How does media portrayal of Islam influence the political participation and ambition of Muslims in the U.S.? By addressing this question, the research highlights how media bias shapes self-perception and engagement in American politics, contributing to broader discussions on democracy and representation in the social sciences.

Chinecherem Ihenacho

Faculty Mentor: Ayanda Chakawa

Academic Unit/Department: School of Medicine and Children's Mercy Department of Pediatrics

Parents' Endorsed Barriers to Behavioral Health Service Access for their Children

Behavioral/mental health needs among youth in the U.S. are at public health crisis status (Abrams, 2023). Research shows a longstanding trend in behavioral health service needs that have been exacerbated since the COVID-19 pandemic and continued barriers to accessing care (Chakawa et al., 2024; Lines, 2022). However, there are gaps in fully understanding which barriers are most highly endorsed among parents, limiting the ability of families and health care systems to effectively address those most associated with behavioral health service access difficulty. Our study explores logistics and perceptual barriers. By exploring these two types of barriers we hope to identify the most commonly endorsed barriers to behavioral health care across all participants and patterns of service access for youths with behavioral health service needs.

We use data from the Promoting Access To Healthy Well-Being Across Youth (PATHWAY) program, a family/care navigation intervention for children ages 2 to 17 referred to mental health services. The pilot study involved 100 racially and linguistically diverse parent-child pairs from a Medicaid-serving primary care clinic within a pediatric hospital system. Primary variables include barriers to care and behavioral health service access. Parents completed the Perceived Help-Seeking Behavior Scale (Brannan & Heflinger, 2006) at four time points, rated on a 5-point scale. Service access data (scheduled and attended visits) will be extracted from electronic medical records.

All data for our poster presentation have been collected and will be analyzed and reported by April 24, 2025. We will use the Statistical Package for the Social Sciences, Version 30 (IBM Corp, 2024), to conduct all analyses, with a p-value of $\leq .05$ to determine statistical significance. Our main analyses will include linear mixed models to assess changes in barriers to care across four time points (months 1, 4, 9, and 13 post-referral), controlling for care navigation attendance. We will also use descriptive statistics and chi-square tests to compare rates of access among children whose parents participated in the PATHWAY program and those whose parents did not.

Even with behavioral health service referrals, parents often continue to face barriers in accessing care for their children. We hope our findings will guide health systems in developing culturally responsive and equitable solutions to address these barriers.

Lyba Khawar, Dallas Welch, Katelyn Erce, & Aqeel Malik

Faculty Mentor: Johanna Nilsson

Academic Unit/Department: Psychology & Counseling

Depression and Health Behavior Among UMKC Undergraduate Students

Depression is increasingly prevalent among college students. National data from 133 colleges show that 44% of students experience depressive symptoms in the 2021/2022 academic year, marking it the highest rates recorded since the inception of the Healthy Minds Study (Healthy Minds Study, 2022). Depression does not only affect students' emotional well-being but also significantly influences their academic performance and health behaviors. Research indicates that students with depression experience a notable decline in GPA, with an average reduction of 0.49 points or half a letter grade. Data suggest that depression symptoms interfere with academic tasks, with the greatest impact occurring during the month of diagnosis and decreasing over time (Hysenbegasi et al., 2005). In addition to its impact on academic performance, depression is closely associated with maladaptive health behaviors, including poor eating habits, physical inactivity, insufficient sleep, and increased substance use (Dalton & Hammen, 2018).

The present study seeks to explore the relationship between depression and health behaviors in college students. Specifically, this study involved 67 undergraduate students from the University of Missouri-Kansas City. The study examined how levels of depression correlate with behaviors such as cannabis use, health practices, and academic stress. Preliminary results suggest that higher levels of depression are linked to increased stress, greater cannabis use, and worse health-oriented behaviors. These findings underline the need for effective interventions aimed at supporting the mental health and well-being of college students, with a focus on promoting healthier behaviors alongside treatment for depression.

Catalina Melgarejo-Melivilu

Faculty Mentor: German Campos-Herrera, Universidad Católica de Temuco (UCT)

Academic Unit/Department: Sociology, Political Science, and Public Administration (UCT)

Funding: Un primer acercamiento a la dinámica política de los Consejos Regionales (CORE) en Chile, 2021-2025. Código Interno PROFONDECYT 2024PF-GC-07

Subnational Authorities in La Araucanía, Chile: A First View about Roles, Performance, and Gender Representation, 2021-2025

As part of the political decentralization process in Chile, the first democratic elections for second-level subnational authorities were held in 2013, with the election of Regional Councilors (CORE), followed by the election of Regional Governors in 2021. In these elections, La Araucanía region was the only one where the right-wing obtained the governorship of the 16 administrative regions of the country. Due to the recent changes introduced in subnational governments, studies on political decentralization are scarce. In this sense, this study explores the roles of recent political actors, performance within the Regional Councils (CORE), and gender representation in La Araucanía region between 2021 and 2025. We use an original database, complemented with electoral data, to identify the productivity of the committees, the most important issues, and women's political representation in the CORE. Our study contributes to the growing literature on subnational politics by placing the Chilean case in the context of broader Latin American experiences of political decentralization.

Key'Rra Moore

Faculty Mentor: Toya Like

Academic Unit/Department: Social Humanities & Social Sciences

An Assessment of LGBTQ Youths Experiences with Crime

Introduction: The topic of my research is LGBTQ youth's vulnerability to victimization and/or susceptibility to engage in delinquent behavior. This topic is explored across three factors: Family and home environment, their identities, as well as the roles their peers and how they are involved. This topic is important due to society needing to know about what barriers as well as struggles that LGBTQ teens face when they encounter society as well their family and friends.

Methods: The literature has informed me that youth partake in delinquent behavior due to them not being accepted in their households and communities. I conducted three interviews with adults between the ages of thirty to thirty-five years old who identified as LGBTQ to understand their experiences based on my topic. I used an interview guide to complete my research.

Findings: Every participant had someone that supported them in their family but they each had a different family member that supported them. In their daily life, each of the participants had something different to say about their home life. All the participants identified as LGBQ when they were young. All the participants have different opinions when it comes to identities. All the participants in this study stated that they had peers that they associated with. Delinquency was mentioned briefly in the interviewee's responses. Individuals had a few instances of delinquency but did not say if it was related to their identity. Spirituality was brought up as well by a participant in which it influenced her identity.

Ainsley Pickering

Faculty Mentor: Westley Youngren

Academic Unit/Department: Psychology & Counseling

At What Frequency do Nightmares Effect Suicide

Introduction: A robust body of research has linked nightmares to suicide. For example, research has found that nightmares predict suicidal ideation above and beyond other mental health symptoms (such as depression and posttraumatic stress disorder) and that treating nightmares may indirectly decrease the risk of suicide. Considering the established link between nightmares and suicide, our goal was to further extend the literature by examining at what frequency do nightmares become related to suicide.

Methods: Data were collected through an online survey distributed anonymously to our participants. Embedded within the survey were measures of nightmare frequency and cognitions related to suicide. After examining the data for validity, and removing outliers, our final sample size was $N = 117$. Bivariate linear regression analyses were used to explore the relationship between nightmare frequency and cognitions related to suicide.

Results: Experiencing nightmares several times a month ($\beta = 6.20, p < 0.01$) and several times a week ($\beta = 5.75, p < 0.05$) both significantly predicted cognitions related to suicide. In contrast, experiencing nightmares several times a year did not significantly predict cognitions related to suicide ($\beta = 2.12, p = 0.32$). Weekly frequency accounted for 6.8% of the variance in cognitions related to suicide while monthly frequency accounted for 8.4% of the variance in cognitions related to suicide.

Conclusion: Our results revealed that experiencing nightmares at weekly or monthly rate were both predictive of cognitions related to suicide, while experiencing nightmares a few times a year was not predictive of cognitions related to suicide. Of note, monthly nightmares appeared to explain the most variance in cognitions related to suicide. Overall, our results highlight that experiencing nightmares at a monthly basis may be the tipping point for when nightmares begin to impact the risk for suicide. However, our data was cross-sectional, which impacts our ability to establish a true temporal relationship. Future research should utilize longitudinal methods to further explore at what frequency do nightmares become a risk factor for suicide.



BIOLOGICAL & LIFE SCIENCES

Judy Batts

Faculty Mentor: Joseph Lightner

Academic Unit/Department: School of Nursing & Health Sciences

A Research Protocol for Healthy Housing

Addressing home health environmental hazards is important to reducing adverse health effects in populations where hazards are prevalent. Many health conditions are exacerbated by living conditions, and much of someone's health outcomes are determined by the characteristics of their living environment. The objective of this protocol is to improve the living conditions of residents in the Health Science Community Improvement District Benefit District in a manner that is guided by residents' individual needs. This quasi-interventional study seeks to evaluate participants' knowledge of home environmental and safety hazards, and health outcomes. Participation occurs over a six-month period. Both educational and resource interventions are applied. Changes to the home environment are expected because of the intervention, as well as increased recognition of potential hazards. Long-term, these modifications are expected to reduce health disparities and improve health outcomes.

Amgad Benkhadra

Faculty Mentor: Hillary McGraw & Mingui Fu

Academic Unit/Department: Biology

Analysis of *Toe1* and *Parn* in Zebrafish Embryos

This study investigates the role of *toe1* and *parn* gene functions in zebrafish (*Danio rerio*) using CRISPR/Cas9 genome-editing technology to introduce targeted mutations. Target of Erg1 (*Toe1*) and poly(A) specific ribonuclease (*Parn*) are ncRNA deadenylases that have been associated with the regulation of cellular growth and the processing of small nuclear RNAs (snRNAs). Mutations in *toe1* and *parn* are linked to neurodevelopmental disorders in human patients. By utilizing zebrafish—a model organism valued for its genetic accessibility, rapid embryonic development, and conserved neural pathways—this research seeks to investigate the function of *toe1* and *parn* in vivo through brain development analysis. To generate mutations in *toe1* and *parn*, CRISPR/Cas9-mediated gene editing was conducted by microinjecting Cas9 protein along with single-guide RNAs (sgRNAs) into zebrafish embryos at the one-cell stage. The efficiency of mutagenesis was assessed through PCR amplification followed by gel electrophoresis to confirm successful genomic modifications. To evaluate the phenotypic consequences of *toe1* and *parn* disruption, zebrafish heads were dissected at different developmental stages and subjected to image analysis for brain structure development.

Preliminary findings indicate that CRISPR/Cas9 successfully induces insertions and deletions within the target genomes. By examining brain structure development, this study seeks to further understand the roles of *Toe1* and *Parn* in neural development and its broader implications for neurological disorders.

Claire Covert

Faculty Mentor: Kelsey Gardiner

Academic Unit/Department: Nursing & Health Studies

Funding: Centers for Disease Control and Prevention's Racial and Ethnic Approaches to Community Health

Kansas City Racial and Ethnic Approach to Community Health: Exploring the Food is Medicine Landscape within Kansas City

Authorship: Gardiner, Grimes, Hample, Lightner, Clay, Covert, Bellman

Objective: This study aims to explore the current Food is Medicine (FiM) landscape within the Kansas City metropolitan. Exploration includes the pilot testing of a FiM coding scheme using the layers of the FiM pyramid.

Methods: The study uses a cross-sectional research design to distribute an electronic survey to community organizations engaged in FiM work. Sampling uses a mix of purposeful convenience and snowball sampling. The survey assesses program components (e.g. participant eligibility criteria) and community organization roles. Analysis of the survey consists of descriptive statistics and the development and analysis of a FiM coding scheme using the FiM pyramid. Each layer of the pyramid was defined and associated constructs within the layers (e.g. Food distribution method) were established. Questions associated with those constructs were developed and organizations were assigned into one of five categories based on the coding scheme.

Results: This study is ongoing, and findings are preliminary. Surveys were completed from 11 community organizations. Of the respondents, 82% reported screening participants, and of those, 63% screen for food insecurity and 50% chronic diseases diagnosis. Among programs that screen for chronic disease diagnosis, 100% screen for type 2 diabetes, 50% hypertension, and 25% hyperlipidemia. Just over half of programs report utilizing direct referral (55%) or self-select enrollment (55%). The primary way food is distributed is through a prepared produce bag (40%), followed by retail food incentives/vouchers (20%). Most respondents identified their role as an oversight organization (70%). Using the FiM coding scheme, 10% of programs were classified as medically tailored meals, 30% medically tailored meal packages/groceries, 30% produce prescription, 10% federal food programs, and 20% population-level food policies.

Conclusion: Findings highlight the nuance of FiM programs in practice. To the researcher's knowledge, this study is the first of its kind to pilot a FiM coding scheme based on the FiM pyramid. The survey developed in this study could be used in other communities to further assess the FiM landscape.

Daze Creamer-Ellecamp

Faculty Mentor: Cynthia Russell Lippincott

Academic Unit/Department: Nursing

Herbal and Dietary Supplement Use Among Living Adult Kidney Donors: The SALAD Study

Introduction: Over 100,000 patients are on the kidney transplant wait list. Those who need a kidney can receive one from a deceased donor or from a living donor. Living kidney donors must be careful with their remaining kidney to not develop kidney failure. Supplements have been shown to contribute to kidney failure. Nearly 30% of living kidney donors take supplements. The purpose of this cross-sectional, descriptive study is to determine the extent of adult living kidney donors' herbal and dietary supplement consumption and to explore the correlation of their supplement use with their blood creatinine levels, and therefore, the function of their remaining kidney.

Methods: Institutional Review Board approval was obtained from the University of Missouri (MU) and University of Missouri-Kansas City (UMKC). MU provided access to a list of 74 living adult kidney donors. A survey was created using Qualtrics asking the donors to report their herbal and dietary supplement intake, their recent blood creatinine levels, and the function of their remaining kidney as either 'normal' or 'abnormal.' From October 2024 to March 2025 the survey was posted online to Facebook, Instagram, and X as well as mailed out to the list of known living kidney donors.

Results: Twelve surveys were collected and analyzed. The sample demographics were 83% female, 75% White, and 65% were married. 58% of participants rated their quality of life as excellent. 58% of participants reported currently consuming herbal and/or dietary supplements. The most frequently used supplement was protein powder with 50% of participants reporting taking it regularly. Half of the participants had their blood creatinine level checked in the last 3 months with other participants reporting unknown levels or different testing times. 75% of the sample reported a normal blood creatinine level, 17% did not know their level and 1 reported an abnormal level. The 1 who reported an abnormal level reported taking 3 or more supplements. There was an inadequate sample size to conduct correlational analyses.

Discussion: Half of the living kidney donors in this small sample reported taking protein powder, which provides additional evidence that living kidney donors consume protein powder supplements, perhaps at a higher rate than previously reported in the literature.

Conclusion: The small study sample size limits generalizability of the findings. Further research with a larger participant pool is needed to confirm the prevalence of supplement use in adult living kidney donors as well as the correlation between their supplement use and the function and health of their remaining kidney, as reported by blood creatinine levels. The information gained from this study will be useful for healthcare providers in determining how they should counsel living kidney donors on limiting herbal and dietary supplement consumption, namely protein powder, to preserve function of their remaining kidney.

Shelby Donnell & Sienna Ficken

Faculty Mentor: Julia Snyder

Academic Unit/Department: Biological and Biomedical Systems

Role of SNF3 and RGT2 Genes in Regulating Satellite Budding Frequency in *Saccharomyces cerevisiae* Under Differential Glucose Conditions

In Biology 370L, we are investigating the fundamental biological processes that regulate cell division and adaptation in yeast, using *Saccharomyces cerevisiae* as a model organism to explore how genetic and environmental factors shape cellular behavior. SNF3 and RGT3 contribute to transcriptional control and growth rates within the model organism *Saccharomyces cerevisiae*. When exposed to various levels of glucose within the organism's surroundings, these genes contribute to regulating the expression of hexose transporters (HXT) that are important for glucose uptake within the cells. RGT2 senses the presence of high glucose and induces expression of HXT1, while SNF3 senses the presence of low glucose in the organism and induces expression of HXT2. We chose these mutations because they have been previously studied as limiting components of the glucose signaling pathways and impact growth and development of budding cells. The presence of satellite buds in *Saccharomyces cerevisiae* with gene deletions of *snf3Δ*, *rgt2Δ*, and *snf3Δ rgt2Δ* will be significantly influenced by the type of carbon source present in the growth media.

This experiment was executed by using replica plating to expose each strain to different media and test cell viability. We then took count of satellite cells by examining samples under a compound microscope. Satellite cells appear when grown on alternative carbon sources, shown as a budding cell that has malfunctioned to grow multiple daughter cells attached to the original mother cell. The media used was YPDA- glucose rich in the presence of additional growth supplements, YEV- an ethanol carbon source, YEA- an acetate carbon source, and YED- a glucose rich media without additional supplements for yeast growth. The replica plating process and analysis was completed three times to ensure credible and accurate results. We hypothesize that when we introduce yeast with an *snf3Δ* mutants to glucose media and *rgt2Δ* mutants to low glucose media this will promote higher satellite budding frequency; suggesting that the media would hinder their metabolic efficiency and allow for the mother cell to channel more resources into forming satellite daughter cells as an adaptive response to optimize nutrient utilization and ensure cellular proliferation under different carbon source conditions. Initial results indicate the presence of satellite cell phenotypes with all mutations on YEA, further testing is undergoing to test the accuracy of this phenotype and provide mechanistic explanations.

General Dorsey & Valentina Oseguera

Faculty Mentor: Julia Snyder

Academic Unit/Department: Biological & Biomedical Systems

Satellite Cell Formation in Yeast Mutants

Satellite cells are small colonies that develop after an incomplete cell division. Often, metabolic pathway alterations lead to incomplete cell division and result in the production of satellite daughter cells. Carbon and glucose are integral factors in most metabolic pathways; however, carbon and glucose availability alter cell division's rate and overall result. Our study investigated how different carbon sources influence satellite colony cell formation in mutant yeast strains – *hog1*, *cdc28*, and *dld3* –. *HOG1* is a key regulator of cell stability in high osmotic pressure situations. The loss of *HOG1* signaling results in further abnormal cell growth and cell cycle delays. *Dld3* is similar and plays an integral role in lactic resource metabolization. Loss of *dld3* signaling prevents yeast from metabolizing specific carbon sources, leading to inefficient cell division. *Cdc28* is the master regulator of G1, S, and G2/M phases, and plays a role in regulating metabolism and transcription levels. We aimed to determine if specific mutations in yeast can influence the development of satellite colonies in response to different media types and carbon resource availability.

To investigate this, we performed multiple rounds of replica plating, each plate was divided into sections to grow both mutant and wild-type yeast strains. Four different agar mediums with varying carbon sources were used for the experiment: YPDA (glucose), YEA (acetate), YEV (ethanol), and YED (low glucose). Our primary focus was to quantify the number of satellite colonies formed in each mutant colony using a hemocytometer. After staining cells with a TB/sorbitol solution we used a microscope to view budding cells through the hemocytometer. Cells were then categorized by the specific mutant, budding satellite cells. Our results indicated an increase of 3-4 multi-budded cells in *dld3* and *hog1*. This confirmed our initial hypothesis that a lack of metabolic signaling will result in further abnormal cell growth and cell cycle delays. Ultimately our evidence suggests that a combination of carbon source availability and metabolic stress will affect the coordination of budding and potentially cause an increase in multi-budded cells.

Sienna Ficken

Faculty Mentor: Maria Spletter

Academic Unit/Department: Biological & Biomedical Systems

Bruno1 isoforms have distinct subcellular localization patterns in developing indirect flight muscle of *Drosophila*

Sienna N. Ficken¹, Erin Kelleher², Mainak Bose³, Anne Ephrussi³, Maria L. Spletter¹

Affiliations: 1. Biological and Biomedical Systems, School of Science and Engineering, University of Missouri Kansas City, Kansas City, MO, USA. 2. The University of Houston, Texas, USA. 3. The European Molecular Biology Laboratory (EMBL), Heidelberg, Germany.

Striated muscle development in *Drosophila melanogaster* is regulated by a variety of distinct transcription and splicing regulation factors, including the RNA-binding protein Bruno1 (Bru1, also called Arrest, Aret). Bru1 is a conserved member of the CELF family of RNA binding proteins, which are key regulators of alternative splicing and muscle development in vertebrates. CELF1-2 are reported to promote embryonic splicing patterns in striated muscle and have increased activity in adult patients with myotonic dystrophy type 1 (DM1), in part due to increased nuclear localization and a reversion to embryonic splicing patterns. In flies, Bru1 instructs indirect flight muscle (IFM)-specific alternative splicing, sarcomere growth, and myosin contractility. *bru1* mutant IFM fails to undergo a developmental transition to mature splice isoforms. Interestingly, Bru1 itself undergoes alternative splicing to produce at least 11 transcripts and 6 distinct proteins. Here we examine the subcellular localization of individual Bru1 isoforms across IFM development. Using confocal microscopy, we show that during early stages of IFM development, Bru1^{eGFP} protein is localized to the cytoplasm as well as the nuclei. As the IFM matures, Bru1^{eGFP} progressively is cleared from the cytoplasm and by 72 h after puparium formation (APF) is strongly enriched in the nucleus. We use UAS-GFP-Bru1 constructs to assay the subcellular localization of individual Bru1 isoforms including A, B, and D at early and late timepoints, and find isoform-specific patterns of subcellular localization in IFM. Intriguingly, CELF proteins in vertebrates are known to shuttle between the cytoplasm and nucleus due to PKA-mediated phosphorylation, and Bru1 in flies is also reported to be phosphorylated by PKA near the N terminus, on a serine that is not present in all isoforms of Bru1. Here we test if Bru1 nuclear localization in IFM is PKA-dependent, using RNAi knockdown and overexpression to modulate PKA activity. This research identifies regulation of Bru1 protein localization as a conserved mechanism to regulate CELF-protein activity, and suggests that different Bru1 isoforms may play distinct roles during muscle development.

Olivia Fritz

Faculty Mentor: Xiaolan Yao

Academic Department/Unit: Molecular Biology and Biochemistry

Funding: SEARCH Grant

Evaluation of Lomitapide as an Inhibitor for Ceramide Transfer Protein

Sphingolipids are vital for membrane structure and in regulating a variety of cell signaling processes. The ceramide Transfer Protein (CERT) transports ceramide from the endoplasmic reticulum (ER) to the Golgi apparatus for the formation of sphingomyelin, thus playing a crucial role in sphingolipid equilibrium. Mutations in the coding region of the CERT1 gene have been found to lead to intellectual disability termed ceramide transporter (CerTra) syndrome. A common consequence of these mutations is the loss of inhibitory regulation of CERT. Therefore, identification of CERT inhibitors could provide treatment for CerTra syndrome. A 2020 drug screen study identified Lomitapide as a possible CERT inhibitor. Lomitapide is an FDA approved drug for the treatment of high cholesterol in children. Lomitapide does not resemble ceramide, unlike the well-known CERT inhibitor, HPA-12, which is shown to bind to CERT lipid transfer domain in a similar manner as ceramide. The aim of my project is to understand the biochemical and structural mechanisms of Lomitapide inhibition of CERT. I used fluorescence resonance energy transfer (FRET) based ceramide transfer assays to evaluate how well Lomitapide inhibits the lipid transfer domain of CERT. Preliminary data indicates Lomitapide is a weaker inhibitor of CERT than HPA-12. I plan to carry out quantitative comparison between HPA12 and Lomitapide. These results will provide insight into whether Lomitapide can be repurposed as a treatment for CerTra syndrome. Due to the fact that Lomitapide has a distinct structure from HPA12 and ceramide, it is possible that it also affects other domains or regions of CERT. For future work, I will also evaluate the ability of Lomitapide to inhibit the full-length CERT protein to test this possibility. Results from these biochemical assays will guide my design of experiments to understand the structural basis of Lomitapide inhibition of CERT.

Jackie Gildo

Faculty Mentor: Angela Cottrell

Academic Unit/Department: Missouri Institute for Defense & Energy

Bridging Cultures: Culturally Appropriate Foods for UMKC Students

The Kangaroo Pantry at the Dr. Raj Bala Agrawal CARE Center at the University of Missouri-Kansas City (UMKC) plays a vital role in addressing food insecurity for the UMKC community. This research aimed to assess the cultural and dietary preferences of pantry users, and to identify ways to enhance the pantry's offerings to meet these needs. A survey was conducted among registered pantry users, acquired 63 responses (12.3% response rate) over a three-month period. The survey researched food preferences, cultural food essentials, dietary restrictions, and user satisfaction. Findings show that a significant portion of respondents preferred culturally specific foods, particularly Asian, Latinx/Hispanic, and Middle Eastern foods, with international students being a key demographic contributing to this demand. The survey also highlighted that a substantial number of students faced dietary restrictions such as vegetarian, vegan, gluten-free, and dairy-free needs. Additionally, respondents expressed dissatisfaction with the pantry's limited availability of traditional ingredients essential to their cultural diets and comfort foods.

Key recommendations include diversifying the pantry's stock to include more culturally relevant foods, especially staple items for diverse cuisines. Partnerships with local ethnic grocery stores, cultural organizations, and urban farms were proposed to ensure a consistent supply of diverse food options. By enhancing the pantry's offerings to reflect the cultural diversity and dietary needs of its users, UMKC can foster an inclusive environment that supports students' academic success and well-being. Ultimately, this research underscores the critical importance of culturally inclusive food options in addressing food insecurity and promoting a sense of belonging among UMKC's diverse population.

Annabelle Griffin

Faculty Mentor: Alison Graettinger & Tina Niemi

Academic Unit/Department: Earth & Environmental Sciences

Funding: EES Newcomb Grant

A Novel Use of Photogrammetry for 3D Underwater Imaging of Patch Reef Biodiversity, San Salvador Island, The Bahamas

The Bahamian Archipelago consists of over 3,000 islands and small cays that extend about 800 km southeastward from Grand Bahamas island. San Salvador Island is an isolated carbonate small island approximately 300 km from Nassau. Patch reefs encompassing the waters of San Salvador Island, The Bahamas were studied using a novel 3D photogrammetry method to assess coral reef biodiversity and health. This underwater study utilized a scale bar with three axes: “X,” “Y,” and “Z,” with pre-measured distances between endpoints that allow accurate 3D models to be developed via Agisoft Metashape. There were a total of six underwater 3D models successfully made from three different sites: one model from French Bay, four consecutive models from a shallow reef at Columbus Monument, and one model from a farther out reef at Columbus Monument. There were varying coral abundances observed at each of the three locations. At French Bay, there were predominantly encrusting corals and branching corals. Corals were largest at this reef location compared to the others, several measuring ≥ 50 cm in diameter. At the Columbus Monument reef closest to shore, there were several algae species noted, with minimum coral observed, consisting of small encrusting coral that measured on average < 10 cm. The reefs farther from the shoreline at Columbus Monument were composed mostly of soft corals and small encrusting coral species. The methodology practiced was successful in producing 3D underwater models that did not affect reef health and were cost-effective. While this 3D method worked, water turbidity was a barrier to the model size, as evident at one of the Columbus Monument locations where images had to be collected closer to the reef reducing the dimensions of the scene. Wave intensity also affected the efficiency of retrieving data, with stronger waves experienced at French Bay. There were fewer corals observed at all sites than expected. The reef diversity at Columbus Monument lacked corals, and in its place had multiple types of algae. Other reef locations studied had coral present, much of it in poor health being bleached or already dead. This project allowed us to test the data collection technique and prove that it successfully produced 3D patch reef models. The methodology can be practiced again in the future; comparisons of past and future models will allow researchers to better visualize reef trends in health and biodiversity. Monitoring and understanding trends in reef biodiversity are vital to understanding how reefs are evolving in a warmer global climate.

Marc Herman

Faculty Mentor: Todd Bradley & Daniel Scott

Academic Unit/Department: Biology

Funding: Children's Mercy Research Institute & SEARCH Grant

An Epigenetic Approach to Controlling CAR-T Cell Function

Marc Herman^{1,2}, Eric Geanes¹, Rebecca McLennan¹, Gage Greening¹, Marco Rodriguez^{1,2}, Daniel Scott³, Todd Bradley^{1,2,4}

Children's Mercy Research Institute¹, University of Missouri Kansas City School of Medicine², University of Missouri Kansas City School of Science and Engineering³, University of Kansas Medical Center⁴

Chimeric antigen receptor T (CAR-T) cell therapy has revolutionized cancer treatment by providing therapeutic options for patients that have relapsed or have tumors that are resistant to conventional therapies. CAR-T cell therapy consists of extracting a patient's T cells, re-engineering them to express cell surface receptors that supercharge the immune system's ability to kill cancer and infusing them back into the patient. Despite the clinical success of this therapeutic approach, almost all CAR-T cell patients experience some degree of Cytokine Release Syndrome (CRS), with symptoms ranging from fever to death. CRS occurs because CAR-T cell recognition of tumor cells leads to cytokine and inflammatory protein production. Additionally, some patients do not respond to CAR-T therapy as the tumor microenvironment suppresses T cell function, though a multitude of actions, including immunosuppressive cytokines. Previous research has tried to overcome these setbacks by engineering different chimeric antigen receptor signaling domains, this approach has yielded inconclusive success. Here, our goal was to develop novel interventions that control the secretion of cytokines, while maintaining the cytotoxic abilities of CAR-T cells. As inflammatory and cytotoxic cellular programs have been shown to be epigenetically regulated, we postulated inhibition of key epigenetic regulatory proteins could modulate cytokine production. Previously we identified Bromodomain and External motif (BET) protein inhibitors (BETi) and DNA demethylating agents can modulate cytokine production on NK cells, BET proteins are epigenetic readers that are often dysregulated in human malignancies, leading to increased oncogene expression. BETi can also reprogram the immune microenvironment, potentially reversing T cell exhaustion and promoting T cell antitumor immunity. DNA demethylating agents are often used as chemotherapeutic agents and have also been shown to regulate T cell function. To test our strategy on CAR-T cells, we mixed lymphoma targeting CAR-T cells with Raji tumor cells then measured cytokine secretion and cytotoxicity. We demonstrated that treatment of CAR-T cells with BETi agents led to a significant decrease in the secretion of select proinflammatory cytokines associated with CRS, and only a modest reduction in CAR-T cell cytotoxicity. Thus, BET inhibition could lead to specific changes in proinflammatory gene expression programs in CAR-T cells that resulted in reduced cytokine secretion with minimal impact on CAR-T cell cytotoxicity. Demonstrating the BET pathway is a key target for treatment of CRS. On the other hand, Demethylating agents led to increased cytokine production with no change on cytotoxicity. This increase in proinflammatory cytokine production may be exploited to help CAR-T cells breakdown the immunosuppressive tumor microenvironment. Additionally, through repeated challenging of CAR-T with tumor cells we demonstrate epigenetic reprogramming has effects that last beyond drug administration and wear off overtime. Future studies are aimed at determining the *in vivo* effectiveness of epigenetic reprogramming on CAR-T cells. This will provide a novel approach to better personalize the aggressiveness of CAR-T cell therapy, enhancing the safety and efficacy of this promising cancer treatment. This study could rapidly lead to clinical trials of BETi with CAR-T cells, as the BETi and demethylating agents used in this study are already in clinical trials as therapeutic agents for various solid and hematologic malignancies.

Samuel D. Herman

Faculty Mentor: Haluk Lacin

Academic Unit/Department: Biology

Funding: SEARCH Grant & UMKC Funds, & NIH Grants

Exploration of Robo3 in Specific Hemilineages During Pupal Development

Samuel D. Herman¹, Erin A. Beck¹, Haluk Lacin¹

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Drosophila melanogaster goes through two phases of neurogenesis. The embryonic phase establishes the larval central nervous system (CNS); the postembryonic phase, from 2nd instar to late pupal stage, establishes the adult CNS. Axon guidance molecules have been extensively researched in the embryonic stage for their role in establishing the larval CNS, but how they organize the adult CNS is not well-understood.

The ventral nerve cord (VNC) of *Drosophila* is analogous to the mammalian spinal cord, performing reflexive motions as simple as kneeling and as complex as take-off. Hemilineages are the fundamental unit of the VNC; they are defined as neurons that arise from the same neuroblast, express a set of similar transcription factors, and use the same neurotransmitters (glutamate, GABA, or acetylcholine). Hemilineages provide a framework for understanding circuit formation during development. We lack clarity for how hemilineages express axon guidance molecules during the pupal stage to form the neuronal circuitry present in a healthy adult. The Roundabout (Robo) family mediates axon repulsion from the midline and organizes axons into lanes which differ in their distance from the VNC midline. To understand the role of axon guidance molecules in the pupal stage, I analyzed Robo3 expression using a hemilineage-based approach.

I first used neurotransmitter-specific driver lines to visualize whether there is an extensive overlap between *robo3* expression and cellular processes of GABAergic, glutamatergic, and cholinergic neurons, finding extensive Robo3 localization in glutamatergic neurons. To identify which glutamatergic hemilineages show Robo3 expression, I utilized our lab's split-Gal4 library, which genetically and specifically labels individual hemilineages. Of the hemilineages I screened, both 14A & 9A displayed extensive overlap with Robo3 protein. Then, to understand the role Robo3 plays during pupal development, I am currently performing a hemilineage-specific knockdown of *robo3* to identify whether *robo3* is required for proper axonal architecture development of 9A and 14A neurons.

CJ Kreeger

Faculty Mentor: Tina Niemi

Academic Unit/Department: Earth & Environmental Sciences

Funding: SEARCH Grant

Assessment of Macro- and Microplastic Pollution at Beaches on San Salvador Island in The Bahamas

Plastic pollution poses a significant environmental threat, particularly in marine and coastal ecosystems. Over time, macroplastics—large, visible plastic debris—are broken down into microplastics, particles smaller than 5 millimeters. The global issue of plastic pollution began with the mass production of plastics in the 20th century, and their durability has since contributed to widespread environmental accumulation. This study investigates macro- and microplastic pollution on San Salvador Island, Bahamas, an ecologically significant location characterized by its pristine beaches and diverse marine ecosystems. The island's position within the North Atlantic gyre and its relative isolation make it an ideal site for studying plastic pollution dynamics. Beach sand sediments and the distribution and abundance of plastic types along the highest backshore, debris wrackline were studied and compared to the findings from a 1998–2004 study by White and Curran (2005), which identified plastics as the most prevalent marine debris on San Salvador shorelines. Understanding the types, distribution, and accumulation of plastics is critical for developing targeted mitigation strategies. This study found that a majority of plastics found were categorized as PP, HDPL, or LDPL, in total carrying a weight of 11.77kg and contributing to 72% of the overall weight of marine debris collected. This study provides valuable insights into how plastics are transported and deposited in coastal environments, contributing to broader efforts to protect marine life and human health from the adverse effects of plastic pollution.

Abhinav Krovvidi, Nina Mitchell, & Hieu Phan

Faculty Mentor: Stephane Dissel

Academic Unit/Department: Biological Sciences

Funding: UMKC Start-Up Fund

Appetitive Olfactory Short-Term Memory Detection Utilizing Y-Maze Paradigm in *Drosophila melanogaster*

This project aims to investigate the mechanisms of associative learning in *Drosophila melanogaster* using a Y-maze appetitive olfactory conditioning paradigm, focusing on how flies form associations between specific odors (octanol/OCT, and methylcyclohexanol/MCH) and a sucrose reward. The study will build on established research that highlights the role of specific stimuli in associative learning, specifically olfactory conditioning in flies. The research question explores whether *Drosophila* can reliably form associations between odors and rewards and whether this varies with different odors. By using OCT and MCH as test odors, we will assess how flies' preferences are shaped by these associations. The significance of this research extends beyond basic insect learning, as it could inform broader understandings of neural circuits involved in memory and learning, offering potential applications in studying memory disorders and olfactory processing in higher organisms. Experiments to date have successfully prepared the odor solutions (OCT in 0.4 μL /5 mL oil and MCH in 0.44 μL /10 mL oil) and established a conditioning protocol using sucrose as the reward. Initial data suggests that flies show a clear preference for the CS+ odor-following training on the associated odor. Future trials will expand on these results, seeking to confirm the reliability and robustness of the odor-reward associations. Furthermore, these future trials will define the upper limits of memory retention with extended periods of time post-training/pre-testing. This will allow us to expand the number of mazes being used, collecting more data to confirm our hypothesis. The expected outcomes will contribute valuable insights into how sensory and reward systems interact in the brain, with applications that reach beyond the *Drosophila*.

Sudhiksha Kumar

Faculty Mentor: Aaron Reed

Academic Unit/Department: Science & Engineering, Biological Sciences

Habitat relationship between *Sigmodon hispidus* and *Microtus ochrogaster*

The purpose of this study is to observe if a newly migrated species, the cotton rat (*Sigmodon hispidus*) competes with a species native to Kansas, the prairie vole (*Microtus ochrogaster*). Spatially-explicit capture-recapture analysis was used to determine if the two species segregate habitat.

Data was collected on a plot of 2 hectares for a period of 40 years. It was collected by recording the frequency of tagged mammals across 100 traps set up evenly through the plot. Program R was used to create population density maps of the months when there were significant populations of the mammals of interest (*Sigmodon hispidus* and *Microtus ochrogaster*). The maps show areas of greater and lesser mammal density through a difference of colors.

The results suggest that the populations of the cotton rat and prairie vole fluctuate throughout the year. The populations generally occupy the same areas even as the population numbers fluctuate. The change in population density over time implies that these mammals gravitate towards areas with abundant food and resources, and it suggests that the species may compete with each other for resources in the areas they occupy.

This data could be further used in a larger investigation to observe trends of the relationship between other small mammals in the habitat and temporal changes to the habitat itself. Using weather trends and this spatially explicit data, we can observe migration patterns by season and implications of the transfer of diseases the mammals may carry.

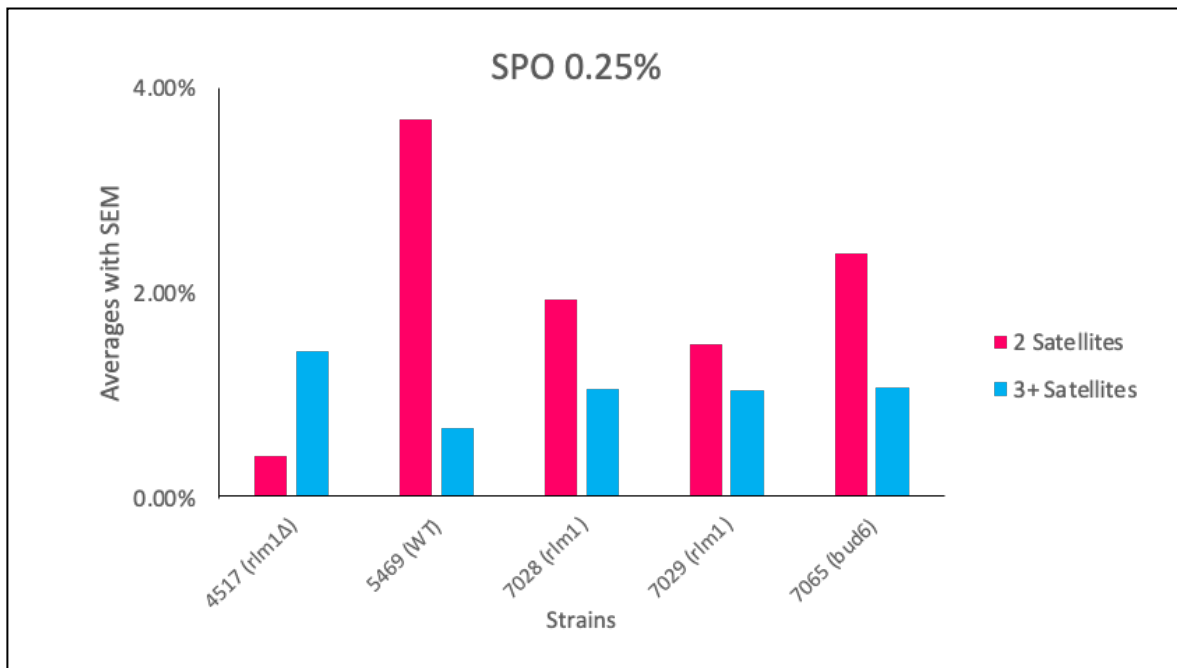
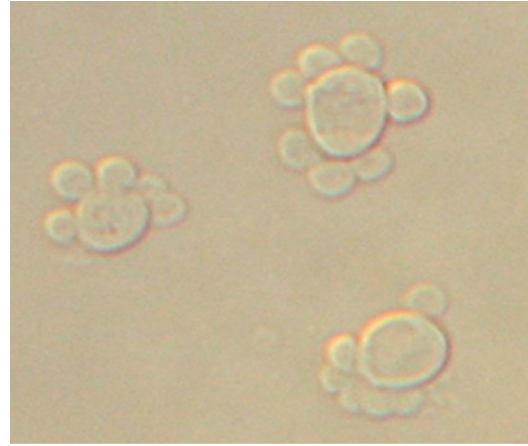
Erica Ludy & Vanessa Menz

Faculty Mentor: Saul Honigberg

Academic Unit/Department: Science & Engineering

Understanding Yeast Cell Division

Saccharomyces cerevisiae (budding yeast) is a valuable model for studying how cells divide under stress. Our research focuses on two key genes: *rlm1*, a transcription factor in the Cell Wall Integrity (CWI) pathway, and *rlm1 bud6*, which are involved in actin organization and bud site selection. When grown on nonfermentable carbon sources at low osmolarity, *rlm1Δ* mutants form abnormal “satellite-daughter” cells, indicating a disrupted stress response. We investigated how the *rlm1-bud6* double mutant responds to environmental conditions and whether these mutations affect budding patterns.



Brian Marrs & Emily Turner

Faculty Mentor: Julia Snyder

Academic Unit/Department: Biological and Biomedical Systems

How the Mutated Genes *Mks1*, *Aqr1*, and *Snf3* Influence the Production of Satellite Cells in Brewer's Yeast

Saccharomyces cerevisiae, also known as Brewer's yeast, is used for brewing beer, hence its nickname. Yeast reproduces asexually by budding. However, satellite cells are produced when the yeast is mutated and grown on alternate glucose media. In mutated yeast reproduction, daughter cells are not always viable. In our research with the Honigberg Lab, we are researching how different gene mutations may influence the production of satellite cells in yeast. We are specifically looking at *Mks1*, *Aqr1*, and *Snf3* gene mutations. When *Mks1* is mutated in humans, it can cause various human health disorders. *Mks1* is important for regulating defense responses and cell wall integrity. *Aqr1* is involved in the excretion of amino acids. When *Snf3* is mutated, glucose uptake is reduced. We hypothesize that when these genes are mutated, there will be an increase of satellite cells produced especially on YEV and YEA media. Since our data collection is ongoing to determine the effect of our mutants *Mks1*, *Aqr1*, and *Snf3* on the production of satellite cells in Brewer's Yeast, our conclusion is inconclusive.

Madison Mitchell

Faculty Mentor: Tina Niemi

Academic Unit/Department: Earth and Environmental Sciences

Funding: EES Newcomb Grant

A 5,000-Year Paleoenvironmental Record Based on Macro- & Microfossil Analyses of Cores from Clear Pond, San Salvador Island, The Bahamas

San Salvador Island in the Bahamas has many inland lakes that have been previously cored to study the past environment and climate of the region. Clear Pond is a coastal lake located on the southwestern side of the island and has a known freshwater conduit and marine conduits that connect to the ocean thus impacting its salinity and biota throughout time. In this study, I use macrofossil and microfossil identification as a proxy indicator to determine the paleoenvironmental conditions over time. I analyzed the biota from three core sections with a total length of 2.3 m collected from the southern part of Clear Pond in 2016. Radiocarbon age dating indicates that the sediment at the base of the core dates to 5,000 years ago. Because ostracod species sensitivity to various conditions, identification can lead to information about changes in precipitation, salinity, and storminess. Analyses of the biota from the cores show a progression from open marine conditions that progress upsection to brackish water. Additional core samples were obtained in March 2025, which can serve as an update to data from the previous coring campaigns. Vegetation and snorkel surveys were conducted to provide further context for the study of the lake biota. *Batophora oerstedii* (fuzzy fingers) and *Thalassia testudinum* (turtle grass) were abundant across the lake bottom. The lake floor was littered with mollusk shells, including gastropods (such as the black and white striped *Batillaria minima*) and bivalves. Throughout the lake, various species of pupfish were present, and a Great Barracuda was discovered near the conduit. The current environmental conditions vary significantly from evidence obtained from the core data suggesting the environment has gone through various phases of change likely driven by global shifts in atmospheric patterns.

Taylor Nevez

Faculty Mentor: Hillary McGraw

Academic Unit/Department: Biological & Biomedical Systems

Funding: McGraw Lab Start-Up Funds

Yeats2 Regulates Embryonic Development in Zebrafish

Yeats2 is a subunit of the Ada-two-A-containing (ATAC) complex which binds to H3K27ac to promote histone acetylation and regulate gene transcription. Yeats2 overexpression is found in many cancers and is thought to promote cancer cell proliferation, migration, and survival. While Yeats2 is being studied in the context of cancer, little is known about the function of Yeats2 in development. The McGraw lab identified a point mutation in the zebrafish *yeats2* gene (*yeats2ⁿ¹²⁴*) which has been found to cause a mild body plan change and a change in sensory cell development. Our current research is to use CRISPR-Cas9 genome editing in zebrafish to create a null mutation in *yeats2*. We have generated a possible null mutant line, *yeats2^{ATG}*, which shows severe developmental defects, including curved bodies, small heads, and disrupted sensory cell formation. Using these mutant lines, we hope to determine the role of Yeats2 in the developing embryo. Understanding the function of Yeats2 is key for developmental and cancer research.

Julius Niyonzima

Faculty Mentor: Saman Zeeshan

Academic Unit/Department: Biomedical and Health Informatics

Application for ML/AI Algorithms in Detecting and Treatment of Lung Cancer

Lung cancer remains the most prevalent cancer worldwide, accounting for the highest number of cancer-related deaths. Early detection is strongly associated with improved survival outcomes for patients; however, it continues to present significant challenges. Despite advancements in medical research, the effectiveness of current predictive models is limited by the constraints of existing machine learning (ML) algorithms, hindering their ability to reliably detect lung cancer in its early stages. These models predominantly rely on demographic risk factors, such as body mass index, gender, smoking history, and family history of respiratory illness. While valuable, these models often fail to capture the genetic complexity underlying lung cancer, limiting the accuracy and precision of early detection efforts.

Recent advancements in artificial intelligence (AI) and machine learning (ML) offer significant promise in improving early detection and prognosis. Supervised and unsupervised ML models, such as K-nearest neighbors (KNN), K-means clustering, Random Forest (RF), Decision Tree Classifiers (DTC), Logistic Regression (LR), Deep learning (DL), Gradient Descent (GD), Support Vector Machines (SVM), and XGBoost, have proven effective in analyzing high-dimensional datasets, including genomic, clinical, and imaging data, which go beyond traditional biological methods. However, these existing approaches often fail to fully leverage genomic data due to issues related to data scarcity, integration, and the complexity of genomic markers.

This research seeks to bridge these gaps by developing a robust ML/AI model that combines SVM and RF techniques with both demographic and genomic data. The objective is to create a more accurate and generalizable model that enhances early detection, improves staging accuracy, and more effectively predicts lung cancer recurrence. Ultimately, the aim is to empower clinicians with comprehensive and reliable tools, enabling them to make more informed decisions in the management of lung cancer.

China Polfer & Ryan Gilliland

Faculty Mentor: Julia Snyder

Academic Unit/Department: Biological & Biomedical Systems

Budding Mutations in Different Growth Media of *S. cerevisiae*

S. cerevisiae are membrane-bound eukaryotes. Cell division in *S. cerevisiae* is a process known as budding, during which smaller daughter cells are pinched off the mother cells. The Honigberg lab found a mutation that occurs on the *rlm1* gene affecting cell division that causes the daughter cells to not pinch off, creating a morphology of satellite cells.

The aim of our study was to investigate the effects of genetic mutations on the morphology of budding in *S. cerevisiae*, and to try to observe if the satellite budding expresses, using different media conditions. We used YPDA media plates as a control plate, then used YEV (Ethanol), YED (Low glucose), and YEA (acetate) to see if the effect of different media plates would increase or decrease abnormal budding.

We selected strains with mutations in *kdx1*, *ysw1*, and *spo13* genes. The *kdx1* gene, which manages stress response alongside the *rlm1* gene by physically reacting with each other in a complex to repair cell damage. When *kdx1* grows on YED, we hypothesize a decrease in the ability to repair cellular damage and increase budding mutations. The *ysw1* gene, which is required for normal prospore membrane formation, interacts with Gip1p protein to assist in septin formation. We hypothesize that a deletion of *ysw1* can be expected to result in defects in budding, as septins are a key component to the cytoskeleton. If grown on YEV or YEA plates, We hypothesize that growing a strain of *S. cerevisiae* on YEV or YEA media will result in an increase of abnormal budding compared to our YPDA plates. Lastly, a deletion on the *spo13* gene is believed to cause cohesion abnormalities in chromatids, so we believe if grown on a YEA plate there will be an increase in abnormal budding.

Satellite bud formation data was collected using a hemocytometer and microscope to observe the budding phenotype on different media plates. Analysis of the data used Excel and percent calculations. After analysis of satellite buds, the results indicated that *spo13* on the YEV plate had an increase in abnormal budding. We are continuing to collect and analyze more data.

Wylie Putnam

Faculty Mentor: Theodore White & Brooke Esquivel

Academic Unit/Department: Biology

Funding: SEARCH Grant & Funding for Excellence Grant

Characterization of *Malassezia pachydermatis* Isolates from the Oral Cavity of Kansas Canines

Malassezia pachydermatis is a species of fungus that is known to cause superficial skin, hair and nail diseases in canines. Our lab found that *M. pachydermatis* is also abundant in the oral microbiome of healthy dogs, indicating a commensal role of the fungus on mucosal membranes. We have collected and cultured fifty-three *M. pachydermatis* isolates from oral swabs of Kansas shelter dogs and have now started to characterize these fungal isolates. So far, we have observed three unique colony morphologies that can be distinguished by color on a chromogenic media in which the isolates grow either pink, purple, or purple punctate. We measured each isolate's drug susceptibility to the commonly used antifungal drugs Fluconazole (FLC), Ketoconazole (KTC), Amphotericin B (AMB), and Caspofungin (CFG). The drug testing revealed that all *M. pachydermatis* isolates were resistant to CFG, however there were significant differences in drug susceptibility to FLC and KTC between the isolates. We observed that these differences in drug susceptibility also correlated with the colony morphology and color differences. For example, pink isolates were found to be more resistant to KTC compared to the other isolates, whereas the purple punctate isolates were more resistant to FLC. To identify the genetic factors responsible for the differences in morphologies and drug susceptibility, we have collaborated with researchers at Duke University to provide us with whole genome sequencing of our isolates. We can then compare the isolate genomes for relatedness and look for gene mutations known to be involved in drug resistance. With preliminary genomic data, we have already been able to identify differences in ploidy between isolates which may contribute to their morphological and drug susceptibility traits.

Nermeen Salamed

Faculty Mentor: Maria Spletter

Academic Unit/Department: Science & Engineering

Bru1 Isoforms Mitigate Developmental Muscle Damage in IFM

During muscle development, changes in gene expression and alternative splicing allow the tissue to transition from embryonic to adult muscle. This transition is essential for developing sarcomere structure, strength, and contractility. The CUG-BP and ETR-3-like (CELF) family of RNA-binding proteins regulate RNA processing during myogenesis, but their misregulation is linked to diseases such as Myotonic Dystrophy Type I (DM1). A CELF1/2 family homolog in *Drosophila* called Bruno1 (Bru1), also known as Aret, is an RNA-binding protein that regulates post-transcriptional processing during myogenesis and embryogenesis. Loss of Bru1 in *Drosophila* flight muscles disrupt alternative splicing, leading to defective sarcomere organization and impaired muscle function. Alternative splicing creates multiple isoforms of Bru1, but their individual contributions to myogenesis remains unclear. While Bru1 is essential for indirect flight muscle (IFM) structure and function, it is unknown which Bru1 isoforms are sufficient to prevent IFM defects. We hypothesize that Bru1-isoA can rescue IFM structural and functional defects in the presence of Bru1-isoD. To test this, we expressed Bru1-isoA via the Gal4-UAS system, allowing for tissue specific and temporal control of expression. The Fln-Gal4 driver allows us to express Bru1-isoA later in myogenesis and at two expression levels, UASp and UAS-T, which express lower and higher, respectively. We expressed Bru1-isoA in two backgrounds. One background had no Bru1 expression (bru1M3) and the other expressed only Bru1-isoD (bru1M4). We then assessed rescue efficiency through flight behavior assays, immunohistochemistry, and confocal microscopy to examine myofiber and sarcomere organization. We have found that the IFM of flies with Bru1-isoA and Bru1-isoD appear to have improved myofiber phenotype, sarcomere structure and some functionality. While our data suggests a rescue of the myofiber defects, further investigation is needed to determine the statistical significance of the rescue and developmental relevance of the expression of these isoforms. This study has improved our understanding of Bru1 isoform-specific functions in muscle development and the role of expression levels in genetic rescue. These findings provide insights into post-transcriptional regulation of muscle integrity and the broader functional diversity of RNA-binding proteins.

Alessandra Smith

Faculty Mentor: Erin Bumann & Claire Houchen

Academic Unit/Department: Dentistry, Oral and Craniofacial Sciences

Funding: NIH/NIDCR R03DE031388, Robert Wood Johnson Foundation Grant Number 79430

Faster Embryonic Jaw Elongation Correlates with Less Bone Resorption

Introduction: Differences in embryonic growth rate between bird beaks can be leveraged to explore therapies for human disorders such as micrognathia, a small lower jaw. Birds are an ideal model to investigate embryonic jaw bone development due to the advantage of being able to observe their development in real time and because their jaws are made of bone with similar cell types to humans. In the jaw bone, osteoblast-lineage cells that mineralize bone have previously been considered the important cell type that determines embryonic jaw bone length, but recent studies have found an important relationship between osteoclast cells that resorb bone and jaw bone length. Our objective was to determine the relationship between initiation of bone mineralization, initiation of bone resorption, and jaw bone growth rate.

Methods: The Hamburger and Hamilton (HH) staging system was employed to determine the embryonic stage of the birds. Bone mineralization in white Pekin duck (*Anas platyrhynchos*) and Japanese quail (*Coturnix japonica*) begins at stage HH33, while bone resorption begins at HH36. Embryonic duck and quail heads (n=12-15) were collected at stages HH33, HH36, and HH39, fixed in 4% paraformaldehyde and stored in 1x phosphate buffered saline. A lateral image of heads was collected using a Leica S9i microscope and measured using ImageJ. Each head was measured twice and intraobserver reliability was measured by calculating the coefficient of variation. Average and standard deviation of each lower jaw and growth rates were calculated.

Results: Our previous data shows that quail have more bone resorption in their short jaws compared to long-jawed duck. Quail and duck jaws were a similar two-dimensional lateral length at HH33, but the duck jaw was astonishingly twice as long by HH39. The growth rates for the quail and duck jaw were comparable between the species between HH33-HH36 (0.83 and 1.38 mm/stage, respectively). However, at HH36-HH39 the quail jaw elongated at 0.84mm/stage while duck jaw elongated at a rapid 3.07mm/stage, approximately 3.65 times faster. The coefficient of variations calculated for the intraobserver analysis were below 5%, indicating high replicability of the jaw length measurements.

Conclusion: While quail and duck jaw growth rates were more similar at stages when bone mineralization was occurring, duck jaws exhibited a much faster growth rate than quail jaws at stages when bone resorption was occurring. As quail jaws have more bone resorption, lower levels of bone resorption may be associated with faster bone elongation as is seen in the duck jaws. These data validate previous studies that found an inverse relationship between bone resorption and jaw length. Bone resorption may play an important role in embryonic jaw development, and bone resorption-altering factors should continue to be investigated for the treatment of babies with micrognathia.

Nevaeh Vang & Fardowsa Ahmed

Faculty Mentor: Kelsey Gardiner

Academic Unit/Department: Nursing & Health Sciences

Funding: Challenge Grant

Measuring Nutrition Insecurity and Diet Quality in College Students

Authorship: Ahmed, Vang, Gardiner

Objectives: Food Insecurity is a current health disparity affecting the U.S. today. While food assistance programs such as the Women, Infants, and Children (WIC) program, and the Supplemental Nutrition Assistance Program (SNAP) aim to alleviate this disparity, challenges persist. These include stigma, access to nutritious foods, and solutions for those who don't qualify for these programs including college students. Considering the gaps in literature, this study aims to explore three research questions. 1) What is nutrition security status, dietary quality, and self-reported health of on-campus food pantry users at an Urban institution in the Midwest? 2) What is the overall satisfaction and additional support needs of on-campus food pantry users at an Urban institution in the Midwest? 3) What are the differences in nutrition security, dietary quality, self-reported health, overall pantry satisfaction, or additional support needs between student groups based on student status (Undergraduate vs. Graduate students) and residency status (domestic vs. international)?

Methods: This study uses a cross-sectional survey design to explore food pantry satisfaction, dietary quality, and self-reported health of on-campus food pantry users at an urban university in the mid-west. The participants included college students at the University of Missouri-Kansas City (UMKC) that utilize the on-campus food pantry (Roo Pantry). All participants were recruited via direct email from the director of the pantry using the on-campus food pantry email listserv. Data was collected using Qualtrics and analysis consisted of descriptive statistics and t-tests using SPSS software.

Results: In total, 144 participants responded to the survey and of those Over half of the participants identified as international students (59%), master's level (72%), Female (52%), and Asian/Pacific Islander (61%). Dietary quality among students was low with 55% reporting less than one serving of fruit per day and 39% less than one serving of vegetables per day. Overall pantry Satisfaction among students was high with a mean score of 3.4 out of 5.0. When comparing international vs. domestic students there was a statistically significant difference in needing food assistance on weekends and satisfaction with fresh fruit. Additionally, the analysis revealed that undergraduate students reported lower satisfaction with pantry hours, weekend food assistance, and the selection of fresh fruits.

Conclusion: Food pantries are serving a vital role to support food access yet aren't fully meeting dietary needs for students. Though students are generally satisfied with the pantry, there are difference among both undergraduate vs. graduate and international vs. Domestic students. More research is needed to understand these difference and the best supports.

COMPUTING & ENGINEERING

Kailynn Barnt

Faculty Mentor: ZhiQiang Chen

Academic Unit/Department: Civil Engineering

Applications of AI in Medicine and Substance Use Disorder

Substance abuse prevention requires tailored, accurate, and responsive educational tools to effectively support families, individuals, and professionals. This poster presents a framework for developing a custom-trained AI model, leveraging Large Language Models (LLMs) and advanced techniques like Retrieval-Augmented Generation (RAG), to enhance substance abuse prevention efforts. The AI is fine-tuned using specialized datasets to address the unique needs of different audiences, including families, healthcare providers, and individuals at risk. Key features include customizable interfaces, integration with up-to-date scientific literature, and task-specific data training to improve relevance and accuracy. Data privacy, security, and legal compliance are emphasized to ensure ethical and responsible AI deployment. This approach aims to create an adaptive, secure, and effective digital resource that supports informed decision-making and fosters proactive substance abuse education and intervention.

Abdallahman Bashir

Faculty Mentor: Farid Nait-Abdesselam

Academic Unit/Department: Science & Engineering

UAVIDS-2025: A Comprehensive Dataset for UAV Network Intrusion Detection and Machine Learning Evaluation

Unmanned Aerial Vehicle (UAV) networks have become increasingly prevalent across various sectors, including military operations, disaster management, and commercial services. However, these networks face unique security challenges due to their mobility, resource constraints, and wireless communication vulnerabilities. Despite the growing importance of UAV security, there exists a significant gap in specialized datasets for UAV network intrusion detection research, forcing researchers to rely on general network security datasets that fail to capture the unique characteristics of aerial networks. In this paper, we present UAVIDS-2025, a comprehensive UAV Network Intrusion Detection dataset specifically designed to address this critical gap. Using NS3 simulation, we modeled realistic UAV network environments under both normal operations and various attack scenarios. We evaluated multiple machine learning algorithms on UAVIDS-2025, achieving promising performance metrics that demonstrate the dataset's utility for developing specialized intrusion detection systems. To promote reproducibility and advance research in this domain, we have made UAVIDS-2025 publicly available. This novel dataset provides researchers with a dedicated resource for developing and evaluating security solutions tailored to the unique requirements of UAV networks.

Z Kemp

Faculty Mentor: Megan Hart & Micah Wyssmann

Academic Unit/Department: Science & Engineering

Funding: SEARCH Grant

Angle of Repose of Burned Soil: A Continuation of Research

Climate change has increased the presence of wildfires and high-impact precipitation like flash flooding. After a wildfire, soil becomes hydrophobic with greater hydrophobicity increasing water runoff and mobile sediment. Mobile sediment mixes with water runoff and becomes debris flow: a rapidly moving mixture and a threat to both human life and infrastructure. In previous research, this project has corroborated literature findings with rheological tests of kaolin slurries at varying concentrations; tests conducted at UMKC has found that yield strength increases as concentration increases. In this proposed research project, natural soil samples from a March 2024 controlled burn will be analyzed for the angle of repose and compared to unburned samples. This continuation of research plans to study how controlled burns impact flow behavior and rheological properties of soil to better understand post-wildfire debris flow, impacting mountainous communities around the world.

Shree Khambekar

Faculty Mentor: Rui Duan

Academic Unit/Department: Computing & Engineering

Analysis of the Effectiveness of AI Cloned Voice Detection

With the rise of AI voice cloning used in impersonation scams and the misuse of synthetic voices on social media, effective detection methods are increasingly vital. This study investigates the effectiveness of both neural speaker embedding systems and publicly available deepfake voice detection tools in identifying AI-cloned audio. By evaluating performance across various voice samples and cloning techniques, the research aims to highlight current strengths and limitations in voice authentication technology and examine the factors that may influence detection accuracy. The study began by identifying five free and accessible voice cloning websites. Original voice samples were submitted to each site, generating five corresponding AI-cloned voices. These clones were then subjectively ranked by the researcher and a faculty advisor based on perceived accuracy (1 being most accurate, 5 being least accurate). Next, a pre-trained End-to-End Neural Speaker Embedding System was used to compute cosine similarity between the real and cloned samples. Each voice clone was compared to the original sample six times, and the average similarity score was recorded. Running the Embedding System required debugging the provided code, accessing a suitable GPU for TensorFlow and Keras, and normalizing files (in both duration and volume) to ensure fair and consistent evaluation. Preliminary results suggest that the Embedding System demonstrates partial effectiveness; it consistently returned similarity scores around 0.50 for all but one clone, indicating an ability to detect dissimilarity but not to reflect perceived accuracy. The final phase, currently in progress, involves testing the cloned voices using online deepfake detection websites to determine whether the systems can accurately classify them as synthetic. Prior research suggests these tools are generally reliable, and the forthcoming results will further assess their practical effectiveness.

Aubry Kleinsorge

Faculty Mentor: Paul Rulis

Academic Department/Unit: Physics & Astronomy

Modeling Silicon Surfaces in OLCAO

In recent years, crystalline silicon (c-Si) has become the dominant semiconductor material for solar panels, with 97% of panels produced in 2023 utilizing c-Si. Photovoltaic silicon is often grown epitaxially, with layers deposited from gas one at a time. As a result, understanding the electronic structure of silicon at its surface is essential for optimizing growth methods. In this study, I model silicon from first principles using the orthogonalized linear combination of atomic orbitals (OLCAO) package, which calculates the electronic structure of materials based on the overlap of atomic orbitals. This approach allows us to examine the differences between bulk silicon and silicon with a surface.

At the surface, silicon atoms are surrounded by fewer neighbors compared to atoms deeper within the material. As a result, the electronic structure of surface atoms is altered. My investigation focuses on how the density of states (DOS) changes as a function of distance from the surface. Specifically, I explore the thickness required for the silicon model to exhibit bulk-like behavior in the interior, as well as the necessary vacuum thickness to prevent surface interactions. Additionally, I examine how relaxing the atomic positions of the surface atoms may further modify the electronic structure.

I have begun preliminary work on investigating how variations in lattice orientation and the presence of grain boundaries may influence the electronic properties of silicon. By analyzing these factors, I aim to gain deeper insight into the electronic properties of silicon surfaces and how these insights can guide the optimization of silicon growth methods for photovoltaic applications.

Jayda Paul

Faculty Mentor: Thiagarajan Ganesh

Academic Unit/Department: Civil Engineering

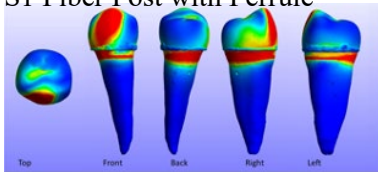
Funding: University of Missouri South Africa Education Program

The PEEK of Endodontics: Resilience of Mechanical Stress on Root Canals

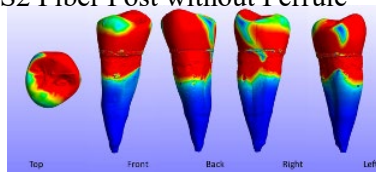
Endodontic therapy alters the structural integrity of the tooth, making it more prone to fractures and weakening overall strength. Polyether ether ketone, a colorless organic thermoplastic polymer (PEEK), is known for its thermal resistance, mechanical strength, and adequate shock absorption capacity [1]. It has been used extensively in dental disciplines, like dental implants fixtures, removable dentures, and fixed crowns [2]. This study's aim is to compare the structural strength of PEEK vertical posts in the mandibular first premolar tooth to withstand mechanical stress against regular fiber posts. In addition, this study explored the effect of inclusion of ferrules in the crown on structural integrity. Biomechanical stress patterns were compared and analyzed for PEEK vertical posts and the regular vertical fiber posts with and without the presence of ferrule using four finite element models of the mandibular first premolar tooth.

The four samples studied were S1 Fiber post with ferrule design, S2 Fiber post without ferrule design, S3 PEEK polymer dental post with ferrule design, and S4 PEEK polymer dental post without ferrule design. The images observed below show the absorption of mechanical stress from the loads. The study concluded that the samples that had PEEK fiber posts showed more absorption of mechanical stress while regular fiber posts have a more widespread stress impact on the mandibular premolar.

S1 Fiber Post with Ferrule



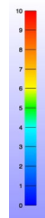
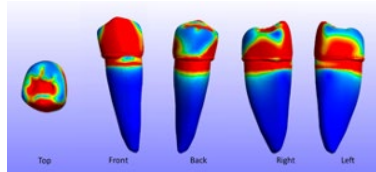
S2 Fiber Post without Ferrule



S3 PEEK Post with Ferrule



S4 PEEK Post without Ferrule



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PHYSICAL & NATURAL SCIENCES

Julia Bruno

Faculty Mentor: Alison Graettinger

Academic Department/Unit: Earth and Environmental Science

Funding: SEARCH Grant; continuation of research from SUROP & Newcomb Grants

The Eruptive Deposits of Dotsero and Cerro Overo Maars

When volcanoes erupt, they can carry crustal rocks to the surface (xenoliths). This is especially common in eruptions that involve subsurface explosions between magma and groundwater. To understand their eruptive and thermal histories, this study investigates xenoliths in eruptive deposits at Dotsero Maar, Colorado, and Cerro Overo Maar, Chile. At Dotsero Maar in Dotsero, there are crustal xenoliths in three types of eruptive deposits – welded spatter deposits, red vesicular deposits with abundant volcanic bombs, and lithic-rich lapilli tuff (loose pyroclastic deposits). Crustal xenoliths found at Dotsero include (from increasing stratigraphic depth) those from the Maroon, Eagle Valley, Eagle Valley Evaporite, and Minturn Formations. The Maroon Formation consists of vibrant red sandstone beds, conglomerate, mudstone, siltstone, and claystone. Eagle Valley comprises reddish-brown/grey siltstone, shale, sandstone, and carbonates. While both are red, the Maroon Formation is more micaceous than the Eagle Valley Formation. The Eagle Valley Evaporite Formation consists of gypsum, anhydrite, and halite. Finally, the Minturn Formation consists of sand to cobbly sandstone. This formation is quartz- and feldspar-rich. Building on research conducted in July 2024, X-ray diffraction and petrographic analysis were used to obtain mineralogical information about the host rock and xenoliths and identify signs of melting or chemical alteration of xenolithic material, respectively. The occurrence of evaporite xenoliths and quartz in Dotsero Maar's deposits provides insights into the thermal history of the eruption. These findings are compared to Cerro Overo Maar, where the composition of crustal rocks is less constrained, contributing to the understanding of phreatomagmatic eruptions and eruption dynamics.

Alec Butler

Faculty Mentor: Lena Hooper-Burkhardt

Academic Unit/Department: Chemistry

Voltammetric and Chronoamperometric Study of Electrochemical Solketal Oxidation Catalyzed by 4-Acetamido-TEMPO (ACT)

The experiment performed used voltammetric and chronoamperometric techniques to analyze the effect of scan rates on peak current. It also featured a redox reaction between solketal and a TEMPO-derivative catalyst, ACT. This experiment used the same techniques to study the efficiency of ACT as a catalyst as well as see the effect of scan rates and solketal concentration on the peak current produced. Through the data collected, it was determined that without the reaction present, an increase in scan rate also increased the peak current produced. The data also proved a chemical reaction occurrence between oxidized ACT and solketal by those specific voltammograms having no cathodic peak. This same data also demonstrated that as solketal concentration increased, the turnover of ACT also increased, which had a measured turnover frequency higher than demonstrated literature values, proving it's more efficient nature as a catalyst for this reaction. It was also shown that as solketal concentration increased and scan rate decreased, peak current was at its maximum, which is opposite the original discovered trend about scan rates and peak current.

Chloe Craig

Faculty Mentor: Tina Niemi.

Academic Department/Unit: Earth and Environmental Science/SSE

Funding: SEARCH Grant

A Record of Paleohurricanes from Grain-Size Analysis of Sediment Cores: Clear Pone, the Bahamas

San Salvador island is home to numerous lakes that potentially record a depositional archive for the reconstruction of paleohurricanes that have impacted the Bahamian islands. Clear Pond lies on the southwestern coast of the island and is separated from the open ocean by a low (< 3-4 m high) and narrow (approximately 40 m to 105 m wide) ridge. This short distance allows for hurricane storm surge deposits to be washed into the pond. Analyses of the sediment records derived from push core samples can be used to determine the frequency of tropical storms. In March 2025, a 38-cm long push core was collected from the northern coastal area of Clear Pond. Based on the radiocarbon-based, age-depth model from a previous study (Dalman, 2009), the sediment record in the retrieved core contains approximately 700 years of deposition. Littoral and lacustrine sediment samples were also taken on an east-west transect near the northernmost overwash fan. Samples were first dried and weighed on a 0.001 g precision balance, followed by wet-sieving each sample over a 63 μm mesh to remove mud. Once dry, these samples are re-weighed to quantify the mass loss and to determine the sand-to-mud ratio. The percentage of sand for each layer was graphed with depth and with age. The periods of high frequency of sand accumulation correlate to increased overwash events during storm surges. Understanding the past pattern of hurricane occurrences by studying lake sediment in The Bahamas can provide crucial data for predicting the frequency of future events. This is especially important as an increase in global sea surface temperatures due to global warming has led to increased severity and number of hurricanes.

Andrew Custis

Faculty Mentor: Jejung Lee

Academic Unit/Department: Science & Engineering

Identification of Microplastics in Water and Soils along the Little Blue River

Andrew Custis, Jihye Cha, Charles Mwaipopo, and Jejung Lee

First identified in 2004, microplastics the study of microplastics has exploded in the last 20 years. With increased concern about the adverse effects on human health, there is a need for an understanding of how many microplastics are in our environment, where they are, and how they move. Previous studies have shown microplastics are common in surface water. Microplastics in the atmosphere have also been documented, especially near urban areas. While there is some understanding of the presence of microplastics in the ground and soil, the extent to which microplastics have managed to infiltrate underground still warrants study. The study analyzed samples from two groundwater wells and two locations along the Little Blue River. The water and soil samples were taken from each sampling location and the area. We identified the microplastics by using optical microscope imaging and SEM analysis. The results showed a significant amount of microplastics in groundwater and soils.

Johnny Diep & David Keltner

Faculty Mentor: Paul Rulis

Academic Department/Unit: Division of Energy, Matter, and Systems

Funding Acknowledgements: SEARCH Grant, Doc Brown Future of Physics Days Travel Grant, PCE Career Escalators

Linking the Atomic and Electronic Structure of Amorphous Silicon Rings

Amorphous solids are highly amenable to property tuning because their atomic structures depend statistically on the specific details of the fabrication process. Amorphous Silicon (a-Si) is an important example due to its use in solar cells, computer chips, and many other technologies. Directing the development of advanced functional properties in a-Si depends heavily on the ability of theoretical models to accurately describe the complicated structure / function relationship derived from the atomic and electronic configuration.

Therefore, this work uses first-principles density functional theory (DFT) calculations to systematically investigate the link between the atomic and electronic structure of ring features in a model of a-Si. The DFT-based orthogonalized linear combination of atomic orbitals method (OLCAO) method is used to compute bond strength and charge transfer statistics following the Mulliken scheme. The results are then mapped onto the statistical distribution of ring structures. The combined statistical data on n-membered rings and bonding properties are then related to the overall system properties to paint a clearer picture of the bulk structure/function relationship to support speculation on approaches that may be used to drive further tuning.

Sam Golladay

Faculty Mentor: Majid Bani Yaghoub

Academic Department/Unit: Mathematics and Statistics

Assessing the Accuracy of Large Language Models on Mathematics Competition Problems

The purpose of this paper is to analyze the performance of Large Language Models (LLMs) in analytically solving problems in calculus, analytic geometry, discrete mathematics, and probability theory. In order to do this, we prompted several leading LLMs with undergraduate mathematics competition questions. An LLM's responses were then compared to the known correct solutions in order to determine the accuracy of the LLM for each problem domain. The LLM's reasoning was also analyzed in order to draw connections problem types, models, and reasoning errors. The LLMs in comparison were OpenAI's GPT 4o-mini, Google's Gemini 2.0 Flash, and DeepSeek's DeepSeek V3.

Alan Karnes

Faculty Mentor: Lena Hooper-Burkhardt

Academic Unit/Department: Chemistry

The Electron Slide

This study employed voltammetric and chronoamperometric methodologies to investigate the influence of scan rates on peak current, as well as to evaluate the catalytic efficiency of a TEMPO-derivative catalyst, ACT, in a redox reaction with solketal. The experimental design focused on examining the relationship between scan rates, solketal concentration, and the resulting peak current. Analysis of the collected data revealed that, in the absence of the redox reaction, an increase in scan rate correlated with a proportional increase in peak current. The voltammograms obtained provided evidence of a chemical interaction between oxidized ACT and solketal, characterized by the absence of a cathodic peak, confirming the occurrence of the reaction. Furthermore, the data indicated that higher solketal concentrations led to an increased turnover rate of ACT, with the measured turnover frequency exceeding previously reported literature values, thereby demonstrating the enhanced catalytic efficiency of ACT in this system. Additionally, it was observed that peak current reached its maximum under conditions of elevated solketal concentration and reduced scan rates, a trend that contrasts with the initial relationship observed between scan rate and peak current. These findings underscore the complex interplay between reaction kinetics, catalyst performance, and electrochemical parameters in this system.

Sudhiksha Kumar

Faculty Mentor: Majid Bani Yaghoub

Academic Unit/Department: Science & Engineering, Mathematics & Statistics

Visualization of NIH NCBI and CDC NORS datasets of Escherichia Coli

Escherichia Coli (E. Coli) is a genomically diverse bacteria that is easily transmitted and is a prevalent cause of outbreaks in the US. While E. Coli exists in the natural gut biome of mammals, aiding with digestion and the immune system, variant strains can have diarrheal and at times, fatal effects. This overview visualizes the general trends of the rates, sources, and common strains of E. Coli outbreaks as reported in the National Institutes of Health, National Center for Biotechnology Information (NIH NCBI) and Center for Disease Control (CDC) databases.

Utilizing the existing data on E. Coli cases in the US found on the NIH and CDC databases, this study observes patterns and trends on cases. Using Python and Program R, we built a reliable model explaining the data found on the databases between the farm, community, and hospital. Additionally, examining trans seasonality and temporal changes in both datasets, we looked at correlations between temperature and the number of reported E. Coli cases in the US as well as correlations between the data found on each database.

By analyzing raw data of outbreaks compiled from a national scale, we were able to notice trends of outbreaks. We were able to observe that there was an overall increase in outbreaks since 2008, with the exclusion of 2020 due to health precautions taken for COVID-19. Majority of the outbreaks start with animal products, specifically undercooked meat or improper handling of meat in the kitchen.

E. Coli outbreaks continue to affect the US every year. Though there have been many protocols put into place in the last 30 years, the overall number of yearly outbreaks has only increased. E. Coli continues to be a major cause of foodborne illness resulting in severe, at times fatal, outcomes.

The dynamic nature of the bacteria also makes it difficult for scientists and public health officials to pinpoint treatments for each outbreak in a timely manner. The E. Coli data collected by the NIH focused on the genomic processing of the bacteria. Allowing scientists to determine which outbreaks were caused by which strains. This benefits the public in that, this allows for further laboratory testing to find effective treatments for each type of strain or serotype. However, rapid evolution of the bacteria poses a threat in that there are many outbreaks in recent years that are caused by newly-evolved serotypes. With the added layer of increasing temperatures, there is an accelerated evolution of bacterial strains, exacerbating the issue.

Adrienne Ly

Faculty Mentor: Lena Hooper-Burkhardt

Academic Unit/Department: Chemistry

Heat Capacity Ratio

The experiment aims to determine the heat capacity ratio ($\gamma = C_p/C_v$) of three gases—nitrogen (N_2), argon (Ar), and carbon dioxide (CO_2)—using two different methods: adiabatic expansion and the speed of sound. In the adiabatic expansion method, γ is determined by measuring the pressure drop during a rapid, reversible expansion of the gas into a vacuum and applying the Poisson equation:

$$\gamma = \frac{\ln\left(\frac{P_1}{P_2}\right)}{\ln\left(\frac{V_2}{V_1}\right)} \quad \text{Eqn. 1}$$

where P_1 and P_2 are the initial and final pressures, and V_1 and V_2 are the corresponding volumes. The speed of sound method utilizes measured sound velocities to calculate γ using the equation:

$$\gamma = \frac{Mv_s^2}{RT} \quad \text{Eqn. 2}$$

where M is the molar mass, v_s is the speed of sound, R is the gas constant, and T is temperature. The results for nitrogen and argon closely matched literature values, whereas CO_2 showed greater deviation due to vibrational mode contributions. The speed of sound method was found to be more accurate, yielding results with lower experimental uncertainty compared to adiabatic expansion, which is more susceptible to measurement errors and heat losses.

Rachel Marquart

Faculty Mentor: Tina Niemi & Robyn Daniels (MO Geological Survey)

Academic Unit/Department: Earth & Environmental Sciences

Funding: SEARCH Grant

Characterization of the Elm Branch Shale in Kansas City, Missouri

This research aims to characterize the Pennsylvanian-aged Elm Branch Shale (Kansas City Group, Bronson Subgroup) in the area surrounding Kansas City, Missouri, to give further insight into its depositional history and to determine if its thickness is consistent across the study area. The Elm Branch Shale is a unique bedrock unit stratigraphically positioned near the base of the Kansas City Group, which marks the depositional boundary between the thick limestone units of the Bronson Subgroup above and the thick clastic shales of the Pleasanton Group below. Therefore, the depositional setting of the Elm Branch Shale is important as it provides data on this stratigraphic transition, from an extended marine regression to a subsequent transgression. Borehole logs were used to understand the depth and thickness of the shale layer throughout the Kansas City area. From these data, an isochore map of the Elm Branch Shale layer was created. The logs showed the average elevation above sea level was 820 ft, while the most common was 815 ft. The average thickness of the shale layer was 3.65 ft, though 3 ft was the most commonly occurring thickness throughout the area. The shale was also never found to be more than 236 ft below the surface, with an average of 108 ft. The average thickness was generally very thin, indicating that the depositional period of the Elm Branch Shale was likely short-lived within the study area. However, since the layer is much thicker in a few specific locations, it can be inferred that those sites are closer to the sediment source or that subsidence increased local accommodation space during Elm Branch deposition. This study of the Elm Branch Shale has aided in contextualizing the local environment and structural setting during the time of deposition, thus providing clues to the regional geographic setting during the Pennsylvanian Subperiod.

Ben Nelson

Faculty Mentor: Lena Goober-Burkhardt

Academic Unit/Department: Chemistry

Bromination of Acetone Kinetics

In this experiment we conducted the bromination of acetone by observing the kinetics of this reaction with different concentrations of acetone, bromine, and hydrochloric acid. The purpose of this experiment is to determine the overall rate law for the bromination of acetone by experimentally finding the reaction orders of each reactant. This will be done by measuring initial reaction rates through absorbance changes of bromine using classical and modern analytical methods like UV/VIS spectrophotometry, dilutions, mass measurements, titrations, and analyzing the data using linear regression to compare the proposed reaction mechanism and identify which step is the rate-determining step. After conducting the experiment we determined that the concentration of bromine was negligible to the rate of the reaction, thus was not included in the overall rate law of the reaction. The rate determining step consisted of acetone and hydrochloric acid indicating that the overall rate law consisted of hydrochloric acid and acetone.

Cadao Nguyen

Faculty Mentor: Xiaobo Chen

Academic Unit/Department: Science and Engineering

Funding: SEARCH Grant

Investigation of Anti-Fogging Properties of Surfactants

Fogging occurs when water droplets aggregate on a surface, causing a disturbance in clarity and visibility. The water droplets adhere in thickened layers and prevent light from passing through the surface completely. This can cause visibility issues if severe fogging occurs on surfaces such as eye-glasses or safety goggles, as well as on car windows. Antifogging solutions have been in production to mitigate the issues caused by fogging; however, many industrial applications are not only costly to produce but also require complicated synthesis methods and toxic materials. Because of this, many industrial antifogging solutions are inaccessible for everyday applications. Using common reagents and everyday materials, antifogging solutions can be effectively made and used in everyday applications.

Surfactants are molecules that reduce the surface tension of the surface it is applied on. Surfactants are amphiphilic molecules that have both a hydrophilic head component and a hydrophobic tail component, usually made of hydrocarbon chains. The structure of surfactants allows it to interact with water and adhere to the surfaces its applied. The polar water interacts with the hydrophilic polar head group of the surfactant rather than aggregating on the surface. The surfactant then spreads the water molecules out evenly across the surface as the cohesion between molecules is disrupted by the presence of the surfactant.

The investigation sought to analyze the antifogging property of a variety of pure surfactants as well as a mixture of different surfactants. The surfactants were tested against plastic surfaces and compared to an untreated control. The antifogging capacities of the surfactants were analyzed using qualitative comparisons between treated and untreated surfaces, as well as water contact angle measurements. After treatment, the lower water contact angles indicate a highly hydrophilic surface, which exhibits reduced fogging due to the reduced surface tension.

The data found that a combination of multiple surfactant types including non-ionic, anionic and amphoteric surfactants had the best performance for antifogging capabilities. This was followed closely by solutions composed of non-ionic surfactants. Anionic surfactants had mixed results across the tested types. This suggests the non-charged surfactants have improved antifogging abilities over the surfactants with charged head groups. The concentrations of the surfactants were also critical in antifogging performance, as more concentrated solutions had better performance. Solutions of varying concentrations were tested, but the most effective and efficient concentration across all solutions was determined to be 1.0% w/v. Some surfactants had acceptable performance at lower concentration, but the trend supports higher concentrations, with the minimum at 1.0% for efficient performance.

Roslyn O’Leary

Faculty Mentor: Lena Hooper-Burkhardt

Academic Unit/Department: Chemistry

Heat of Combustion

The purpose of the Heat of Combustion lab was to determine the heat of combustion of naphthalene. This was done using bomb calorimetry, where a sample of an analyte is combusted and the temperature change in the bomb’s surrounding water bin is recorded on a computer. Before testing the naphthalene, the system was calibrated using a sample of a known energy change (ΔE), in this case, benzoic acid. This calibration data was used to determine the C_v of the system, and then two samples of naphthalene were combusted. Using a temperature-variable equation as a foundation, energy change (ΔE), heat of combustion (ΔH_{comb}), and heat of formation (ΔH_{form}) were calculated.

The results showed that the heat of combustion was -5432 kJ/ mol, which was within 6% of the accepted literature value. However, the heat of formation was calculated as 353.81 kJ/mol, which is 394% greater than the accepted literature value. This suggests that heat of formation is greatly dependent on the accuracy of the heat of combustion.

Jessica Olaby

Faculty Mentor: Lena Hooper-Burkhardt

Academic Unit/Department: Chemistry

Kinetics: Bromination of Acetone

This experiment was to see if the overall mechanism was consistent with the experimentally determined rate law using the method of initial rates to determine the overall rate law. The kinetics were characterized by performing UV-VIS Spectrophotometry to determine the overall rate law of a bromination of acetone reaction at different concentrations at a temperature of 25°C. The rate constant and reaction orders with respect to reactants were determined as well. For Bromine (Br_2), three different concentrations were determined by its absorbance measurements at 400 nm using a Cary-60 spectrophotometer. Acetone's three different concentrations were determined by exact weight. While HCl's three different concentrations were determined using traditional titration with NaOH (which will be titrated with KHP). The final step in this experiment was mixing seven different cuvettes of differing concentrations of the three compounds (1 ml of each reactant to fill a 3 ml cuvette) and performing UV-VIS spectroscopy using the Cary-60 spectrometry. In conclusion the experimentally determined rate law is consistent with the overall mechanism.

De' Vine Robinson

Faculty Mentor: Paul Rulis

Academic Unit/Department: Physics & Astronomy

Unveiling Hidden Optical Transitions in Si and Ge: A DFT Based OLCAO Approach

Silicon (Si) and germanium (Ge) are semiconductors that are used in a wide range of applications from solar photovoltaics to integrated circuits. Although they have been studied in detail over the past 50 years, additional useful insights to their electronic structures can still be obtained with the development of new methods. In this poster we present the application of a new method for decomposing the optical properties of a bulk material according to its orbital contributions. Si and Ge are used as target materials because they are well-understood and extensive experimental data is available.

The new partial optical properties method was recently developed within the density functional theory (DFT) based orthogonalized linear combination of atomic orbitals (OLCAO) method. To interpret the orbital decomposition of the optical properties of Si and Ge we performed a comprehensive study of the electronic structure of the two materials including the total and partial density of states, the symmetric band structure, and the total optical properties. Each of the above electronic structure results was analyzed in comparison to the partial optical properties to illustrate the role that each orbital played. Of particular interest was the involvement of occupied and unoccupied states in each of the decomposed spectra as well as the degree of adherence to the traditional angular momentum selection rules. We observed that orbitals that are ostensibly unoccupied for isolated atoms can play a significant role in the optical response of a solid. Similarly, transitions that are ostensibly forbidden in isolated atoms were also seen to play a role in the optical spectra of Si and Ge.

Kyndall Robinson

Faculty Mentor: Lena Hooper-Burkhardt

Academic Unit/Department: Chemistry

Heat Capacity Ratios for Gases

In this experiment, the heat capacity ratio (C_p/C_v) of argon (Ar), nitrogen (N_2) and carbon dioxide (CO_2) was determined using two methods: adiabatic expansion and sound velocity. The purpose of this experiment was to compare the experimental results to theoretical values and evaluate the accuracy of each method. The adiabatic expansion method involves the measuring in pressure changes during reversible expansion, while the sound of velocity method utilized the relation between the speed of sound and the heat capacity ratio in a Kundt's tube. Theoretical values were determined with the equipartition theorem which depends on the rotational, translational, and vibrational degrees of freedom of each gas. The heat capacity ratio is influenced by the molecular structure, particularly if the molecule is monoatomic, diatomic, or polyatomic. Experimental values confirm that the adiabatic expansion method was effective, however experienced greater variability due to experimental limitations. The sound velocity method proved to be more accurate in determining the heat capacity ratio.

Alexander Rose

Faculty Mentor: Xiaobo Chen

Academic Unit/Department: Science & Engineering

Funding: SEARCH Grant

Solar Powered Reactor: The Clean Energy Solution You Can Make at Home

The sun and the solar energy it emits are powerful energy resources that are cast unto our planet without using our resources. By constructing mechanisms that harness this energy, it can be utilised to carryout many different applications. For this reason, it is valuable to research the apparatuses that can be made, those that have applications into clean energy, and those which can be made cheaply. Within this research project, such an idea come to fruition, as it is entirely built out of materials that are accessible to the public, and is one that can function to clean the environment. The results of chemical testing will show that the system can succeed in energy efficient reactions to convert molecule like CO₂ into those which are better suited for the environment such as water (H₂O), oxygen (O₂), and more. These results will show how solar energy, an already clean energy source, can be directly utilised, without photovoltaic mediums, to catalyse reactions for clean energy.

Yaser Sadeqi

Faculty Mentor: Lena Hooper-Burkhardt

Academic Unit/Department: Chemistry

Heat of Combustion

This experiment will determine the molar energy change, $\widetilde{\Delta E}$, heat of combustion, $\Delta\widetilde{H}_{combustion}$ and molar heat of formation, $\Delta\widetilde{H}_f$ of naphthalene. These values are crucial to determining naphthalene's energy content in crucial areas such as applications in thermochemistry, food science, and commercial industries. The technique used was bomb calorimetry with benzoic acid as the calibration standard. The capacity of the system was calculated as 11.09 kJ/°C based on the combustion of the Benzoic acid. The average experimental value for $\widetilde{\Delta E}$ was -5490.29 kJ/mol, $\Delta\widetilde{H}_{combustion}$ was 5495.19 kJ/mol while $\Delta\widetilde{H}_f$ was 416.73 kJ/mol. The enthalpy of combustion had a 6.7% error compared to the theoretical value. This error was propagated to the calculated average enthalpy of formation of 416.74 kJ/mol, which deviates significantly from the theoretical value of 71.67 kJ/mol.

Jaidy Sudduth

Faculty Mentor: Lena Hooby-Burkhardt

Academic Unit/Department: Chemistry

Heat of Combustion

The purpose of this experiment was to determine the heat of combustion, and the enthalpy change of naphthalene using a bomb calorimeter, a constant volume environment. To use a bomb calorimeter to determine these values of a sample, the sample must be made into a solid pellet, fused to a wire, and connected to the leads of the bomb which is then sealed shut and pressurized with oxygen. The bomb is then placed inside an adiabatic environment, and the temperature of the environment is recorded as combustion of the sample inside the bomb occurs. The difference of the initial temperature at time $t(0)$ and the final temperature at time $t(f)$, as well as the calorimeter constant, are critical variables needed to solve for the heat of combustion and enthalpy of change. The calorimeter constant for the bomb calorimeter, also known as the heat capacity of the system, was established using benzoic acid as a standard.

Mya Thomas

Faculty Mentor: Alison Graettinger

Academic Unit/Department: Natural & Built Environment

Funding: SUROP 2023, Newcomb, AGU Michael H. Freilich Data Visualization Competition Grand Prize, SEARCH 2025

Field and Remote Identification of Small Diameter Lava Tubes from 1961 Lava Flow at Askja, Iceland

Vikrahraun, a 1961 eruption at Askja Volcano, Iceland, produced a series of alternating a'a and pahoehoe lava flows from multiple clustered vents over seven weeks. Lava tubes are common pahoehoe flow features that insulate heat and contribute to flow extent. To better understand lava tube distribution of Vikrahraun, a field campaign identified and measured eight small (2 m diameter) lava tubes and five pond features in pahoehoe flow regions. Digital three-dimensional models and satellite image-based mapping support field observations of the relationship between tubes, ponds, and bifurcations. Field measurements of crustal thickness and opening geometries were collected to validate data derived remotely. The lava tube features range from 2-2.5 meters in interior floor width and 0.6-1 meters in cavity height. Most tubes have organized lengths of 10-30 meters. The longest recorded lava tube has an organized length of 111 meters and an average interior height of 2.6 meters. Tubes are concentrated near vents and flow breakout lobes as well as at lava pond margins. 50% of the encountered tubes extended from pond margins and, in the field, some ponds were seen to have at least six tube extensions. 50% of tubes also had subsequent branches off the primary cavity. Small tubes at Vikrahraun show up to three bifurcations with organized lengths ranging between 2 and 8.5 meters. These characteristics and the tubes' diagnostic sinuous shape commonly with a central crustal surface crack were used to identify and measure more tubes and ponds in satellite and aerial imagery. These data may be used as inputs in numerical flow simulations to improve lava flow forecasting. Terrestrial analogs like the 1961 lava flow at Askja provide an opportunity to investigate tube bifurcation and correlations between tube formation and ponding. These can be test cases for evaluating numerical models and supporting remote lava tube studies on other rocky bodies, which is of particular interest since extraterrestrial lava tubes may be leveraged for habitation and in-situ resource utilization.

Coral Tracy

Faculty Mentor: Lena Hooper-Burkhardt

Academic Unit/Department: Chemistry

Determination of the Kinetic Order for the Bromination of Acetone

The proposed mechanism of the bromination of acetone has three elementary steps. The purpose of this experiment was to determine which of these steps is rate limiting, and thus determine the validity of the proposed mechanism. To this end, varying concentrations of bromine, acetone, and hydrochloric acid were reacted together and placed into a UV-VIS spectrometer to measure the absorbance of bromine. The concentrations of the components of the reaction were then placed into a regression algorithm that returned the rate coefficients. It was determined that the rate coefficient for the third step in the reaction is zero, and has no effect on the overall rate of the reaction. This confirms the proposed mechanism.

EUREKA! COURSES

BIOLOGY H206

Genetics

Mahrukh Aamir, Brock Dobbie, Nesyah King, & Himmat Sandhu

Faculty Mentor: Saul Honigberg

EUReka! Course: Biology H206 Genetics

Increasing Protein Content in Soybeans Using Gene Gun

Through careful planning of diets, many vegetarians are able to meet their protein requirements. However, there are some who have insufficient intakes. To make vegetarian diets more sustainable for everyone, we propose using gene therapy to genetically modify soybeans to increase their already high protein percentage. We propose to use a multi gene approach. The QQS (Qua-Quine Starch) gene is available in many beans and controls the amount of protein within the beans. A closely monitored overexpression of the gene can lead to higher amounts of protein within the food. Also, the DapA gene is present in the bean and controls the synthesis of Lysine, an essential amino acid. Overexpression of the DapA gene will result in higher Lysine levels resulting in an increased protein level. Using Standard iGEM Assembly, we will clone the QQS and Dap A genes as a vector and insert it in the soybean cells via Gene Gun to create recombinant DNA. The installation of the gene will lead to an overexpression of the QQS and DapA genes, dramatically increasing the amount of protein. The editing of soybeans will not just help vegetarian diets, but also improve diets of those suffering from food scarcity in many communities and countries. However, careful monitoring is needed to ensure that there is no dysfunction within the cell.

Gianna Cado, Anna Cranston, & Wylie Putnam

Faculty Mentor: Saul Hongberg

EUReka! Course: Biology H206 Genetics

Using Recombinant DNA Technology to Reduce Spread of Invasive Species *Lonicera maackii*

Our project utilizes synthetic biology to control the spread of *Lonicera maackii* (*L. maackii*), an invasive species of brush honeysuckle found across the Midwest. Control of species is difficult as it establishes itself in many different ecosystems.

Our project intends to change the DNA of *L. maackii* in two regards:

- (1) Combine DNA from a plant with a lower pollen output with the DNA *L. maackii*, thereby decreasing the number of offspring of future generations.
- (2) Use this same technology increase production of omega-3 fatty acids levels in *L. maackii* seeds, thereby making it more attractive to predators to assist in propagation of the new recombinant DNA.

Our project is intended to be used by local conservation organizations to reduce the population of *L. maackii*. Once the edited *L. maackii* is out in the environment, our hope is the invasive populations will decrease.

Phoebe Murphy, Sienna Ficken, Samuel D. Herman

Faculty Mentor: Saul Hongberg

EUReka! Course: Biology H206 Genetics

A Genetic Construct to Enhance Thermal Tolerance in Symbiodinium

Corals are being rapidly bleached as global temperatures rise. As they play vital roles in ocean ecosystems, it is imperative that humans intervene to rescue their declining health. Bleaching occurs when the coral symbiont Symbiodinium accumulates excessive oxygen free radicals, which invade the coral. To protect itself, the coral ejects the Symbiodinium. Coral death often follows ejecting Symbiodinium because 90% of their energy is derived from the dinoflagellate. To address this issue, we utilized a synthetic biological approach. Corals that can survive warmer temperatures often have elevated Hsp70 protein. We designed a simple construct to integrate more heat-resistant copies of heat shock protein into Symbiodinium to confer greater thermal tolerance. Our approach is relatively simple and cost effective as it utilizes common vectors.

Ivey Siles & Alexis Reed

Faculty Mentor: Saul Honigberg

EUREKA! Course: Biology H206 Genetics

Using PCR to Inhibit Invasive Species Reproduction

Around 42% of threatened or endangered species are at risk due to invasive species and the damage to natural ecosystems and the economy due to invasive species costs billions of dollars each year. Not only do invasive species pose a risk to ecosystems, they also pose a major risk to human health. The goal of this project is to create a pheromone producing plant to help curb the reproduction of invasive species using recombinant DNA technology.

To achieve this, the pheromone producing Bond gene would be inserted into a bacterial vector using restriction enzymes. Amplification of the new vector can be done using restriction digestion and selection. This culture of pheromone producing transgenic cells can then be inserted into the plant.

ENGLISH 225

**English II: Intermediate Academic Prose
(10:00am-11:15am)**

Abdullah Almutairi

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose (10:00am-11:15am)

The Role of Digital Literacy in Modern Education

The main goal of this project is to find out the role of the digital literacy in the modern education and to look through the ways how the technology affects the teaching and learning process. Now, classrooms are more digital and it is necessary for both students and teachers in order to possess the skills for using digital tools. While it may not be the most useful skill for one to have in order to succeed in life, it's definitely still vital. Yet as technology moves forward and becomes more integrated into education, new problems present new problems, specifically about who has and does not have equal access to these tools. This is the digital divide which is inequality where students have equal access to technology and still are not held at par with the students who don't have it and will affect their learning outcome. The problem of digital divide is a huge problem to solve as all the students need to have equal opportunities to succeed.

Based on this research, this principle is for all students, regardless of background, to be able to have access to technology and skills for life learning. In this paper, I examine the history of digital in education, digital divide and problems it entails, and how schools can practice teaching students' digital skills. The project seeks to identify these areas and devise ways of advancing digital literacy in all educational settings to ensure that no student is left behind.

The study is a combination of case studies, surveys along with other qualitative research to explore how technology is being used in the classroom and how the schools can overcome the digital divide barrier. The research suggests it is a question of whether or not technology is used as part of the classroom experience. Schools should train teachers, provide teachers with enough resources, and offer clear policies to ensure that all students have equitable technology access.

The paper also addresses the policy of education on supporting the digital literacy. Directing digital education is important because it determines what they will be working with and what they need to focus on, as well as who will be receiving the technology and to what extent. It proposes that strong policies are implemented to support teacher development, infrastructure improvement and the closure of the digital divide. This means that it should have a holistic approach including curriculum development, teacher professional development, and investment in technology infrastructure and numerous other things.



Logan Hodson

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (10:00am-11:15am)

How Artists A\$AP ROCKY and Kanye West Have Shaped Pop Culture

My project is over the effects that music artist A\$AP ROCKY and Kanye West have on pop culture and fashion. By answering the questions of how have the song lyrics and fashion / public statements have affected pop culture? And my other question is, why do artists like A\$AP ROCKY and Kanye West have the effects on pop culture that they do? I will be mainly comprehending and finding my understanding on this topic through the textual analysis I will be doing on the song lyrics in the songs by A\$AP ROCKY and Kanye West for example songs like Fashion Killa by Rocky. Also, through the archival research of their Instagram's and X accounts where they have each made numerous statements that have left lasting effects on people and how they perceive the artist. I will then use my analysis to break down how the lyrics, fashion, and social media post have directly affected pop culture as we see it today. The reasoning that I have been able to find for them having the effects is because they have been in the public eye for a long time and it seems especially for Rocky that all of his actions are very planned out and strategic to portray the image he is looking to put out and that's why he has built the fan base and following of people that he has which is a direct effect on pop culture where people are going to want to dress similar and be like their favorite artist. I will combine all the information I pull from the articles of my secondary sources all the way up to the song lyrics and archival research of their social media post, doing this will help me find the answers that all my research is being sought out to solve in the first place. I have been able to find a lot of research on my own through these different sources as I stated already, I plan to use my research to show the effects that these artist truly have because I honestly feel like it goes kind of unnoticed at the large effects that these artists have on our everyday lives and we don't even realize it. What I have been able to find so far goes as the following through the textual analysis methods I have analyzed a few songs by each of the two artists and some songs I found that will help show and find my answer are songs like Fashion Killa – A\$AP ROCKY, the best one I found from Kanye was – Stronger, both of these songs have a lot of lyrics about fashion and if you look into depth at the time period the songs came out and the following years those brands became huge staples in the fashion world showing even just from of there songs there lyrics have the ability to effect pop culture and fashion massively. This is just some of the information that I have found that shows how A\$AP ROCKY and Kanye West have shaped pop culture.

How A\$AP ROCKY and Kanye West have shaped pop culture through there writings in lyrics and fashion statements and overall self-image. My Project is over the effects that music artist A\$AP ROCKY and Kanye West have on pop culture and fashion. By answering the questions of how have the song lyrics and fashion / public statements have affected pop culture? And my other question is, why do artists like A\$AP ROCKY and Kanye West have the effects on pop culture that they do? The answer to these questions is going to show the whole meaning of my research and the great and big effects that these two artists have had on pop culture and fashion.

Maddox Hoover

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (10:00am-11:15am)

Rhetoric in Court Documents

In this research poster, I'm trying to answer the question: How does the rhetoric in complaint letters in the case against GlaxoSmithKline come together to deliver a guilty verdict? I am looking into the complaint document and the press releases that are used in the case, and looking at why the letters of complaints against GlaxoSmithKline help build a case that lead to a guilty verdict. I want to know how a bunch of letters that had been sent in and collected for 15 years were finally able to build a strong enough case to make a major company guilty. I will be looking mostly at court documents from the case and news reports after the verdict. This will be contemporary writing focusing on this case, which was in 2012. I will be using archival and textual analysis for this project. My primary source will be the documents and resources from the case in the U.S. Department of Justice archives that have court documents and many complaint exhibits. I am very interested in this topic because right now there are millions of people around the world that could be being lied to about prescription drugs, drugs that are advertised everywhere. You see them when you are watching TV, when an ad pops up telling you to try this new thing. You see it on social media, advertisements for hundreds of different kinds of drugs to help you with anything and everything. You even see them on billboards when driving. Before we had technology, you had to schedule an appointment with a physician and they would recommend the best course of action and treatment plan, but now you can look up on your phone your symptoms and may different thing will pop up telling you, you need to try this or have your prescriber give you that with know actual way of knowing if that is true or not. You should be able to know exactly what it is you are taking without having to worry if what you are being told about it is the truth. I think that I am qualified to research this topic because I work in a pharmacy and I deal with prescription drugs all the time. And I want to make sure that everyone who needs a prescription medication is actually getting what they need.

Kierra Hurd

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (10:00am-11:15am)

“Deathpiea and “The Land of God”: Necro-politics, Colonization and Eiichiro Oda’s *One Piece*

The purpose of this study is to illustrate the connection between colonization and necropolitics through the lens of the anime *One Piece* by Eiichiro Oda through character portrayals. The visuals of *One Piece* introduce its audience into various environments that tackle real life situations and themes similarly to ones aforementioned. While focusing on the season/arc *Skypiea* the intersectionality of both colonization and necropolitics become apparent. This study is examined and structured through textual analysis on the visual depictions, language, and the effects utilized to demonstrate the world building and context of *One Piece*. From this evidence supporting the correlation of necropolitics and colonization to *One Piece* become apparent along with a breakdown on characters that build the foundation of this claim. Instructors and academics might consider further investigation of the intersectionality present through *One Piece* as it can help bring understanding to themes of necropolitics and colonization through various media sources. *One Piece* is a well celebrated anime in the anime community; considered to be the best by many. Characters in *One Piece* work together to dismantle systems and governments that are corrupt and harm the lives of citizens and save their communities. *One Piece* follows the Strawhat crew currently consisting of seven members. In the season *Skypiea* the existence of the speculated sky islands is revealed as well as the 400 year history behind its formation. Throughout the world of *One Piece*, *Skypiea* and its many sky islands were seen as a myth as the idea of an island in the sky seemed preposterous. Upon arrival to *Skypiea* the Strawhat crew are introduced to a reality that mimics that of heaven, “The Land of God”, yet they quickly realize that the land was far from it. The holy land of *Skypiea* was actually land of the Shandorian People and was added to that of the Sky island due to a natural phenomenon. The Shandorians lost their land as the Sky people claimed it for themselves. This led to a 400 year long conflict that was only exacerbated by the dominion of Eneru who took control over *Skypiea* six years prior to the start of the *Skypiea* season debut. The relationships in *One Piece* highlight the circumstances that often surround colonization and necropolitics. The land in which a population inhabits no longer belongs to them and are then forced to live on the outskirts stripped of their customs and traditions. The reign of Eneru was brutal and consisted of controlling the citizens of *Skypiea* both the Shandorians and the Sky people alike. The world of *One Piece* serves as a vital form of media that serves as exposure on the connection of necropolitics and colonization have on a given society.

Kaleb Jaegers

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (10:00am-11:15am)

EVs and their Hidden Impacts

For my project I am focusing on the environmental impact of electric vehicles, and if they are really as clean and green as we are lead to believe. To solve the growing problem of emissions produced by cars, I will be reviewing a video made by Donut Media, who worked with Porsche directly. In the video they tour the synthetic gasoline production plant developed by Porsche. For any other information I will be looking at data on carbon emissions and comparing them with the sales of electric cars and see if they had any impact. The problem is a lot of these graphs count electric cars as having zero emissions, so the data shows emissions produced by cars as going down. The graphs often don't include the hidden emissions caused by electric cars. I have conducted a case study to concentrate specifically on finding the gaps in the current data on electric cars. So far I have found, electric cars have a lot of hidden emissions that aren't reported in data because its emissions are more indirect than gasoline. The emissions aren't produced by the vehicle itself, but from the infrastructure it takes to support them. A lot of the electricity used to charge the lithium batteries from coal. To mine the lithium they have to stripmine entire landscapes away, and drain the water sources of the third world countries that lithium is often mined in. Both coal and lithium are non-renewable resources. It doesn't make sense to stop drilling for oil, which only leaves a hole in the ground, just to trade it for two other non renewable resources that leave craters in the landscape. I have seen the result of stripmining in Colorado, and it completely destroys the land. My goal now is to find data on coal mining and coal power to see if we are mining or burning an increasing amount of coal to support the electric car sales increase. The questions I will address will include questions such as, how do electric cars really impact the environment and carbon footprint? How do electric car perform compared to traditional gasoline powered cars? If the United States of America went fully electric, the current infrastructure wouldn't support it but I need the data and graphs to back my projection up. To solve the issue of carbon footprint, Porsche developed a synthetic gasoline that can go into any gas powered car as it burns like regular gasoline. (Porsche, "eFuels: Synthetic fuel from renewable energy sources") It is made from a process of combining the carbon in the air with hydrogen in water to make a blend of hydrocarbons, which is the main active ingredient in gasoline. It burns and produces the same amount of carbon emissions as regular gasoline but the carbon gets sucked up and turned back into gasoline, thus its carbon neutral. If every gas station had this synthetic gas, not only would we reduce emissions produced by cars we would eradicate any more carbon emissions from being produced by gas powered cars. If we used this same process for jet fuel and diesel, every gas powered vehicle would be carbon neutral. Donut Media made a video, first hand documenting the first and only synthetic gasoline production plant developed by Porsche. (Donut Media, "I tried "e-fuel" ... The Future of Gas?") I will be using their video as a primary source as it goes over my exact topic. I will also find primary sourced data on current carbon emission data. The current path of electric car production will destroy the landscapes with stripmining and put unnecessary stress on the US infrastructure. If we really want to make a change in our carbon footprint, switching to a synthetic gasoline would solve all emissions produced from gas. Having production plants for synthetic gasoline in big cities would suck lots of carbon out of the atmosphere and create more jobs all while maintaining our current infrastructure.

Tehaguas Kibrom

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (10:00am-11:15am)

How AI Affects Writing Studies

Today, many students use AI tools like ChatGPT and Grammarly to support their writing by improving grammar, sentence structure, and idea development. My project explores how these tools affect writing education and how students and teachers feel about their use.

AI tools offer clear benefits. They save time, reduce stress, and build confidence—especially for English language learners. Students get instant feedback, allowing them to fix mistakes and improve before submitting assignments. However, overreliance on AI can be a concern. Some students may skip key writing steps like brainstorming or revising, which limits their development as independent writers.

Teachers are divided. Some worry AI makes it harder to evaluate students' true skills and fear that it encourages shortcuts. Others see AI as a helpful learning aid if used responsibly—as a tool to support, not replace, original thinking.

Overall, AI can enhance writing education when used wisely. Schools should create clear guidelines and offer training to help students use AI ethically. Writing is still about expressing your own ideas, and while AI can assist, it should never replace a student's voice. Balancing AI support with human creativity is essential for the future of writing.

Phuong Le

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (10:00am-11:15am)

Cross-Cultural Academic Writing: Difficulties and Adjustments in a Globalized Educational Environment

This research explores how international students adjust to academic writing at U.S. universities. Many of these students are strong writers in their home countries, but they face challenges when learning new writing rules—like using a clear thesis, direct structure, and strong arguments—which are often expected in American classrooms. This study includes student essays, surveys, and interviews with international students at UMKC. Findings show that many students struggle at first, but with support from writing centers, professors, and peers, they build confidence and learn to succeed. Some even create their own writing style that blends their home culture with U.S. academic rules. This project shows that writing challenges are not just about language, but also about culture. With better support and understanding, international students can become more confident writers and stronger learners in the classroom.

Sophia Liperuote

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (10:00am-11:15am)

Ethnography's on the Human Brain

This research project is about ethnography and what part of the brain controls decision-making after a traumatic brain injury. Who these concerns are about are for people who have had an alarming physical experience or have had a traumatic brain injury. This could entail a brain tumor, stroke, blow to the head, anything that can physically affect the brain. Ethnography is described as a scientific description of people, culture, and ethics. So, when a traumatic brain injury happens, it affects a person's ethnography because a person's point of view might change due to the trauma or severity of the injury. Where this traumatic brain injury takes place can affect the situation greatly. If a person gets injured in their temporal lobe, that is located on the sides of the head near the temples, or a traumatic brain injury to their frontal lobe, which is located in the front of the brain directly behind the forehead, then this will be a much bigger issue than if a person gets injured to the parietal or the occipital lobe. This is due to the fact that in the middle of the temporal lobe and the frontal lobe in the front center of the brain is where the hippocampus is located. The hippocampus is the center of memory control, and the frontal lobe is the center of decision-making, so if either one of these gets injured it won't be a good thing, and this can mess up the ethnography of the brain. This can affect ethnography, and ethical decision-making because there are decisions in our everyday lives that are made without even thinking. When our brain is not right, then our decisions become corrupt. So, what if people make bad choices or unethical decisions? It matters a lot because we use the definition of ethics and ethnography in our everyday lives, actions, and choices. Such as simple as doing the right thing. Doing the right thing is basically ethics, ethics is defined as moral principles that govern a person's behavior or control an activity. How this all comes together is by this, if a person gets an injury in the head, it can lead to a traumatic brain injury, then this can affect how they perceive the world after. Such as ethical decision making that comes from the hippocampus and the frontal lobe, and how they perceive ethnography. Ethnography has lots to do with cultures, this is very important because respecting different cultures is one of the most important things. Having a traumatic brain injury can mess up some things, if it is a bad enough injury. Being aware of our surroundings is such a big thing in life, being aware of others and how they dress and what they like to listen to, things like this are stuff we need to pay attention to. This is why learning more about our brains and how or maybe why discissions were made, can impact us and change how things are looked at in different situations.

Creighton McKenna

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (10:00am-11:15am)

Head Trauma In Combat Sports

The project examines the circulation, severity and long-term results of head trauma in combat sports such as boxing, mixed martial arts (MMA), and kickboxing. While these games are widely observed for their intensity and spectacle, they are also under constant investigation for those risks for neurological health of athletes. Through a combination of athlete interview, research and primary analysis of scholars of medical data, this project explains how repeated head impact cognitive functions, emotional stability and the quality of overall life affect the quality. This research enters the conversation of scholars running about brain injuries in contact games, especially chronic traumatic encephalopathy (CTE) and post-concussion syndrome. While the NFL has received extensive academic and media attention to head injuries between football players like Aaron Hernandez, but often, despite incorporating more direct and frequent head trauma, Combat sports have not been widely studied. My project addresses this difference by analyzing direct and severe fighter games. My intervention Dr. Bennett aligns with a model of cars by manufacturing scholars such as Omalu and neuroscientist McKinnon who brought awareness to brain injuries to athletes. I increase their findings into the environment of low-regulated fighter sports, checking how poor medical inspection, cultural generalization of violence and financial vulnerability of fighters increase the risk of long-term damage to issues. This approach challenges the current story that the game is "part of the game." Primary research includes post-fight medical reports and interview content analysis with former professional fighters, some of which reported symptoms like Memory Loss, DEP.

Fatima Reyes

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (10:00am-11:15am)

Mental Health in Screenwriting: The Emotional Cost of a Creative Industry

The research evaluates the occupational requirements of screenwriting together with their effects on writer mental health. The film and television industry places specific workplace challenges before screenwriters because they must face demanding production requirements coupled with active producer oversight as well as financial constraints. These demanding factors cause substantial stress that results in screenwriters experiencing burnout symptoms together with anxiety issues. The business model of filmmaking and television creation relies on financial funding alongside producer visions, which establishes unique workplace challenges specifically for screenwriters unlike other creative writers. The particular mental stressors affecting screenwriters remain poorly investigated despite extensive studies about emotional work in creative industries. This research aims to fill this gap by examining the pressures unique to the profession and their psychological consequences, offering a more focused investigation into how these pressures shape the mental health of screenwriters. Recognizing the combination of emotional work demands and complex screenwriting tasks allows researchers to develop remedies that help mental health progression in screenwriting divisions while establishing industrywide mental health modifications. Changes in industry policies need to prioritize the mental health of creative workers along with developing a better workplace quality that will ultimately enhance writer productivity.

Primary findings stem from scholarly publications together with original statements from professional screenwriters who depict industry-driven mental health problems. The analysis employs the B.E.A.M. (Background, Exhibit, Argument, Method) research method to study both primary and secondary information. The research draws upon two important source materials: professional interviews and emotional accounts. Seth Rogen and Evan Goldberg conducted a video discussion that delivered essential information about industry standards and creative requirements for writers. Real-world screenwriters describe their emotional experiences within both creative production and professional relationships in a parallel manner to the experts. Screenwriting requires both creativity and critical thinking capabilities but subjects writers to severe emotional challenges because writers face ongoing professional stress, according to a detailed evaluation of these sources.

Screenwriters experience their main mental health troubles because of rigorous professional conditions such as pressing deadlines together with ongoing alterations by editors while dealing with irregular work commitments. Screenwriters admit stress exists as an ongoing problem given the urgent need to deliver projects and respect editorial requests. Unstable employment conditions cause writers in the industry to experience more stress because they have to work with short-term contracts and face unstable job stability. The study demonstrates that creative workers experience industry-standard pressure in addition to emotional artistic workload, causing persistent stress that requires institutional backing for proper management. The combined forces of these factors make the creative workforce experience a mentally exhausting space, which develops burnout symptoms and anxiety and various mental health problems. These challenges are not only personal but structural, requiring urgent reform. Screenwriters in the industry face widespread mental health challenges, yet they lack official workplace mental health support, which makes the situation more difficult because resources to manage professional emotional strain are scarce.

Gavin Salzsieder

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose –10:00am-11:15am)

Translating Physical Activity Benefits to The General Public

This research paper attempts to examine the rhetorical devices and literary norms used by both medical professionals and fitness professionals in translating the benefits of their respective professions both mentally and physically. It is a well-known fact that physical activity is good for the mind and body, but how does the average person come to know this and how can they try to set aside times in the day to reach physical activity recommendations. This is what I am hoping to answer through the research done for this paper. It is well known that every day it becomes easier for the world's population to live a sedentary lifestyle. This rise in a lack of movement has been observed by physicians across the world and they are trying to do something to stop it. Often, however, doctors run into a number of obstacles in prescribing physical activity to their patients, and in turn, patients struggle with translating the order, “Be more active,” into a workout program that fits them and their schedule. A seemingly obvious bridge in this gap is health clubs and personal trainers, but again obstacles arise in the way of prescription of these resources as well as the patients making these things work. The primary issue doctors see in prescribing personal trainers or health clubs to their patients is cost. Health clubs and personal trainers can be extremely expensive, and it is worth noting that these services are often provided on a subscription basis. This means another recurring bill a patient is going to have to plan around, if they can even afford it in the first place. While the same can be said for health clubs (think of Orange Theory for example), but they do have the added benefit of further flexibility when it comes to scheduling. This is where the utility of the internet can be employed to its fullest extent. While you need to be careful on the internet as anyone can claim to be an expert in anything, there are vast communities of people that can be found at nearly any stage of their workout journey, beginner, intermediate, advanced, etc, that are excited to help others get started. Social media platforms like Twitter, Instagram, and Reddit can be incredible places to find and connect with these communities. With that said there are also companies that provide this service at a much lower price than that of a health club or personal trainer, and without the added suspicion that the person you are getting advice from may be just as uninformed and unsure as you are. The organization that I chose to analyze in this research project is Noom. Noom is an online, consumer-led company that uses psychology, technology, and human coaching to empower people to change their habits and take control of their mental and physical health. Certified coaches are available through their app at nearly any time of the day to answer questions about diet or exercise or even simply to give you much needed and deserved encouragement. I hope to analyze the specific rhetorical norms Noom implements into their coaching and see how they could help bridge the gap between the doctor's office and healthy habits.

Maria Sandoval Ojeda

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (10:00am-11:15am)

Depiction of Mental Illness in Video Games

My project focuses on the question: *How has the depiction of mental health issues/mental illness changed in recent years and what are the effects these portrayals have on audience perceptions/opinions on mental health?* By analyzing secondary scholarly research articles, I will discuss how video games over the past 25 years have primarily delivered negative, stigmatizing portrayals of mental health issues. I will discuss why these portrayals are an issue and how they influence the perceptions/opinions of the youth and the gaming community as a whole. Furthermore, I will use textual analysis to communicate how the depiction of mental illness in video games has changed for the better or worse in recent years. This will be done by covering how mental illness is portrayed in a couple of different games, Omori and Mouthwashing, and how different people have reacted to and been influenced by these portrayals.

Charlie Sauer

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – Section 0013 (10:00am-11:15am)

How Does Writing in Social Media Affect the Sport of Golf?

This research project explores the question: *How does writing in social media affect the sport of golf?* As social media becomes more integrated into sports culture, the way people write about and discuss golf online is changing the game in noticeable ways. This project looks at how platforms like Twitter, Instagram, and YouTube impact the sport—from shaping public opinion to influencing professional reputations, to transforming how players, instructors, and fans interact. The majority of sources used come from *Golf Digest*, a widely respected publication in the golf world that offers both insider perspectives and cultural commentary.

One major theme that emerges from the research is how quickly social media writing can spread and stir up controversy. Posts from players, fans, or media figures can go viral within minutes, sparking debates and sometimes leading to real-world consequences. For example, one article outlines some of the most controversial moments on Golf Twitter, showing how a few words or a short tweet can create waves throughout the sport. Another source discusses the importance of written agreements and the problems that arise when professional golfers rely on informal communication—an issue that social media can sometimes complicate.

Another important finding is that social media gives golfers, especially younger ones, a platform to build personal brands and reach audiences directly. Paige Spiranaac's rise as a major golf influencer is a great example. Her success shows how writing on social media isn't just about commentary—it can also be a career strategy. This shift represents a new kind of visibility in golf where players no longer rely solely on performance or traditional media coverage to shape their image.

My project enters the conversation by focusing specifically on the *writing* aspect of social media in golf—something that's often overlooked. While visuals and videos are popular, the captions, tweets, and written posts behind them play a big role in how stories are told and how people react. I'm interested in how that writing influences perception, professionalism, and even the culture of the sport itself. By analyzing the tone, content, and impact of social media writing, I aim to show that words still matter—even in a world driven by images and videos. That's the space my research hopes to fill.



Dominique Smith

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (10:00am-11:15am)

Living Stories: Oral Tradition and Symbolic Writing in Contemporary Native American Literature

This project investigates the intersection of Native American oral traditions and symbolic writing systems through the lens of ethnographic research, focusing on how these traditions are preserved, transformed, and expressed in contemporary Indigenous literature. By analyzing storytelling practices within Native communities and examining how Native authors integrate traditional forms into written narratives, this study reveals the enduring significance of oral storytelling and symbolic representation as tools of cultural continuity and resistance.

The scholarly conversation surrounding Indigenous literature and ethnography has emphasized the importance of culturally grounded methodologies. Scholars like Julie Kinkead and others from the class syllabus advocate for a decolonial approach to research, one that respects Native epistemologies and centers Indigenous voices. This study positions itself within this conversation by employing ethnography not as a means of extracting knowledge, but as a collaborative, interpretive method. My CARS move contributes to this conversation by exploring how Native authors repurpose ethnographic narratives to assert cultural agency and reclaim storytelling on their own terms.

Using case studies of contemporary Native American authors particularly those who weave oral elements and tribal symbolism into their texts this research examines how written works serve as modern vessels for ancient traditions. Authors such as Leslie Marmon Silko, Joy Harjo, and Louise Erdrich often blur the boundaries between oral and written expression, embedding traditional myths, ceremonial structures, and community-based narratives into the form and content of their work. These literary strategies not only preserve cultural knowledge but also adapt it to confront modern challenges such as cultural erasure, assimilation, and misrepresentation.

Primary research includes close readings of selected works, comparative analysis of oral traditions, and ethnographic data drawn from interviews, archival material, and Indigenous scholarship. These findings reveal that oral traditions are not static relics of the past but living, adaptive frameworks that inform contemporary Indigenous identity and storytelling practices. Native authors use symbolic writing such as petroglyphic motifs, tribal iconography, and mythological references not just for aesthetic purposes but to signal continuity with their cultural heritage and to invite readers into a layered, multivocal narrative space.

This project argues that contemporary Native American literature is not merely influenced by oral traditions, it is structured by them. This reframing has implications for how we read Indigenous texts, approach ethnographic research, and understand the broader relationship between narrative, culture, and identity. The project contributes to both literary and anthropological discourses by demonstrating how storytelling functions as both a cultural practice and a form of intellectual sovereignty.

Yusuf Suleiman

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (10:00am-11:15am)

How Music Impacts Black Social Justice

The purpose of this research project is to explore the effect of music on Black social justice. Throughout American history, music has not only been used as a form of entertainment through the media, but also as a pathway to voice the struggles and emotions of those under oppression in the country, most notably African Americans. During prominent times of social change and activism, music acted as a tool that could be used to voice the experiences that those in the Black community were going through, without having to worry about censorship from outside sources to suppress perspectives challenging those in power. This study will look at the impact of music these spaces by textually analyzing academic journals examining the change in students when learning about Black culture through Hip-Hop or Critical Race Media Literacy, novels written by renowned academic and historical scholars going over music's constant role in social justice advocacy and its ability to inspire mobilization and consciousness within communities, and certain songs written by prominent Black artists released in order to highlight the racial injustices that are still being committed currently.

This research project presents its findings through many different facets of literature and media. Firstly, Hip-Hop has been known historically as an avenue for the voices of those being oppressed in the Black community, being used as a political tool to express frustrations and urge change. Music has been shown to be an effective tool for teaching students about Black culture/history, and the struggles that have come along with it, in particular Hip-Hop music. This is touched on in Vivienne P. McDaniel's and Darren Hamilton's articles respectively. This study found that by using Hip-Hop to teach students about the socio-political commentary and public resistance that took place in the Black community for many years, students became more engaged, progressive, and active agents of change, furthering their abilities to advocate for change. Secondly, music has been a constant tool used in the Black community to inspire active critical thinking and participation in protest and activism through mobilization. It has an ability to raise class consciousness, promote radicalization and communicate for active participation through authentic messaging has played a key role in the fight for social justice throughout American history. Novels written by Robin D. G. Kelley and Ron Eyeran underline these facts effectively. Thirdly, music is still being used today to highlight the social injustices still being committed against the Black community. In a time where many people falsely believe that racism and discrimination is a "thing of the past" due to social detachment or ignorance, certain artists use their platform to remind those who believe said notion that racism is still very much present in today's country, albeit not as direct and upfront as it used to be. Many People of Color are still falsely profiled or believed to be "aggressive" solely due to their outwards appearance, despite having no history of supporting such claims. The song "Neighbors" written by American singer-songwriter J. Cole communicates this very experience thoroughly, showing how even in today's day and age there are still those whose assumption of you will stay surface deep.

The goal of this research project is to explore the effects of music on Black social justice. While often when exploring topics related to music there are mainly just a multitude of songs examined, this research analyzed sources from many different types of professional media to be as efficient as possible when gathering results. By doing so, I hope to be able to give reliable research with the ability to present new perspectives that can be used to push forward critical thinking when it comes to racial discussions in our society.

Kedryn G Whittington

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (10:00am-11:15am)

AI Ethics in Digital Art

My project investigates the ethics, or lack thereof, surrounding the AI "artwork" makers in the digital space. I have been conducting my research through textual analysis of people in this sphere of influence, as well as conducting interviews with those personally effected. Looking thought both how artist make their art, and how AIs are trained on the art, I hope to showcase the significance of how dangerous it is to let this new technology exist unabated. If left for to long, we could very well wind up in a sea of garbage.

In my textual analysis, it has become very apparent that corporations who house these AI, care very little for the damage that it may cause. AI's will steal artwork with no compunctions, and churn out massive amounts of copies and fakes. While courts have ruled that art made by AI cannot be copyrighted, it is still a firehouse of content and information that becomes increasingly hard to determine what was made by humans' hands, and what isn't. We've found AI capable of recreating copyrighted material, this sets a dangerous president.

In my personnel interviews, I have found much more grounded problems, artists report that their art has personally been stolen, used by machines to copy their style, with no consent asked for. Corporations fine it immensely easy to not have to ask small time artist, instead opting for a "seek forgiveness, not permission" stance. As more gets stolen, less artist finds the heart to actually post art online. If this continues, could we see humans pushed out by AI? We have also seen cases of AI being used to change pictures to match a person's style, should an AI be allowed to do this? And given enough time, could it be used to trick people? We've already seen cases of AI being used to generate fake news articles that look like the real thing, AI deep fakes, while currently able to be detected by untrained, could get to the point where it becomes indistinguishable from the real thing.

My research paper will be arguing for the fact that AI must be kept in check. If allowed to simply steal wantonly under the guise of "the machine doesn't know better" we are likely going to be staring down cultural and social damage with a long-lasting impact. I am hoping that with my research I can shine a light on this issue and arm people with the knowledge of why ethical consideration for these things is important.



ENGLISH 225

**English II: Intermediate Academic Prose
(11:30am-12:45pm)**

Jordyn Beaupre

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

How Films Affect Public Perception

This research project will go over how movies have changed public perception of many controversial topics. To achieve a more accurate study, the research is being conducted as interviews with around 20 people of different age groups and backgrounds. The main groups represented in this study are college-age, middle-aged, and senior citizens. This is done to create a bigger representation of how movies have changed over the decades. Doing this also provides a better sense of the changes over several decades.

To narrow down this study, I have chosen to use the niche of horror movies to better represent the changes in the amount of violence and sexual acts throughout the decades. For the scholarly conversations it has been decided that the study will be supported through several resources to further the point of changes in the public due to the film. I would also like to make it very apparent that this project will not only go over how movies change public perception, but also about how films are a victim of their time and tend to reflect the preferences and ideals of the times they were created.

To further support this theory, it has been decided that the study will be supported by another primary resource of reactions all over the US to *The Birth of a Nation*. This will be used to give the study another niche to further the point of changing public opinions and perceptions. This resource will likely be used to show how a movie can cause public outrage, leading to several changes in how people treated black Americans at the time.

To complete the CARS move, this study will present the findings in a clear and concise way. To do this, I will attempt to eliminate all personal opinions and bias from the writing to attempt to represent the interviewees in an accurate and realistic way. This will be done to eliminate any misrepresentation or misinterpretation of opinions or quotes.

Within the current research, it has been discovered that while movies today are much more gory and violent, movies from the 1990s and early 2000s tended to have a more sexual and angry nature to them. One person who was interviewed even stated, “They were both pretty violent and gory... I think they literally ran out of every original idea, so most new ones are just old ones redone, or so focused on the gore that there is essentially no story.” This specific quote is taken from Lynda Batricevich, who is 44 at the time of writing. Lynda is part of the demographic that lived on the West Coast of America during her youth. This piece of information will be important once the study progresses into the differences in living areas that affect opinions and ideals.

Molly Benton

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

Strategies in Social Media Advertising and Marketing

Marketing psychology has a huge impact on how people spend their money, especially in today's digital world where we're constantly being exposed to ads. This project focuses on how marketers use emotional and psychological strategies, like urgency, social proof, and emotional appeals (as outlined by Cialdini), to influence consumer behavior. I'm especially interested in how these techniques work on younger audiences who are constantly seeing ads on social media platforms such as Instagram and TikTok. The main goal of my research is to figure out which psychological tactics are most effective in getting people to spend and to understand how people respond to them, whether they realize it or not.

While a lot of past research has looked into general consumer behavior or persuasion tactics (like Solomon's work on buying behavior and perception), not many studies have taken a close look at how these marketing strategies are actually being used in social media ads and how real people react to them. There's a disconnect between what the research says and how it plays out in everyday digital environments. That's where my project comes in. I'm trying to bridge that gap by using examples of real ads and collecting direct responses from people in my own age group.

For my method, I'm using a mix of content analysis and survey research. First, I analyzed different ads from TikTok and Instagram to see which psychological techniques they use most; examples are limited-time offers, influencer endorsements, or emotionally charged visuals. Then, I plan to create a survey and share it with other college students to get a sense of how these ads made them feel and whether the strategies affected their desire to buy something. This way, I'm not just looking at theory, I'm also seeing how it plays out in real-time, with real people.

So far, my findings show that emotional ads, especially ones using humor, nostalgia, or urgency, are super effective in driving engagement and impulse buying—something supported by Pancer and Poole's research on emotional cues in social media marketing. Ads that feature influencers or have a warm, friendly design also seem to build trust and make people more likely to buy. Interestingly, even though a lot of students said they were aware of marketing tactics, many still admitted to being influenced by them. This suggests that just being aware isn't always enough to resist the pull of well-designed ads.

Overall, my research highlights how powerful marketing psychology really is, especially when it's used in digital environments where people are scrolling and not really thinking about how they're being influenced. This has important implications for both marketers and everyday consumers. For marketers, it confirms that using these tactics works. For consumers, it shows why it's important to be more aware of what's going on behind the ads we see everyday.



Scott Brown

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

Peer Reviews And its Effect On Literacy

For my project I have been looking into the benefits that peer review has on a student's literacy. In my own experience I have not been exposed to peer review during my time in high school so when I arrived in college peer review has been a new addition to my literacy journey. During my time at UMKC I have noticed huge personal benefits to my literacy ability. In my research I have found several sources that supported my claim where I used textual analysis to get a better understanding of what the scholarly sources had to say about peer review.

During my process of analyzing the sources that I have gathered I have found common themes throughout all of my sources that indicate the peer review does have a benefit to students in higher education. In general there is one issue in peer review that inhibits a student's success on an assignment and this is the amount of effort that goes into peer review. This brings up the question as to how peer review is introduced to a student so that they are able to benefit other students. "Results suggest that the more critical students were when reviewing their peers' writing, the better grades they received" (Yalsh). With this information I found I tried finding a source that goes over what should be put into a peer review to make it good. I found in my readings that peer review should be able to cover these 3 topics; integrity, ethics, fairness, usefulness, and timeliness. (Heidi). This shows that during peer review a person needs to be accountable for the effort and quality that goes into their peer review so that the other person can gain the benefits from what the reviewer has to say.

I believe that for students to benefit from peer reviews, they will need to learn more about what goes into the peer review process. I believe that teachers should encourage teaching the peer review process to their students so that they can set goals in their peer reviews to help out the students in their class and benefit off of the review that they receive from others. Yalsh found that when students did peer reviews in their class and had to go over that same topic of information there was a measurable difference between the first and second paper that was submitted to the teacher.

When students recognize that their feedback can directly impact someone else's success or their own work, they tend to engage more seriously in the process. Over time, this shared responsibility contributes to a more supportive and effective learning environment. After a student realizes this benefit I feel that it will be a snowball effect that will lead to a student using peer reviews throughout their college career and further on in life in their place of work. Ultimately, when peer review is taken seriously by all participants, it cultivates a culture of mutual respect and academic support that benefits everyone involved when a student's pride is set aside and is open to feedback on their own work.

Brandon Castillo

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

How Do Cultural Differences Affect the Way People Play and View Soccer Around the World?

Soccer, or football as many people call it, is the most popular sport in the world. It brings people together no matter where they're from, but it's not the same everywhere. Even though the rules of soccer are the same, the way people play, watch, and celebrate the game is very different depending on their culture. My project looks at these differences to understand how soccer connects to people's traditions, values, and lifestyles. This research is important because it shows how a sport can teach us about different cultures and bring people closer together.

To study this, I am using a method called ethnography, which is when you observe and analyze how people behave in their everyday lives. I've been looking at soccer games from different countries, like Brazil, Germany, and the United States, to see how teams play and how fans act. For example, Brazilian teams are known for being flashy and creative, showing their love for freedom and fun. German teams, on the other hand, are more focused on teamwork and being very organized, which shows their value for discipline and hard work. In the U.S., soccer is still growing, so the style of play and fan culture is a mix of ideas from other countries. I'm also looking at how fans celebrate soccer around the world. In Argentina, fans are loud and energetic, with singing, drums, and colorful flags. Their traditions show how much they care about their teams and the sense of community soccer gives them. In England, fans are known for their loyalty and their creative chants, which often go back generations. This shows how important history and pride are in their culture.

The sources I'm using for my research are helping me understand these cultural differences. One article, "The Hidden Influence of Local Cultures on Football Club Tactics and Styles," explains how local traditions influence the way teams play. For example, Brazilian players' love for creativity reflects their culture, while German teams' focus on defense shows their value for structure. Another source, "Soccer Fan Culture Around the World: Traditions and Rivalries," talks about how fans in different countries support their teams and create special traditions. These sources are helping me connect how people's values and lifestyles shape the way they experience soccer.

One thing I've learned is that soccer is like a global language. It brings people together, even when they're from different cultures. International tournaments, like the World Cup, are a great example. Teams from all over the world bring their unique styles of play and fan traditions, creating a celebration of both the game and the cultures behind it. The way people play and celebrate soccer tells us a lot about who they are and what they care about.

This project is important because it shows how soccer is more than just a sport. It's a way for people to share who they are and where they come from. The different ways people play, cheer, and celebrate soccer reflect what they value and how they live. By studying these differences, we can see how soccer brings people together, even when they are from different parts of the world. This research helps us understand that while soccer has the same rules everywhere, it's played and loved in unique ways that tell us a lot about the people and cultures behind the game.

Akaria Clark

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

The Power of Color

This research project explores the connection between color theory, color psychology, and fashion to understand how the colors individuals wear influence emotional responses and shape first impressions. It will investigate how color associations formed through past experiences and visual communication affect perceptions of an individual's personality, trustworthiness, and approachability in educational environments. This study seeks to answer how clothing color choices impact students' perceptions of teachers and peers in school settings. As well as, to discover whether certain color patterns in teacher outfits appear as insightful to the teacher's character. Could teachers be perceived as more approachable, experienced, or dependable by the students based on their outfit colors?

The research methodology uses a combination of case studies and textual analysis. The textual analysis focuses on the television series *Abbott Elementary* which showcases the life inside of an underfunded majority black student and faculty school. Throughout the series, the teachers wear various outfits and experience challenges within the school. This research will analyze how the teacher's outfit color choices shape the viewer's perception of character personalities. For example, Gregory wears earthy or muted palettes; which could influence students' perception of Gregory as serious and stable. Furthermore, Janine usually wears bright or soft colors which could further influence her character of being the soft and optimistic teacher. The case study involves conducting interviews in which participants are presented with images of individuals dressed in various color schemes. Participants will be asked to describe their first thoughts involving the color and their assumptions of the individual's personality traits. Additional interview questions explore how participants personally associate colors with emotions, objects, memories, and symbolic meanings.

The research will apply the CARS method (Create a Research Space) to study and discuss my topic. There are various articles and studies focused on how color psychology affects emotions and thoughts. However, this research differs from other scholars by exploring how this is in a practical environment such as education. This research will present how color psychology impacts interactions or relationships between faculty and students. This could be useful for teachers, faculty, and other professional settings if they want to analyze how to appear more approachable or stern.

Various studies support my argument like Colin G. Pennington's study on the impact of teacher appearance and age on student assumptions. Pennington explores how visual aspects like clothing and general style, can influence students' perceptions of trust, reliability, and competence. The findings suggest that younger teachers are favored because they seem more relatable and trustworthy. It also showcases that students form judgments and attitudes about teachers based on the behavior or teaching ability the teacher displays. Moreover, visual cues like how professionally or casually a teacher acts or dresses. This supports the idea that attire and color choices can impact social dynamics and first impressions within educational spaces. Other sources like "Handbook of Color Psychology" show that most humans associate red with danger, love, and passion. While other colors like blue are associated with calmness, sadness, or the work field. Furthermore, humans use certain colors to convert meanings or messages, like the pride flag or traffic light. These aspects highlight the power of color and appearances when in relation to interactions and relationships in the education setting.

Miracle Crawford

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

Gender Differences in Literacy

My poster project's main focus is the rhetorical or stylistic differences between boys and girls in creative writing. I will implement a textual analysis of a girl's writing and a boy's writing from the online website Represent: The Voice of Youth in Care. Themes I would look for would be gender roles with literacy pertaining to boys and girls. I am focusing on essays of youth written by both genders to determine a difference or similarity in literacy writing such as the way females and males use language and creativity.

The rhetorical difference of boys and girls in creative writing, like the difference in the way boys and girls use creativity, language and communication. The way that this would be done is through a textual analysis that will be used. The purpose of this study is to understand that I will focus on those who are in high school going into university. Trying to find if there is a pattern or even a difference or even not one at all. This study followed two years in a London borough primary school with a class teacher and twelve children in the classroom, two boys and two girls who were selected from the three literacy-tired groups. The method that will be represented is a textual analysis to see the difference of stylistic or rhetorical difference of both genders in creative writing. This has been seen through a primary source of boys in girls in creative writing skills. Corso stated that the indications that is being said that females grown faster in mutation and that boys would rather be comfortable while working on creative writing it was also found that boys and girls should attend education around the same time. This school had been picked due to voluntary work that was done with both high and low achievers. This was to see the change in curriculum with reading and writing. The results that Jason Shawn indicated was that girls mature earlier than boys through sex linked mutations and the other results that Hedges & Nowell found was that female human brains were more stable from the ages of six to twenty nine The other results that Cameroon found were that he discovered that males and females language roles were organized in a remarkably different way. The last result that Allen and Groski found was a 1996 study indicated that twenty one percent of grammar schoolboys received a grade of excellent compared to fifty one percent of the girls. These results just indicate girls outperforming boys in some cases and others indicate similarities between both boys and girls. The implications would be to focus on literature, specifically on creative writing. With better ways for students to be taught in the classroom with creative writing skills. Another implication would be to implement feedback on essays or papers that are being written to know what each boy and girl can work on in the creative writing process. The last and final implication would be teaching a full course on the way creative writing should look and providing examples. This connects to my practice because it shows the different way that boys and girls show creativity in creative writing with the way that it being shown through their work and how this creative writing is being put out through these creative writing techniques that are being implemented here. This also illustrates patterns or similarities that are being shown here. In conclusion, gender can be used in many different creative writing styles in English today.

Camden Freeman

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

Rhetoric in Social Media Activism

Activism in America has shifted from traditional mediums like literature and protests to digital platforms, with social media emerging as a powerful tool for civic engagement. This shift has made activism more accessible and amplified local issues to national prominence. My research explores how activists from the “Voters of Tomorrow” and the “KHive” hashtag utilized rhetorical and algorithmic strategies on social media to influence voter behavior leading up to the 2024 election. I analyzed posts on the platform X from users affiliated with these movements, along with interactions from broader online communities. My secondary sources, gathered through the UMKC library, emphasize the strategic importance of social media in shaping public discourse. This supports my argument that rhetoric and algorithms are essential tools in modern activism, allowing individuals and groups to promote specific ideals and mobilize political engagement on a large scale.

Toni Gooden

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

The Influence of the Writers' Strike on Film Quality and Audiences Enjoyment of Films

This case study focuses on the AMPTP's decision to strike against the Writers Guild of America and how this choice has significantly altered the trajectory of the film industry. The decision arose due to the rise of streaming services, which led to writers for the AMPTP being paid a one-time fee instead of their usual royalty checks. This change has forced them to depend on a gig-based income. So naturally being that living that way was not sustainable it forced many of them to strike to potentially negotiate for better wages. In the meantime these companies still need to generate revenue so, many have turned to remaking older films or using AI to create new ones. Audiences have taken notice of these changes, the research includes viewer reviews and opinions that indicate many people feel today's movies lack artistry, and depth, making them forgettable. With that being said, the goal of this research is to answer these key questions: How has the writers' strike influenced the quality of films? How do both writers and audiences perceive the films being made? Has technology overshadowed the role of screenwriters in the industry? This research will use both textual analysis and archival research methods. These methods are best suited for this kind of research because older interviews, articles, and reviews on the subject will be used to support claims and answer the key questions. While these reviews and articles around this topic are not as current as they were two years ago, they are still very much relevant.

To make the "CARS" move time was taken to focus on identifying the main areas of concern and narrowing them down to three key topics. Once the direction was clear, it became easier and the story started to evolve on its own. Through the research found in this study, there can be a lot learned about why some feel new movies don't seem worth watching today or for some to get a deeper understanding of the greed in the movie industry. This research took a bit of an unconventional approach by having some of the sources come from journalist social media accounts who've done their own separate research with their own interest of focus. The primary source for this research is an article that includes interviews collected by a journalist from many different people related to the film industry. This journalist took a hands-on approach and put herself in rooms to have conversations with people who knew more about it and could give her more insight. This promising research will be used in this case study as support and to get a first-hand account. Of course, there is potential to expand more on the concept of AI in films or more on the after but with the time provided this is all the research that could be done. In conclusion, this study is ongoing and it hasn't quite reached the peak of what there is to know so for now, these are only the preliminary findings, there are so many more layers and things that are unknown at the moment but that will come out with time and deeper research.



Sai Bindhu Javvaji

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

A Digital Shift – How Blogs, Social Media, and Online News Changed Communication

My project is about how the way we talk and share news has changed because of things like blogs, social media, and online news. Before all this, people mostly got their news from newspapers, TV, or the radio. It was slower, and people could only listen or read—it wasn't something you could talk back to. But now, we can get news right away, share it with others, and even post our own news using apps like Twitter, Instagram, or WhatsApp.

This new way of talking and sharing is faster, reaches more people around the world, and lets us interact more. But it also has some problems. News spreads really fast now, but that also means fake news can spread just as quickly. We're always online, but sometimes we still feel lonely or not connected. When we text or use social media, we can't see people's faces or hear how they're saying things, so it's easy to get confused or take things the wrong way.

Many people who study this topic say that digital tools have really changed how we talk and share things. Henry Jenkins talks about something called "convergence culture," which means old media like TV and newspapers are mixing with new media like social apps, and this changes how we act and share stuff. Nicole Martin says social media makes it super quick to get news, but sometimes the news isn't correct. Amelia and Balqis explain that even though apps help us stay connected, they can also make us feel emotionally distant because we miss things like facial expressions and body language.

When I looked at this topic using the CARS model (Create a Research Space), I saw that many researchers talk about how fast news spreads, how easy it is to get, and how more people can join the conversation. But not many talk about how these changes affect our emotions or the quality of the news. My project adds something new by looking at how people show feelings online and how trust in the news is changing in the digital world.

For my main source, I looked at Jack Dorsey's first tweet from 2006. That tweet was the beginning of Twitter and also the start of a new way of talking to people — short, quick, and worldwide. From then on, people could share their thoughts and updates right away, and big events started happening live on social media.

From what I've found so far, digital platforms make it easy for people to connect fast and with lots of others. But at the same time, they can make emotional connections weaker and news less deep. A lot of news websites now care more about what's popular than telling full, detailed stories. Social media helps us talk a lot, but it doesn't always help us feel truly connected.

In the end, this change is not just about technology — it's about how we connect as humans. Digital communication has made life easier in many ways, but it also brings new problems we need to think about. My project helps show both the good and the bad, and why it's important to slow down and think about how we communicate in this digital age.

Sai Sindhu Javvaji

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

Understanding and Improving the Clarity of Data Science Tutorials: A Writing Studies Approach

This research looks at how online data science tutorials explain difficult topics and how we can make them easier to understand by using ideas from writing studies. As data science becomes more important in different fields, it's essential that learning materials are clear and easy to follow. But many tutorials either make things too simple or too complicated, which makes it hard for beginners to understand. This study focuses on these problems by looking at how tutorials use technical terms, how they are organized, and how they present information with text and pictures.

This research is based on ideas from experts in technical writing, content planning, and how we share knowledge in education. It uses sources like Morteza Monavarian's work on scientific writing and that talks about the best ways to plan content. These sources highlight the importance of being clear, focusing on the user, and keeping a consistent tone. Using the CARS (Create a Research Space) model, this study points out a gap in how tutorials manage to be both accurate and easy to understand. My goal is to suggest a clear plan to make data science tutorials easier to follow and more effective.

For this project, I studied different tutorials—mainly from W3Schools—by closely looking at their text and using real examples to see what they do well and where they fall short. I looked at things like sentence structure, how the content is organized, the visuals used, and what level of knowledge they expect from the reader. I also thought about whether these tutorials consider ethical and social issues, based on ideas from the article “From Critical Technical Practice to Reflexive Data Science.” This research brings together viewpoints from technical writing and digital humanities to support a more thoughtful and inclusive way of sharing information.

Early findings show that W3Schools does a good job with organizing its content and using examples effectively. However, there are still areas that could be improved. For example, it could work on maintaining a consistent tone throughout the tutorials, explaining things in a clearer way, and making the material more interesting for different kinds of learners. By applying best practices from technical communication, such as breaking information into smaller, easier-to-understand sections and focusing more on the needs of the learners, the tutorials could become even better. These strategies help people learn more effectively and can keep them engaged with the content. Tutorials that use these approaches are better at holding the learners' attention and giving them the confidence to continue exploring and learning more about data science.

This study plays an important role in writing studies and educational design by sharing simple and useful ways to make technical tutorials easier to understand. It's meant to help teachers, content creators, and writing professionals create materials that are not just correct but also interesting and easy for people to follow. In the long run, making tutorials clearer and more user-friendly can help more people access data science education and feel more confident about learning and growing in the field.

Hailey Liu

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

How Culture Differences Affect Eastern and Western Writing

I want to conduct a writing study on the differences and commonalities between Eastern and Western cultures. This topic interests me because as an international transfer student, I deeply feel the differences between Western and Eastern writing. Although I have only been here for six months, it makes me think that the educational culture and the background of our society are probably the factors that caused the difference. I plan to search for typical articles that represent the similarities and differences between Eastern and Western writing, the tone, structure and the argumentation between Eastern and Western articles are significantly different. I am looking for how society culture affects our writing styles because this can help me to make a deeper conclusion in the differences between two types of writing. I've asked for others' opinions about the sources I found and they said the topic I chose is interesting and it's worth discussing, especially since I have personal experience related to the project, so that makes the whole research result more convincing and reliable. In conclusion, I believe scholars in writing studies would find my project interesting because culture is a crucial factor that shapes writing styles and represents the educational background in which we were raised.

I have seven sources on hand and each of them can be useful in different areas, they are scholars written by different writers from different culture backgrounds in different period of times. These articles help me analyze the differences in writing style, structure, tone, and argumentation between Eastern and Western cultures. For example, I decided to have *Dawn Blossoms Plucked at Dusk* and *Circe* as my exhibit sources. Lu Xun's work is a typical article that represents the writing style in eastern countries, the author uses lots of historical references in the article is known for its deep historical and philosophical references. In contrast, *Circe* is direct, mirroring Western rhetorical traditions by exploring relationships between gods and humans. The author uses clear structure and cause-effect logic, traits commonly associated with Western rhetorical traditions. The secondary sources which talk about how cultures affect writing styles will serve as an argument source in my paper, These sources help emphasize the specific ways in which culture influences writing, making my research more persuasive and reliable.

The crucial part of this research is to get to understand how do cultural values in Eastern and Western societies shape the differences in writing style. I think the issue of my research is the limited time and the limit amount of my interview participants. If I have more time I can interview more participants and have more data source, the large amount of sample helps me to support my research. To fix the issue, I will think deeper on how the culture affects our society and our educational system, this project requires me to find more evidences in the seven sources.

Nikitha Mandla

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

How AI Tools Are Effecting Students' Writing, Creativity, and Original Work

AI tools like ChatGPT, Grammarly, and Quillbot are becoming popular in schools and colleges. Students often use them to fix grammar mistakes, rephrase sentences, and get ideas for writing. These tools are fast, easy to use, and available online. Because they are being used more and more in academic settings, it is important to understand how they are changing students' writing, creativity, and original thinking.

There are many advantages to using AI tools. For example, a student who struggles with grammar can use AI to improve their sentences. Someone who has trouble starting an essay can use it to get ideas. These tools can make writing feel less stressful and help students feel more confident. They also save time, which is helpful when students are busy with other subjects or part-time jobs.

However, there are also concerns. Some people think students might depend too much on these tools. If students copy AI-generated text without changing it or thinking about it, they may lose their own voice in writing. This can hurt creativity and make it harder to develop real writing skills. It can also raise issues about plagiarism, even if it is unintentional. These are serious problems in academic environments where original work is very important.

In my project, I joined an ongoing scholarly conversation about the role of AI in education. Some researchers believe AI tools help students grow by offering support and improving their writing. Others argue that too much use of AI might damage students' ability to think critically and write creatively. Most of the research so far focuses on what AI *can* do, but not enough explores how it affects student writing in actual practice. That is the gap I focused on.

My CARS move (Create a Research Space) is based on this gap. I wanted to better understand how AI tools are influencing student writing through two research methods: textual analysis and archival research.

In my textual analysis, I studied examples of AI-generated writing and compared them with traditional student-written texts. I paid attention to tone, language, organization, and originality. This helped me understand what changes when students rely on AI tools. AI writing often sounds smooth and formal, but sometimes it lacks personality, depth, or a clear point of view. This can affect how creative or meaningful the writing feels.

For archival research, I looked at older sources about how writing tools have developed over time such as spell checkers, grammar software, and now AI-based tools. I also read studies and documents that discussed technology's impact on student learning. This helped me see the bigger picture and understand how AI tools fit into the long history of educational technology.

From my findings so far, I can say that AI tools can help students improve surface-level writing, like grammar and structure. But they can also reduce personal voice and original thought if used without care. This research suggests that schools should teach students how to use AI wisely not as a replacement for thinking, but as a tool that supports learning.

Mitul Neerubai

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

The Digital Shift: How Social Media, Blogs, and Websites Are Transforming Writing Style

In today's digital age, the way people write and communicate has significantly changed with the growing use of social media platforms such as Twitter(X), Instagram and Tik Tok, blogs, and websites. These digital platforms allow people to convey the message more engagingly but also introduced some new ways of writing such as the use of emojis and abbreviations. This research explores how these different digital platforms are influencing writing styles across personal, academic, and professional contexts. While social media posts have a very short and casual writing with visuals or emojis to grab attention, whereas writing in blogs is a bit different - people try to elaborate their thoughts and will dive deeper on a particular topic with a well formatted writing. However, with the growing informal writings such as tweets, captions, and blog posts, writing has become more fun and engaging. This study investigates the impact of these changes, particularly how digital writing is impacting traditional writing in the 21st century.

Using the CARS (Create a Research Space) move, my project starts by highlighting how digital writing has become more important, pointing out how online communication has impacted modern writing styles. While some researchers have looked at how texting and blogging affects writing, however, there is still a gap in understanding how these platforms together influence writing habits, especially for younger people. While many studies look at academic writing or social media writing separately, only a few explore how these two types of writing influence each other. My research focuses on how writing's structure, tone, and style are changing through everyday digital platforms. Different platforms encourage people to use different writing styles depending on the audience and context.

To explore this topic, I used a mix of archival research and textual analysis available online such as social media, blogs and articles from websites. One key idea in research is using the resources that are available online such as the public content where people share their ideas. I also looked at examples from popular platforms like Twitter, Instagram, Medium, and LinkedIn to spot trends in grammar, tone, emoji use, punctuation, and sentence structure. My initial findings show that social media has led to short and informal writing with a great audience engagement. Studies also show that people change their writing style depending on the platform they use. Emojis and abbreviations have become important ways to express tone and emotions, adding extra meaning to the text.

This suggests that writing styles are not becoming less complex but are adapting to new forms of communication. Digital platforms have made writing more fun and engaging. This affects not just how we communicate personally, but also how writing is taught in schools and used in professional environments. Overall, this study will help determine whether digital writing practices are enhancing creativity and adaptability or weakening traditional writing skills needed for academic and professional success.

Rasagyna Peddpalli

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

AI and Technical Communication: Comparing Human and Machine-Generated Writing

The use of artificial intelligence tools like Grammarly and ChatGPT is becoming more common in both schools and workplaces, and their impact on technical communication is growing. This research looks at how writing done by AI compares to writing done by people, focusing on how professional, clear, accurate, and well-organized the texts are. Since technical writing requires careful attention to detail, clear structure, and a focus on the reader's needs, it's important to see if AI can meet these standards. While AI is often praised for making writing faster and easier, there hasn't been much research on how well it handles the deeper demands of technical communication. This study helps fill that gap by asking whether AI tools truly meet professional writing standards or if they just copy the surface features of good writing.

By using the CARS (Create a Research Space) method, this study points out that there aren't many detailed comparisons between how AI and humans perform in real-life technical writing situations. Most existing research focuses on the benefits of AI-like saving time, fixing grammar, and helping with content creation. However, fewer studies look closely at how well AI handles more complex tasks, such as understanding context, considering the audience, or dealing with ethical concerns. To help fill this gap, I'm analyzing technical documents like reports and user guides written by both AI tools and humans. This research also uses the BEAM framework: background sources explain AI's role in writing, exhibit sources provide sample texts for comparison, argument sources explore strengths and weaknesses of AI, and method sources guide the way I analyze the writing.

While AI tools can create writing that is grammatically correct and well-organized, early research shows they often fall short in important areas like being specific, adjusting tone, and being clear about ethical concerns. For example, AI-generated content tends to use vague or general wording and may struggle to adapt writing for different audiences or purposes. Human writers are better at adding critical thinking, creative problem-solving, and understanding the context and purpose of the writing. In terms of professionalism, people still tend to trust writing done by humans more-especially in technical fields where the accuracy and accountability matter most.

This study adds to the growing conversation about how AI is transforming professional communication. It encourages a thoughtful and balanced approach to using AI, recognizing both its strengths and limitations. The findings can help professionals, educators, and students use AI effectively and ethically in technical communication. As AI continues to evolve, it's important to understand how to use it responsibly, ensuring that it remains accurate, trustworthy, and clear.

Mark Rigoli

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

The Need of Water Protection: Understanding the Impact and Seeking Solutions

Water is one of the most abundant natural resources on earth. It is very important to every life, for healthy ecosystems, and for communities to thrive and depends on it. But today, our water systems are facing serious threats due to pollution, industrial waste, agricultural waste, climate change and harmful practices that have gone unchecked for too long. In my research project, "*The Need of Water Protection: Understanding the Impact and Seeking Solutions*," is explore how water pollution affects marine biodiversity, public health, and economic challenges. This research also look at the policy that needs to be improve and solutions that are already being put in place whether through government policies or community efforts.

For this study, I use a qualitative approach with grounded theory and case study analysis. I've been comparing areas where strong environmental law like the Clean Water Act (CWA) are being strongly implemented and to areas that's not prioritizing practices to protect the water and struggling with poor water quality or water contamination. I've also been examining how environmental laws like the Clean Water Act are being implemented, and if this law enough to protect our water resources. This has helped me better understand how improving the policies and how local action can work together to bring about real environmental change.

One thing that is really interesting to me in my research is how water pollution is not just creating an issue for fish and marine animals, but it also has a huge impact on people who lives by the coastal areas relying on fishing or tourism. Reports like *Water for Our Future: Americas Regional Process Event* by the World Wildlife Fund. Made it clear that clean water plays a huge role in keeping communities to have a good health and stable sources of fish and tourism and not just about protecting nature. Singh and Gupta's work on "*Water Pollution Sources, Effects and Control*".2016. Explores the direct health risks of waste from industrial, agricultural and sewage that polluted water brings to communities, from disease to long-term health issues.

Even though the laws like the Clean Water Act exist that are supposed to regulate water quality, enforcement can often be weak or inconsistent. James Shortle argue on his work "*Policy Reforms Needed for Better Water Quality and Lower Pollution Control Costs*." *Choices: The Magazine of Food, Farm, and Resource Issues*, vol. 32, no. 4, 2017, pp. 1–7, that stronger and more cost-effective reforms are needed if we really want to improve and make change to have a better water quality. At the same time, international research from organizations like UNESCO has reminded me that water isn't just an environmental concern but it's also an issue that impacting socially and economically. We need to treat our natural resources like water as something that holds value in all aspects of life.

In the end, my research has led me to believe that protecting our water requires more than just one solution. It calls for stronger policies, better education, and real involvement from communities. Clean water isn't just something we should protect but it's something we *have* to protect, for our health, our environment, and future generations. Together we can make Clean Water a reality for all.

Shruthika Uduthuri

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

Influence of AI in Professional Email Communication

This research project studies how artificial intelligence (AI) is being used in writing professional emails. Many people in schools, companies, and other professional settings now use AI tools like ChatGPT to help write emails. These tools can make writing faster, easier, and more organized. The goal of this study is to understand how AI is helping people with email communication and what problems it might cause.

The study uses the BEAM framework to collect and analyse information. It includes background sources that explain how AI is used in education and business. It also uses real emails generated by ChatGPT to show how AI works in different situations. Argument sources give opinions from experts who talk about the good and bad sides of using AI. Some say AI improves communication, while others say it may remove the human element from writing. Method sources explain how the study was done, including how emails were analysed using prompt engineering and text analysis.

The findings show that AI tools help improve the grammar, tone, and structure of emails. They also help users save time and feel more confident in their writing. However, the study also found that emails written by AI can sometimes sound too formal or impersonal. This can be a problem in situations where a more human touch is needed.

In conclusion, AI is a helpful tool for writing professional emails, but it should be used with care. People should still read and edit the emails before sending them. AI should support the user, not replace them. More research is needed to understand how different people use AI in their daily communication and how to improve these tools in the future.

Daniel Wink

Faculty Mentor: Dana Hoffman

EUReka! Course: English 225 Intermediate Academic Prose – (11:30am-12:45pm)

Is Music a Medium for Social Change?

“This is America” by Donald Glover, also known by his stage name Childish Gambino, addresses recent issues in America, both culturally and nationwide. From gun violence and police brutality to social inequities, Gambino conveys this through imagery within his lyrical and visual choices in the music and video. For my research method, I am planning on utilizing case studies as well as textual analysis, to examine how Gambino portrays these problems in society through imagery in his music, especially when approaching harsh issues. Along with this, I will look at how ethos influence is utilized in music. A case study is applicable through the ability to look at similarities between Gambino’s music to other songs from the historical references made towards the oppression of black people and the Jim Crow laws. Gambino’s imagery throughout the song helps reinforce these issues black men in America face, referencing the Jim Crow-like laws for felons in the prison industrial complex, which is a contributor to the targeting of black Americans. For example, towards the beginning of the song, Childish Gambino juxtaposes this idea of wanting to have fun, yet being targeted for being black through his lyrics, “We just want to party...”, abruptly being ended by a gunshot in which the tone changes, leading to the lyrics, “This is America”. (Gambino). Both visually and lyrically, this highlights the struggles that black people in America go through, wanting to have fun, just to be targeted. Similar to this, through analysis it was found that during the part of the video where it turns to a bloody choir, Gambino is referencing the church shooting that had occurred a few months prior. Through music, Gambino can appeal to a much broader audience, leading to more influence and understanding of these issues being faced. Following the police brutality and targeting of a black man that occurred in Ferguson a few years prior, which led to the emergence of Black Lives Matter protests again. This combined with shootings around the country, as well as a president who promotes inequities recently being inaugurated, people of color terrified, leading to protests following the inauguration, and the release of “This is America”. Within imagery in the music video and lyrical choices, Gambino can highlight many important issues of the late 2010s, connect them to history, and promote change by connecting to the audience through ethos, influencing change. Throughout history, music has been a medium in which people can address societal issues and promote change through emotional appeal and awareness. Music has been a prominent medium for social change forever, for example, music about social change was very prominent in the 1960s during the Vietnam War, and even back to the country’s roots fueling the soldier’s morale during the Revolutionary War. By analyzing “This is America” by Childish Gambino and examining past examples of music being a medium for social issues, to look at the influence that music can have, not only in current times, but to highlight issues of the past and to learn from.

ENGLISH 242
Women Writing/Women Reading

Haley Bowman

Faculty Mentor: Jane Greer

EUReka! Course: English 242 Women Writing/Women Reading

Ownership of Oneself in Disheartening Times

After interviewing 10 young women in mainland China about why they write slash fanfiction and what that means to them Coco Fang discovered the core reasons of expressing sexuality, wanting to find connections, and breaking out of a “conservative” political state. My research concurs with hers as my interviewee Shiann Runnels perceives the lack of writing and reading to be detrimental to your identity, specifically being a woman working in the medical field and living in the current political climate of America. Interviewing Shiann for my oral history project who is a late-twenties woman surgical tech divulges that without the ability to read and write you lose critical parts of your voice, experiences, and existence. It’s even more important now due to the reigning administration debating and revoking many rights from women. I conducted an interview with Runnels for my oral history project over Zoom and received a signed electronic consent form over email. The time duration was roughly forty-eight minutes and was audio recorded with the program built onto iPhones. Which I transcribed by listening through and typing down as I went. Afterwards I proofread the transcript and fixed any grammatical errors. Finally, I read again but this time specifically on the content and annotated connections or intriguing findings. Pulling key quotes of “Being a woman always changes my perspective on things, especially as late with all of the political issues going on,” and “Being able to defend yourself has never been more important than it has become in this day and age. It is so important for women to be able to speak up for themselves as well as fellow women.” In these sentences Runnels makes it apparent that these skills have always held significance but increasingly as the country heads in a certain direction, one not exactly meant for women to enjoy and feel comfort. More researchers should steer to speaking to women in America at this time, to learn how they cope and preserve self when their own country is an enemy.

Tonie Cloutier

Faculty Mentor: Jane Greer

EUReka! Course: English 242 Women Writing/Women Reading

Stories That Bind: Women's Reading and Writing as a Mirror and a Bridge

In this study, I will be focusing on a woman's reading and writing experience and how that form's "bridges" to others and "mirrors" to themselves. In my interview, I chose to do my Mom, who grew up in the late 70's/early 80's and had a passion for reading the moment she learned how to. In her experience, I noticed that reading was a way for her to relate to the world around her and navigate herself as a woman. She mentioned reading magazines and stories that a lot of young girls would read that spoke about things that were more "taboo" at the time, such as puberty, dating, and what is it like to be a teenager. Not only did reading allow these girls to feel less alone in their journey as young women, but also allowed them to have a safe space to relax and imagine. My mother accounted for her reading as a coping mechanism, being there for her in times in her life where things felt out of control. That love for reading melted into her parenting. She stressed the importance of teaching my brother and myself how to read and write, frequently reading to us at bedtime and giving us notes in our lunchboxes. She also reflected on her writing life, at first denying ever being interested, until she remembered when her best friend, Kelly, moved away when they were young. She would constantly write letters to her, especially because they had grown up like siblings. That allowed them to remain in contact for years, and have a strong connection till this day. Reading and writing are shown to be bridges between people when they aren't able to communicate verbally. They allow women to find themselves within texts like a mirror, as well as find others between the words to relate and grow as individuals. A woman's reading and writing experience is crucial to their community, allows them to connect with others and their inner femininity stronger than before, and use it as a means to escape for reward.



My mom and her best friend, Kelly, when they were teenagers.

Meilan Cobb

Faculty Mentor: Jane Greer

EUReka! Course: English 242 Women Writing/Women Reading

The Connective Tissue of Reading and The Disconnect of Writing

If you read often enough even if it's a book every couple of months you may brand yourself with the label of reader, and yet no matter how much you write if it is not novels, or poems, if it's not something creative or lengthy in nature then you simply wouldn't call yourself a writer. Some would even say that they don't "write" even if they write handfuls of emails, letters, documents for work, etc. In an interview I conducted with my grandmother I examined the joys of growing up in a reading family, identifying as a reader, and the disconnect when discussing writing, how she can feel so intertwined with reading yet so detached from writing even when it plays an important role in her life. In comparison with Deborah Brandt's "Remembering Writing, Remembering Reading" in which she conducts interviews finds that people often have positive early memories of reading, but negative or academic early memories of writing. I would like to explore her findings that people view writing as more academic and task-based when compared to reading. Reading seems to be a connective tissue for family, coworkers, and friends but writing isn't viewed with the same pleasure. Mothers will sit and read to children but not write with them. Why do people often find more joy in reading than in writing? I hope to explore these concepts while exploring my grandmother's memories and feelings associated with reading and writing. To better understand the connection felt through reading that doesn't seem to be felt by others. I will aim to discuss the connection of reading, the disconnect of writing, and the way we view both of these through the lens of my grandmother's life as told to me in the interview while drawing a comparison to Deborah Brandt's past interviews.

Naomi Gonterman

Faculty Mentor: Jane Greer

EUReka! Course: English 242 Women Writing/Women Reading

Grandmotherly Literacy

In this study, I will be going over the teacher's perspective when it comes to learning to read and write, along with expanding on how the development of learning happens to the student and continues for the teacher. We look through the view of the learner and see their struggles and triumphs, but often, the view of the teacher is not acknowledged, and I will be using my grandmother's experience to explore this. Debra Brandt conducted interviews with forty individuals to hear how their reading and writing lives were impacted by the people in their lives. The person who impacted them the most was often their mother, and I have chosen to explore that side of the story, the mother's side. My grandma had the experience of being that mother not only to her own children but it has continued on to her grandchildren as well; this shows the other side of Brandt's research from the mother's perspective instead. For this interview, I spent an hour interviewing my grandmother using questions influenced by Brandt, along with other readings associated with the class. I used Zoom along with a voice memo tool to record and transcribe, and after the interview, I spent five hours going through to clean up the transcript, along with adding annotations to help in the future. My grandma stated, "And so, and I had a degree in English, and I knew how important it was for her to read. This is a passion of mine. And so I'm so I stayed home and raised kids and taught them how to read and write." It is important for this side of the story to be recognized as a foundation for futures as readers and writers, and the best way to learn is through others' experiences and using them to further our knowledge, and that is what I hope to do with this study.

Brianna Biondo

Faculty Mentor: Jane Greer

EUReka! Course: English 242 Women Writing/Women Reading

A Difference in Perspectives: How Motherhood Bleeds into the Personal Pursuit of Reading

In 1994, well-renowned literary researcher Deborah Brandt made incredible conclusions regarding individuals reading lives in her oral history project, “Remembering Reading, Remembering Writing.” One key theme in her research was that most people associate their early reading experiences with positive emotions through fondly recalling being read to by their parents or receiving books as gifts. My interview with my 76-year-old grandmother about her personal reading life further proved Brandt’s conclusion that children’s reading lives are associated with warm memories; however, the interview also introduced a new viewpoint her research failed to touch on: the perspective of mothers. Being a mother of four children and working in Social Security for 38 years, my grandmother provided great insight on the reading habits of working mothers. Our one-hour interview, which I recorded, transcribed, and coded, revealed that she rarely read for personal pleasure during motherhood. Her reading life focused on dense work documents as opposed to novels such as “Little Women” and “Black Beauty,” which she loved as a child due to her lack of spare time. Not until her children moved out could she reignite her love for reading. Her experiences affirm Brandt’s existing literary research conclusions while also introducing a new perspective emphasizing the connections between personal, professional, and familial duties concerning women’s reading habits.

Lauryn Justiss

Faculty Mentor: Jane Greer

EUReka! Course: English 242 Women Writing/Women Reading

Struggle to Passion: The Path of Overcoming Reading Difficulties to Embrace Literature

This study explores the challenges and disparities that individuals, particularly young girls, may encounter when developing reading skills at an early age. These difficulties range from peer bullying within classroom settings to discouragement and ridicule within the home environment. This research takes a more refined look at the experiences of young female readers by focusing on the personal narrative of an interviewee who faced criticism for her reading style-both from classmates and from her own siblings. Despite these negative experiences, the subject chose to persevere, dedicating herself to improving her reading abilities and ultimately cultivating a deep passion for female literature. This study argues for the importance of fostering a supportive environment for young girls as they learn to read. It emphasizes that early negative associations with reading can have long-lasting effects, and that encouragement rather criticism is essential to nurturing confident and capable readers.

Audriana Lagares

Faculty Mentor: Jane Greer

EUReka! Course: English 242 Women Writing/Women Reading

ChatGPT and Its Intellectual, Emotional Rewards for Women

“Some people are like, “That's cheating.” But, for me, it's a godsend” (Wilcoxen 2025). I interviewed Andrica Wilcoxen in her workplace, the ‘First Gen Den,’ at the Atterbury Student Success Center located on the University of Missouri Kansas-City’s main campus. Before the interview, I obtained Wilcoxen’s consent through a pre-printed consent form provided by me. The recorded interview lasted about 70 minutes and I’ve annotated the transcribed interview to organize my thoughts and note the key points and implications made through Wilcoxen’s personal renditions of her reading and writing life. I argue that the authenticity of writing, combined with and assisted by artificial intelligence, may be overlooked due to the help modern technology provides, not taking into account the deeper, more personal effects it may have on a woman writer, deducing her to be perceived as something other than an intellectual. After interviewing two extremely diverse individuals about their digital and non-digital literacy lives throughout the late 19th century, Gail E. Hawisher and Cynthia L. Selfe discovered that “People can exert their own powerful agency in, around, and through digital literacies” (Hawisher, Selfe 2004). My oral history interview with an educator, who struggled with writing later on in life, confirms Hawisher and Selfe’s point that, for some, having digital literacy and being able to effectively use it empowers them with their writing skills. We, as a society, need to rethink the idea of utilizing ChatGPT in intellectual settings and how it affects the interpretations of those who use it. I would like to see people not assume too quickly when it comes to professionals, especially women writers, using ChatGPT to assist them with their writing.

Daisey Maldonado

Faculty Mentor: Jane Greer

EUReka! Course: English 242 Women Writing/Women Reading

“Behind from the Start”: Socioeconomic Status, Early Literacy, and Lifelong Self-Perception

Exploring how an individual growing up without early literacy support can shape an individual's perception of their reading and writing abilities across their life. Drawing on a life literacy history interview with Shanna Whitley, an advocate for restorative justice and a community mentor, this project can dive into how systemic barriers such as limited access to books, guidance, and even affirming literacy experiences in early childhood can leave a lasting impression on one's confidence as a reader and writer. Unlike Debora Brandt's "Remembering Reading, Remembering Writing", which describes early literacy narratives as warm and nostalgic, Shanna's story focuses more on feeling "behind" her peers and never entirely on track". Having this internalized perception of defiance complicates common literacy narratives and highlights how literacy development is not just cognitive but also deeply emotional and social.

This research also considers how individuals who feel "behind" can still become powerful communicators, specifically when their experiences make them more rhetorically attuned to others' needs and context, a concept Lormir Leonard names "rhetorical attainment". Despite her early struggles, Shanna can use writing intentionally in her professional life to foster understanding, avoid exclusionary language and support marginalized voices. Her story can demonstrate how personal literacy experience can evolve into tools for justice and community empowerment.

This research contributes to ongoing conversations about literacy sponsorships, class, and identity by centering voices that challenge dominant literacy success stories. It raises important questions about how we define literacy achievement and invites educators and researchers to think more critically and who gets to feel literate and why.

Janissa Martinez

Faculty Mentor: Jane Greer

EUReka! Course: English 242 Women Writing/Women Reading

Pages of Her Own Making

This research explores the personal journey of a woman raised in rural Mexico, where entrenched cultural norms and poverty significantly restricted access to education for women. With literacy undervalued and traditional gender roles emphasizing domestic and agricultural labor, she left school at the age of 12 and had little exposure to reading materials beyond the Bible. Her early environment discouraged reading for enjoyment or growth. However, after immigrating to the United States, she experienced a profound shift in perspective. Motivated by a desire to support her children's education, she taught herself to read and write, discovering in the process the empowering potential of literacy. Her evolving understanding of gender roles—shaped by observing the independence of women in the U.S.—inspired a deep appreciation for education as a tool for personal and social transformation. Although she lacked formal schooling, she now embraces lifelong learning, reading in both Spanish and English. Her story illustrates how literacy can transcend barriers, redefine identity, and empower individuals to challenge societal expectations and create new possibilities for future generations.

Flor Ramos

Faculty Mentor: Jane Greer

EUReka! Course: English 242 Women Writing/Women Reading

Women's Educational Experiences in Marginalized Communities

This oral history interview with Angelina, reveals the complexities of being multilingual and how it creates productive chaos in communication. Through this interview, I examine how early reading and writing experiences shape literacy, especially among women in marginalized communities. Angelina's experiences reveal the challenges of navigating obstacles that are faced in educational settings. Drawing from the works of Leonard, Hawisher, Selfe, Moraski, and Pearson, the interview confirmed Leonard's idea of "highlighting the difficulty of marshaling any literate resource in an act of communication" while Angelina has been exposed to early literacy, it revealed to me as a researcher how the multilingual environment adds layers of complexity and challenges that arise from this "productive chaos.". As a multilingual researcher, I am interested in further exploring how early literacy experiences in low-income communities where math and science are often emphasized and the impact it has on women's creativity and engagement with English literacy. This research argues the intersection of gender, language, and literacy on marginalized communities, that reveal the ways in which these factors interact and shape educational experiences.

Sophie Roach

Faculty Mentor: Jane Greer

EUReka! Course: English 242 Women Writing/Women Reading

Navigating Language and Literature

This interview-based study explores the reading and writing experiences of a 23 year old Mexican-American woman, who has spent her life navigating between the United States and Mexico. Her bilingual identity significantly shaped her literacy journey. During the interview I found she has a complex relationship with literature, marked by both anxiety and comfort. While reading and writing were sources of stress in her childhood—rooted in familial and academic expectations—they have also become tools for personal escape and reflection. Living in a family-oriented culture, where she found privacy is hard to come by, literature offers her a sense of freedom. This case highlights the nuanced ways that bilingualism and biculturalism shape literacy practices.

Bella Taffner

Faculty Mentor: Jane Greer

EUReka! Course: English 242 Women Writing/Women Reading

Fostering Community Through Reading and Writing

It can be argued a sense of community and belonging can be gained through reading experiences both from Childhood to Adulthood through bonding by being in book clubs and discussing books, fostering a love of reading in children using certain experiences, such as going to a trade in bookstore with your parent, and encouraging reading to those around you by giving books to others

I conducted an oral history interview for 59 minutes with my interviewee, recorded with voice typing on google docs, with consent, and fixed any mistakes made by that technology. I went through inductive coding through annotating the transcribed work, then followed by focused coding by rereading said work to create a proper product. Through interviewing ten people, Fang expressed the idea that women can find a sense of belonging and equality through reading slash fanfiction, subsequently comforting other individuals through a shared sense of community by writing slash fanfiction. Therefore, quoting Promise's response, "I am no longer 'me' to some extent, because my story will affect and comfort at least some people, and may even save one or two people who read my texts." My Oral history interview with Lori Moore brought about a sense of these aspects with her joining a book club to help with her depression and to gain a friend group, something she did not have before.

Keziah Torres

Faculty Mentor: Jane Greer

EUREKA! Course: English 242 Women Writing/Women Reading

Wanderlust: An Escape Hidden in Plain Sight

This study takes a look at the reading and writing experiences that Stephanie, a successful female pharmacist, has lived. This research investigates and analyzes the formation, development, and impact of those reading and writing experiences through an oral history interview conducted with Stephanie. This analysis cross-references previously existing scholarly conversation on reading and writing practices, emphasizing the positive and negative associations created with reading and writing during formative years. The oral history interview with Stephanie reveals the importance and impact of family transmitted literacy values and practices in the creation of positive and negative associations made with reading and writing.

Meaghan Vandehey

Faculty Mentor: Jane Greer

EUReka! Course: English 242 Women Writing/Women Reading

Remembering Reading, Rediscovering Reading: A Librarian's Tale

My oral history interview with Kris, a middle-aged woman who is a former librarian, reveals that the emotional power and impact that early reading has on a person's life still rings true today, more than thirty years after Deborah Brandt conducted her extensive study.

After interviewing forty individuals about their reading and writing habits and experiences in the 1990s, Deborah Brandt found that three quarters of her interviewees said "reading and books were actively endorsed in their households." The same I found was true with Kris.

I completed this by conducting an oral history interview. I reached out to Kris via iMessage, asking her if she would be open to completing an interview over Zoom at a time that was most convenient for her. A bit of coordination was required due to the time zone difference. I later emailed her the consent form, which she filled out digitally and sent back to me afterwards. The interview was slightly longer than 62 minutes in total. The interview was recorded and transcribed using an app called Rev, and the transcript was completed using AI. After I received it, I went through and corrected any errors, then did some inductive coding and then focused coding.

During the interview, Kris spoke much more fondly and enthusiastically about her reading experiences growing up and in adulthood than her writing experiences, which she didn't care for as much, as well as that she did in her career as a librarian and in her current occupation. Something that could be investigated further is what could make someone dislike reading or writing, and what they could do to create a deeper emotional connection to it.

Lyric Westley

Faculty Mentor: Jane Greer

EUReka! Course: English 242 Women Writing/Women Reading

Reading and Writing Experiences: Intersectional Effects

This research discusses the responses given during an interview with a woman in Generation X regarding her experiences in life as a reader and a writer. The purpose of the interview was to develop a well-rounded understanding of the different influences and memories tied to her development in reading and writing over the years. While the interview covered a broad range of topics relating to different life stages and scenarios, a pattern emerged that stood in contrast to what often comes up in discussions of the identity-influenced experiences of women readers and writers. The tendency of the existing discussions to highlight only a single aspect of the identities of women readers and writers (their gender) is complicated by what was reported during the interview. I found that, in the context of positive guidance and negative responses given by others in the past regarding her reading and writing activities, the interactions were influenced by her identity as an African American rather than her identity as a girl. The intersections of her identities in this case resulted in her gender being overlooked in favor of either supporting or judging her reading and writing journey based on her race, as seen in the difference in her experiences at a predominately minority school compared to a predominately white institution.

Nevaeh Whaley

Faculty Mentor: Jane Greer

EUReka! Course: English 242 Women Writing/Women Reading

Power of Reading Literature

The research I have conducted reveals that reading to your children at a young age has a profound effect on the child's relationship with literacy. I interviewed Glenda Christopherson, a sixty one year old women born and raised here in Kansas City, Missouri. During the interview Glenda reflected on her strong relationship with reading literacy which started out by her mother reading to her at a young age. Starting a positive relationship with reading literacy at a young age was important for her academic success. As Glenda started a family of her own, she continued that pattern of reading to her children from a young age. The research I have after my interview with Glenda really ties into Deborah Brandt's research: Remembering Writing, Remembering Reading. Brandt conducted forty interviews with individuals, all with different backgrounds, about what they "could remember about learning to read and write across their lifetimes." In Brandt's research she states, "the forty interviews I conducted indicate that messages about the prestige of reading are sent to children early and often." Which is what my research has proved through interviewing Glenda about her relationship with reading throughout her life. My interview with Glenda highlights how the practice of parents and children reading together fostered a strong sense of confidence in children, shaping their academic success. My research shows that children who are read to regularly tend to develop a positive attitude towards reading, which can significantly influence their academic performance and overall cognitive development.

GECRT-AH 113

Text Technologies

Emily Balentine

Faculty Mentor: Spencer Keralis

EUREKA! Course: GECRT-AH 113 - Text Technologies

Beyond The Badge: Enhancing Ethics and Reducing Bias in Kansas City Policing Through Training Manuals

This research project explores how training manuals and textual materials can be leveraged to enhance social ethics and reduce bias in law enforcement, specifically within the Kansas City Police Department (KCPD). In recent years, public concern regarding police misconduct and systemic bias has grown substantially. While law enforcement agencies have introduced implicit bias training and ethical codes, gaps persist in their effectiveness. This study addresses the question: How can training manuals and textual materials enhance social ethics and reduce bias in law enforcement in the Kansas City area?

Using a qualitative research design, this project includes a document analysis of KCPD training materials, a comparative evaluation of similar resources from other major cities, and a thematic analysis of expert interviews with law enforcement professionals. Early findings indicate that while Kansas City employs foundational ethics documents, these materials often lack the narrative coherence, cultural relevance, and interactive strategies to impact officer behavior meaningfully. The study proposes revising training materials with more immersive, community-based content can improve ethical decision-making and reduce implicit bias.

The final project will be a multimedia zine to make research findings accessible and actionable to both academic and community audiences. By examining the intersection of textual training resources and ethical policing, this study contributes to a broader effort toward justice reform and more equitable law enforcement practices.

Maria Barreto-Juarez

Faculty Mentor: Spencer Keralis

EUREKA! Course: GECRT-AH 113 - Text Technologies

Improving High School Students' Literacy and Writing with Narrative Writing

This research project investigates the benefits of teaching narrative writing to high school students, an essential skill for enhancing critical thinking, communication, self-expression, and future professional success. The research question, "How does narrative writing impact high school students' academic and personal development?" was chosen to highlight narrative writing as a benefit to the critical thinking, creativity, and communication skills of high school students. This study examines how narrative writing fosters connections that enhance its practice and development among students. Equipping students with practical narrative writing skills can suggest that their literacy will improve, thereby better preparing them for future academic and professional endeavors. While existing literature acknowledges the importance of narrative writing for literacy development, this study aims to explore underexplored connections, particularly the impact of diverse genres on student creativity. Employing literary criticism as its research design, presented visually through a zine, this project will analyze the purpose, evaluation, and significance of narrative writing. Data collection will examine existing survey data, historical records, and document analysis to gather varied perspectives and evidence. Statistical analysis will be used to visually represent the impact of narrative writing on high school students' literacy improvement over time. Expected outcomes include identifying concrete benefits and realistic effects of narrative writing and potentially informing educational theory and teaching practices. Ultimately, this research seeks to advocate for a more robust inclusion of narrative writing instruction in high school education, ensuring that students develop their writing skills and gain confidence in their ability to express themselves creatively and effectively.

Julia Bourquin

Faculty Mentor: Spencer Keralis

EUReka! Course: GECRT-AH 113 - Text Technologies

Pop Quiz: Affirmations in Education

This research aims to explore the effectiveness of self-affirmations, a form of text technology, in improving academic performance among college students. Previous studies explore the role of affirmations in reducing stress, increasing motivation, and improving self-esteem (Cascio et al. & Creswell et al.). Many highlight affirmations as a stress buffer leading to better problem-solving skills and emotional resilience (Dutcher et al.). Additionally, affirmations increase motivation and self-compassion, helping students to adopt a growth mindset and better study habits (Breines & Chen). While these studies indicate benefits to practicing affirmations, there is still a large gap in longitudinal research directly linking affirmations to academic success. Given this, my study will investigate how self-affirmations shape habits, focus, and resilience, ultimately improving academic performance outcomes. To address this, I will use a mixed-method approach, combining quantitative data analysis and qualitative observations. I will analyze existing research surrounding self-affirmations and academic performance, subsequently assessing the effectiveness of this technology in improving academics. Primary sources, including self-affirmation stories, podcasts, and journaling, will be included to illustrate realworld impacts and applications of affirmations. In the end, this study will highlight the need for further exploration of the benefits of self-affirmations in post-secondary institutions. Future research should explore how universities can integrate affirmation interventions to support student well-being and academic success. Self-affirmations have the potential to become a simple yet effective tool for improving students' academic motivation and performance. This study will help show how small, positive habits like self-affirmations can make a difference in student success.

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Daniela Castro-Carrera

Faculty Mentor: Spencer Keralis

EUReka! Course: GECRT-AH 113 - Text Technologies

La Virgen de Guadalupe, a Guide for The People or Form of Control?

Anywhere you turn in Mexico there is no doubt that you will see the image of La Virgen de Guadalupe plastered everywhere from building walls to the inside of homes. The essence of La Virgen is significant within itself but the significance behind this research project is identifying the shift in mindsets about values caused by her memorable image. The question being, how has the story of La Virgen de Guadalupe written hundreds of years ago, shaped present-day religion in Mexico? The methods that were used to conduct this research were both historical and interpretive. To collect this data the methods were gathering different pieces of text related to La Virgen from different times in history. Looking at the original manuscript written in the 1500's as well as more modern articles reassessing viewpoints. Analysis was done by closely looking at timelines of events through observations of her rise and analysis of the praise and celebrations devoted to her. Key findings from all the texts included Aztec society and religious symbolism behind La Virgen. Back in the 1500's the Aztec people had a religion that revolved around an intense desire to please their gods, which even led to them welcoming Spanish conquistadors. Regarding the image of La Virgen, it was originally adopted by Creole patriots to express cultural pride which evolved into Mexican nationalism when independence from Spain was declared in her name. Overall, it's unquestionable that the image La Virgen presented to Juan Diego, an indigenous convert to Christianity, was a key part in the start of the Catholic dominance in Mexico. Although the system that stands today has been washed from its original indigenous views, the people of Mexico made the image of La Virgen their own and is a symbol of pride, faith and identity.

Genesis Diosdado

Faculty Mentor: Spencer Keralis

EUReka! Course: GECRT-AH 113 - Text Technologies

The Effects AI has in the Human Resources Department

Imagine a world where a human no longer reads your job application but rather a robot. It is important for us to know about the effects that the use of AI in HR management could have on many people. This idea leads me to my research question, How does the use of AI affect filtering job applications and impact certain groups based on their race? I want to see if AI affects people's possibility of getting hired therefore interfering with any possibility of finding a job.

My research is a mixed-method approach. The use of AI could limit the opportunity for applicants to be accepted. Many of the authors understand that the use of AI could be of significant help to the Human Resources department, but it's not quite there yet. With the extensive research that the authors did, I get to see many different views and approaches to the use of AI. With this we can see the strengths of the positive outcomes and the negative outcomes of AI. I did not conduct any surveys but I did take a look at some outcomes of surveys for the Pew Research Center conducted (Rainie). The timing of data collection across my sources is an essential component for this research. Due to the fact each study/research was conducted during a different period, the factors in which the data was gathered influences both its relevance to the pros and the cons of AI from all the sources.

The outcome from this research is that AI can be a very efficient tool but it is not yet ready to be used in HR management. The filtering that AI does could target certain races and alter their chances of receiving a job. From the research outcomes I've seen for example with Pew Research Center it was clear Americans didn't feel comfortable with the idea that AI would be the one reviewing their application. "When it comes to seeing potential in job applicants and assessing their possible fit with co-workers, Black, Hispanic, and Asian adults are all more likely than White adults to say AI would be an improvement over human judgment. On the other hand, Black and Hispanic adults are *less* likely than White or Asian adults to think AI would be an improvement over humans in treating applicants in the same way"(Rainie,pg.1). It is clear that a certain group would not be targeted by the use of AI in HR. This makes it an extremely unfair system to start using AI in HR.

Overall AI is not an efficient tool that should be used in the Human Resources Department. It has proven to need more modifications done to it to erase the bias this tool could present altering many people's lives.

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Annita Dube

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EUReka! Course: GECRT-AH 113 - Text Technologies

Enhancing Cancer Patient Care through Natural Language Processing: Extracting Insights from Electronic Health Records

Natural Language Processing (NLP), a branch of artificial intelligence that enables computers to understand and interpret human language, presents new opportunities to enhance cancer care. Electronic health records (EHRs) contain vast quantities of patient data, but much of it is in free-text form, making it difficult to analyze effectively. This research investigates the question: *How can NLP be applied to extract meaningful insights from EHRs to improve outcomes for cancer patients?*

Through a qualitative study involving a comprehensive review of academic literature and analysis of case studies, this project explores the use of NLP tools such as entity recognition and sentiment analysis in oncology settings. These methods enable healthcare professionals to detect trends, assess patient progress, and support personalized treatment strategies. Findings suggest that integrating NLP into clinical practice could improve diagnostic accuracy, facilitate early identification of complications, and enhance the overall quality of care.

While the potential benefits are significant, challenges remain particularly around data privacy, complex medical terminology, and integrating new technologies into existing healthcare systems. Despite these limitations, this research highlights the promise of NLP in oncology and its ability to transform unstructured data into actionable clinical insights. Continued investigation and targeted implementation could further improve patient-centered care in cancer treatment.

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Hashtag Power on BLM Movement

Introduction: Social media has been used for greater things, not just to connect with friends, it has opened a space for people to speak out about issues going on around the world. Hashtags have been one of the most used methods to spread messages online, for example #ICantBreathe, which became popular after George Floyd's death. That hashtag helped bring attention to police violence in the black community, supporting the BLM movement.

Research Question: How does text-based activism, like hashtags, influence social movements on Black Live Matter, for example the #ICantBreathe movement?

Methodology: The methods used for this research were reading different articles with data of past protests and how social media has helped spread these events that happen around the world.

Key Findings: The most important discovery that I made was finding how quickly protests occurred after George Floyd's death, which was an event that quickly spread around mainly through social media. Protests began the day right after Floyd's death, this is a key piece of information because it demonstrates the rapid work of social media and its outcomes.

Conclusions: Overall, my conclusion for this research is how text-based activism, specifically hashtags, has become very powerful and a way for people to be heard. Movements like #ICantBreathe have been examples of how short messages can quickly spread and bring people together online to fight for change in the world. Some implications I have come across have been trying to find movements that continue to be active with a mass of people and not it just being for the moment.

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Liam Funk

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The Effects of Translation on the Interpretation of the Bible

This project investigates the translational differences between the King James Version (KJV), English Standard Version (ESV), and Common English Bible (CEB) and their impact on reader comprehension. While numerous Bible translations exist, these three represent distinct approaches to translation. Existing literature lacks a direct comparison of these specific translations regarding their adherence to original languages, writing style, and suitability for modern readers. This study aims to address this gap. The expected findings suggest the KJV employs archaic language best suited for experienced readers “the results indicated that the KJV differs from the NIV in terms of being more formal, harder to read, while actually being more positive in its emotional expression” (Thomas Darrin & Roger O’Connor Valenzuela 268), the ESV offers a more literal translation for modern readers “the ESV often sacrifices English idiom for the sake of preserving word-for-word correspondence to the original languages, even when it makes little sense to do this” (Steinmann 115), and the CEB prioritizes conveying original meaning in accessible language, potentially diverging from traditional religious terms “the purpose of the CEB is to use clear English vocabulary that is understood at a seventh grade level by those who have no church background” (Westfall 905). The research methodology will involve literary criticism and thematic analysis, comparing three scriptural translations, as highlighted in these sources. This research anticipates demonstrating that different translations cater to varying reader needs and levels of familiarity with the Bible, potentially indicating the superiority of certain translations for specific audiences.

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Grace Hensley

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Rethinking Resume Screening: The Negative Effects of AI in Human Resources

As the use of Artificial Intelligence has rapidly increased in recent years, and humans have begun to integrate it into the realm of Human Resources, the hiring process has changed significantly. HR managers are now able to use AI to screen resumes in hopes of increasing efficiency, and making it easier to find specific qualifications within the resumes. While this could lead to potential benefits to both HR professionals and applicants alike, this study seeks to demonstrate that the use of AI in Human Resources negatively affects female applicants. The question that this study aims to answer is as follows: How has the use of Artificial Intelligence by Human Resources professionals unintentionally hindered the hiring process and created bias in regards to the female applicants that apply for entry level positions? With this question in mind, original data was collected in this study with the goal of determining whether or not the AI tools used in resume screening are biased against women. The data collected in this study mainly resulted in qualitative data, and was therefore analysed thematically. The experiment conducted involved asking ChatGPT to generate a resume using language typically used by women, and a second resume using language typically used by men. When asked to compare the two resumes, ChatGPT claimed that the male applicant had better qualifications in every department, even though the only difference between the prompts was the word “female” and “male” (OpenAI). Based on the data mentioned above, it can be concluded that the AI tools used by HR professionals to screen resumes can be biased against women, and should therefore be used with extreme caution, or not at all. Overall, this study has contributed to the ever increasing research on the use of Artificial Intelligence in Human Resources, and aims to spread awareness to applicants and HR professionals on the negative impacts that AI could have on their careers.

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Janet Hernandez

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Ideology or Machismo: Insights into Campaign Rhetoric and Latino Men's Political Engagement

In the 2024 U.S. election marked a shift in Latino men's political engagement, revealing the intersection of cultural narratives and voter behavior. As a Hispanic woman, It caught my attention, how given machismo actions, media framing, and algorithmic targeting influenced this group's ideal perceptions of leadership. This study explores the dynamics between immigrant generational status and political preferences, focusing on themes such as economic concerns and systemic bias on gender. While some Latino men saw Trump's straightforward, like a "businessman" rhetoric as an asset, others remained influenced by cultural barriers to female leadership, like recently in Mexico's recent election of a female president, and historically she isn't the first one. Using qualitative content analysis, this work breaks down themes in media reports, interviews, and campaign materials to understand how cultural and gender dynamics impacted Latino men's political choices. By addressing gaps in representation and uncovering the narratives that resonate or fail with this demographic, this research contributes to ongoing conversations about inclusivity and systemic change in political campaigns. It also raises the question into what could've the Democratic party done better?

Shelby Jackson

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Gender and Standardized Testing: Examining Differential Impacts on

Standardized tests are commonly used to evaluate student performance, but they often fail to account for how different formats may impact male and female students in distinct ways. This research explores the question: How do standardized test formats influence the learning processes and behaviors of male and female students?

Understanding these differences is important for achieving fairness in educational assessments. This study will use a qualitative approach, analyzing academic literature, psychological reports, and educational data to explore these differences in test-taking strategies and cognitive responses. Using thematic analysis to examine documents and records, the research finds patterns in student behavior and performance associated with various test formats.

“This research generally shows that male students score higher, on average, than female students on the multiple-choice portions of tests, whereas female students score higher, on average, on the written portions of tests.” (Beller & Gafni, 2000) Additionally, the research “A meta-analysis of twenty-eight studies similarly found larger cortisol responses to stressors in males than females.” (Sauro, Jorgensen, and Pedlow 2003) Which can negatively affect their performance. Neurocognitive studies also suggest that stress impacts all students' memory and concentration during tests. “The “distraction” model can be understood in terms of a distraction caused by the pressure to do well on a demanding task, making it difficult for a person’s working memory to perform optimally.” (Hirsch 2016)

The study concludes that standardized tests may favor one gender’s cognitive strengths, urging more inclusive formats to reduce achievement gaps and promote equity in education through the development

Madeline Knapp

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Exploring the Marketing Strategy Differences Between McDonald's and Burger King: Impact on Advertising Effectiveness

Introduction: This research explores the contrasting marketing strategies of two global fast-food giants—McDonald's and Burger King—and examines how these strategic differences impact the effectiveness of their advertising. Given their iconic rivalry and reach, understanding how each brand positions itself in the market reveals insights into consumer behavior, brand perception, and strategic advertising outcomes in a competitive landscape. How do the marketing strategies of McDonald's and Burger King differ, and what effect have these differences had on the effectiveness of their advertising? This study aims to explore how these differing approaches have influenced consumer perception, engagement, and overall brand performance in the fast-food industry.

Methods: I used a mixed-methods research design of qualitative and quantitative comparative analysis to analyze the marketing strategies of McDonald's and Burger King, focusing on historical and contemporary campaigns. I completed a content analysis of advertisements, market reports, brand studies, and academic articles on fast-food marketing. I used data analysis techniques such as a thematic content analysis of advertising styles and messaging, social media engagement analysis, return on advertising spend evaluation, and evaluations of sales fluctuations during and after advertising campaigns.

Results: McDonald's advertisements tend to focus on emotional connection, family themes, and an emphasis on convenience and consistency. In contrast, Burger King often employs humor, controversy, and bold, unconventional campaigns to capture attention. Burger King's edgy campaigns generate high short-term engagement but mixed long-term brand favorability. McDonald's campaigns have higher recall and are generally viewed as more trustworthy and family-friendly. Engagement metrics favor Burger King but return on advertising spend and sustained brand preference tilt toward McDonald's.

Conclusion: While Burger King's marketing is disruptive and gains immediate attention, McDonald's long-term, emotionally resonant strategy proves more effective in maintaining customer loyalty and brand strength. The research suggests that brand tone, audience targeting, and message consistency are critical in shaping advertising effectiveness.

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Jerson Lopez

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Research Project Abstract

This research explores how translation methodologies influence the interpretation of the Bible, highlighting the impact methodological choices have on a reader's understanding. In this research, the significance is found in the interpretation, which plays a powerful role in shaping personal beliefs and theological perspectives, making it critical to examine how translation strategies—such as dynamic and formal equivalence—can either clarify or distort original meanings. The central research question guiding this study is: How do methodologies and translations of the Bible affect interpretation? Through multiple methodologies, the project utilizes the historical-critical method to analyze original biblical contexts, literary criticism to study narrative structure, and translation theory combined with comparative analysis to assess how different translation styles influence meaning. Additionally, hermeneutical frameworks, to study interpretation, such as reader-response theory and grammar provide insight into the interpretive process. The key findings will suggest that the method of translation and the interpretive lens applied significantly shape reader response. While interpretation allows individuals to connect with the text on a personal level, it also presents the risk of miscommunication or theological misdirection. The tension between preserving original intent and making texts accessible shows the complexity of biblical translation. In conclusion, this study highlights the beauty and challenge of interpretation, demonstrating that translation is not a neutral act but a powerful tool that shapes understanding. These findings emphasize the importance of critically engaging with translated texts, especially when exploring foundational religious scriptures.

Julian Matras

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The Necessity of Transparency from Social Media Companies: Social Media Privacy Policies and User Data Privacy

As social media platforms like TikTok and Meta (Facebook and Instagram) grow in popularity, concerns surrounding how these companies collect and use user data, including personal information and content engagement, have become increasingly relevant. This project investigates the degree of transparency social media companies provide through their privacy policies by analyzing the language used in the privacy statements of TikTok and Meta. It compares the syntax and word choices used to describe data collection and usage methods with third-party reports detailing actual data collection practices.

Using a mixed-methods approach, this study incorporates both quantitative and qualitative elements. Word frequency analysis through Voyant Tools highlights key areas of emphasis within the policies, while textual analysis uncovers how companies use language to frame their data practices. These findings are compared with third-party reports, including legal and investigative sources, to determine discrepancies between stated policies and real-world practices.

Existing literature provides broad overviews of social media privacy policies or focuses on legal and economic implications of user tracking. This project builds upon that foundation by offering a focused, comparative analysis of two major companies and emphasizing the gap between policy language and real-world data usage.

The anticipated outcome is that both TikTok and Meta's policies employ vague or strategically ambiguous language to describe practices that are more extensive than they appear. These findings underscore the need for clearer, more direct social media privacy policies. This project aims to advocate for increased transparency to protect user data in a digital age.

Wendy Reyes

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Through the Media's Eye: The Portrayal of African Americans Through Kansas City's Media Before the Abolishment of Segregation

As everyone knows, the media often distorts and misrepresents information to the public to support a particular viewpoint. To prevent future persecution of specific target groups and stop history from repeating itself, it is vital that the public understands the evidence that the media has left behind, depicting oppression of African Americans. What influence did news articles have on the perception of African Americans in Kansas City in the early 1900s before segregation was declared illegal in 1954? I closely read and examined historical news reports from Kansas City in the early 1900s that discussed the Black community or any African American. I tried to determine how the media presented them and what traits they were perceived to possess. After reviewing and analyzing each source, I concluded that all the articles I collected mentioning the Black community fit at least into 1 of 3 categories. These include articles reporting oppressive behavior, articles arguing for oppression, and articles which have a sense of neutrality in the issue but incorporate bias by presenting the white man's perspective. Most of the sources fall into the final group, which includes biased interpretations of news that claim to be neutral on this issue. The stories take a neutral stance, but they exclusively discuss the white side of the story, never the black side. The language used in these publications to stereotype African Americans demonstrates the bias that the authors incorporate into their writing. The amount of data examined to reach this conclusion is one implication of my research. Despite compiling a list of references, I am generalizing the claim that the Black community in Kansas City was misrepresented by the media at the time. Additionally, relying solely on the evidence provided by the UMKC library may be restrictive because additional historical data can be analyzed using other sources, such as the Kansas City Public Library.

Mariana Simental Grijalva

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Translated Tales: Aiding Spanish-Speaking Students Success in the Classroom

In this project, I evaluate how translated children's books impact Spanish-speaking students' success in the classroom. Many public-school classrooms prioritize English, often excluding our students' diverse identities. The lack of representation creates unmotivated students hindering their abilities to succeed. Therefore, my research question is: In what ways do translated children's books impact elementary aged Spanish-speaking students' success in the classroom?

To explore this topic, I reviewed literature discussing the benefits of translated books and the impacts of teaching methods. Statistically, I analyzed third grade English Language Arts (ELA) from Kansas City Kansas Public Schools ("Performance Level Reports") and the Dual Language schools from the Kansas City Public Schools ("DESE Web").

My findings revealed that current teaching methods neglect the needs of bilingual students, limiting their development of literacy skills. The ELA scores in KCKPS reflect these issues as many Spanish-Speaking students struggle with English literacy ("Performance Level Reports"). However, using translated children's books can affirm these students' identities as bilingual learners, enhancing the classroom experience. Students encouraged to use their cultural knowledge improve their skills in both their native and English language while develop empathy and respect for others.

Even so, data from KCPS Dual Language schools demonstrate that even with bilingual instruction, Spanish-Speaking students still face challenges on standardized assessments, suggesting that external factors may influence test performance ("DESE Web"). In conclusion, while translated books can be successful in aiding student success, more research is needed to explore how bilingual instruction can be more effective in urban settings.

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Left Behind Before They Begin: Tracing Educational Inequity from No Child Left Behind to Kansas City Classrooms

Educational inequality remains one of the most pressing civil rights issues in the United States, particularly affecting college access for marginalized students. This research investigates the question “How NCLB has shaped the historical and ongoing education gap in America, specifically regarding college admissions of High School students in the Kansas City metro area over the past 25 years?” It is imperative that we address this topic because it bridges national policy with local educational realities, revealing how systemic efforts at reform may have yielded uneven or even regressive results. Using a mixed methods approach, the research synthesizes historical legal analysis, policy review, and educational data outcome. Primary sources include data from the National Center for Education Statistics and case studies from Kansas City schools, and secondary sources for socio historical context, including scholarly articles, and legal case summaries. The findings are creatively synthesized into a children’s book format. Key findings suggest that while NCLB produced short term gains in standardized test scores, these improvements did not translate into long term increases in college admissions and patterns of school resegregation, funding inequalities, and racial tracking continue to undermine the policy’s intent to close achievement gaps. This research concludes that although NCLB was a well intentioned reform, its reliance on standardized testing and lack of structural change may have exacerbated existing disparities. By presenting these findings in the form of a children's book, the project aims to make complex policy impacts accessible and foster dialogue about educational justice in the U.S.

Eli Vogt

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Website Cookies: A Sweet Treat or a Sour Taste on the Web?

In the era we live in today, website cookies are often accepted without any question from the user. These “cookies” are small files of data that contain information about your previous website history to enhance your user experience. While they in fact improve user experience, their use by U.S. government websites raises concerns about privacy and constitutional protections. This study will take a dive into how website cookies are used by government websites and if they are a breach of privacy under the Fourteenth Amendment’s due process clause. The main research question for this study asks: *To what extent can the use of cookies in U.S. government websites be a breach of our personal privacy?* To conduct this study, I used a mixed method approach of both quantitative data and qualitative analysis. Quantitative data identifies what cookies are implemented in the websites while qualitative will explore their privacy policies and if they align with our constitutional protections. Preliminary findings showed that not all government websites have the same privacy policies and used the same website cookies. Additionally previous research has highlighted that website cookies can cause potential “chilling effects” on their users, limiting their usage of the websites. (Stoycheff) As a whole, this research will help to provide the public with more understanding about what cookies do when you accept them and if they are an invasion of privacy. Along with this, it could also create a push more accountability in federal privacy policies and government websites.

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David Zahnter

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The Impact of In-Vehicle Car Voice Recognition Systems on Driver Safety: Accents, Tasks, and Performance

As voice recognition technology is increasingly being used in contemporary cars, its potential to enhance safety by reducing manual distraction is under heightened scrutiny. The present study explores how voice recognition influences driver performance and safety as a function of command complexity as well as different users' accents. The main research question for this research is: "How do car voice recognition systems influence driving performance in normal, complex, and emergency driving conditions, especially for drivers with regional or non-native accents?"

Through a qualitative literature review, the research combines new, peer-refereed works in system reliability, user diversity, and driver-vehicle interaction. Some sources include research on reducing multimodal distraction, recognition improvement via deep learning, and experimental works on verbal task interference under stress. The study confirms that voice systems enhance safety with simple tasks through audio control but compromise on their reliability while processing complex speech directions or under environments with time stress, specifically when drivers' accent patterns are linguistically different from vendors' training.

Results show speech recognition errors not only risk safety but increase cognitive load and frustration as well. Accent distinction is a universal impediment to equitable system execution. The study concludes that voice-operated interfaces reduce physical interference but are restrained by current technical limitations and limited accommodation of human variation.

This research advocates greater design, inclusivity and sensitivity in future systems and makes pragmatic suggestions to developers as well as safety regulators. It also identifies some of the most important areas where further empirical research is needed to make such systems equally advantageous to all drivers.

Beck Zaitz

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EUREKA! Course: GECRT-AH 113 - Text Technologies

Do Unions Dream of Electric Sheep?: The Implications of the Rise of AI in Film and Television

From May to late September of 2023, the Writers Guild of America was on strike. This overlapped with the Screen Actors Guild strike. Artificial intelligence played a large role in both strikes and the negotiations surrounding them. Union members were afraid that their work and likeness would be used to train AI to eventually replace them. How does the increased use of AI in entertainment industries such as film and television affect the workers of these industries? The methods used in this research consisted of analysis of interviews from union members and others affected by the strikes and analysis of writing done on the implications of increased AI usage in these fields. Many of these interviews and prior analyses showed clear common through lines. Workers in these industries were not being given livable residuals due to the rise of streaming services and feared AI models being trained to replace them without compensation for their likeness or work being used. For actors, AI is being used to take the autonomy over the actors work and deprive them of control over their portrayal. Background actors will also be put almost completely out of work due to studios scanning them once and using their likeness without paying them. For writers, AI is being poised to replace them, while being trained on their existing work. If the advancement of AI in these industries continues with no regulation, it will result in reduced hiring of actors, background actors becoming obsolete, writers being put out of a job, and an overall loss of human creative input in the film and television industries.

GECRT-SC 101
How Do I Live in A Changing World?

Steven Bhakta, Mohammad Alqattan, Alyssa Rankins, Kathryn Ross & Dannah Warner

Faculty Mentor: Julia Snyder

EUReka! Course: GECRT-SC 101 - How Do I Live in A Changing World

Impact of Antigenic Drift and Shift on the Influenza Virus

This project investigates how antigenic drift and antigenic shift within influenza viruses influence the efficacy of seasonal influenza vaccines, highlighting the public health challenge of adapting vaccines to continuously evolving viral strains. We approached this by analyzing epidemiological data from CDC influenza surveillance reports, specifically examining weekly infection rates, incidence of specific viral strains, hospitalization patterns, and mortality data from recent influenza seasons. Results reveal a clear relationship between increased antigenic drift and diminished vaccine effectiveness, exemplified by a notable decrease in efficacy during the 2014–2015 influenza season. Additionally, periods marked by antigenic shifts, such as the 2009 H1N1 pandemic, show significantly higher rates of influenza-related hospitalizations and deaths compared to typical seasonal outbreaks. Recent data from the 2024–2025 influenza season underscore these findings, illustrating a sharp increase in influenza-positive cases predominantly driven by evolving viral strains, particularly A(H3) and H1N1 subtypes. CDC mortality surveillance further confirms the variability and heightened risk associated with new or significantly mutated influenza strains.

These results underscore a critical need for improved adaptability in influenza vaccine formulations, potentially through broader protection approaches such as a universal influenza vaccine. Enhancing global surveillance and refining vaccine-strain selection processes will be essential to effectively manage emerging influenza variants. Moreover, ongoing research towards universal influenza vaccines appears increasingly necessary to ensure consistent and durable immunity across seasons. Overall, our research highlights the importance of investing in proactive vaccine strategies and innovations, essential for mitigating future influenza outbreaks and reducing their associated global health impact. Strengthening adaptive vaccine technology and surveillance infrastructure is paramount to protecting public health in the face of evolving viral threats.

Ace Britton, Brianne McGovern, Eli Vogt, Lia Smith, & Hannah Woods

Faculty Mentor: Julia Snyder

EUReka! Course: GECRT-SC 101 - How Do I Live in A Changing World

Rabies: The Transmission From Animals to Humans

Rabies is a virus that targets the central nervous system and is transmitted by animals through their saliva by a bite or other open wound. In industrialized and lower-middle-income countries these animals and rates of transmission vary. We could determine which species infected humans in various countries by analyzing death and infection rate data sets regarding different animal populations. Our data indicated in industrialized countries, like the United States, the main animals responsible for transmitting rabies include bats, foxes, raccoons, skunks, and dogs. In lower-middle-income countries in Africa and Asia, the main animals for transmitting rabies include dogs, bats, and cats. The transmission and infection rates are much higher in countries in Africa and Asia than in countries like the United States. In countries with less industrialized healthcare systems, less human and animal vaccination, more wild animals, and more rural areas, animal transmission and infection rates are higher. Analyzing and understanding animal species and their contributions to rabies transmission can help to control this virus better and mitigate future deadly outbreaks.

Sol Disney, Grace Hensley, Desye Stewart, & Kam Yarbrough

Faculty Mentor: Julia Snyder

EUReka! Course: GECRT-SC 101 - How Do I Live in A Changing World

The Different Effects of Ebola on Humans and Non-Human Primates

Orothoebolavirus- also known as the Ebola virus- is a fatal disease that impacts humans and primates and is primarily hosted and transmitted by fruit bats in sub-saharan Africa. Ebola can be contracted when an individual comes into contact with the bodily fluids of another infected individual. This study is intended to showcase the various ways that the Ebola virus negatively impacts different species. We collected qualitative and quantitative data and used it to observe different aspects of the Ebola virus in humans, monkeys, and fruit bats. The result of the data and research collected indicated that the Ebola virus negatively affects both humans and non-human primates, while fruit bats commonly act as a carrier for the disease. While both species suffer from the disease; non-human primates are impacted at a much higher rate compared to humans. In addition to multi-organ failure, non-human primates can experience brain damage and even death. Monkeys are significantly more susceptible to contracting the Ebola virus and are much more likely to experience negative symptoms leading to a 98% mortality rate in affected populations. In addition, Non-human primates can be infected with one out of several various strains of the virus, while humans are susceptible to four strains. The treatment for Ebola virus for humans and non-human primates is available by vaccination; there are currently two working vaccines that are certified by the World Health Organization. Because fruit bats are hosts and carriers of the virus, there are no vaccines for the population. Completing more research is crucial in learning more about the Ebola virus due to the various impacts it leaves on vulnerable populations. To summarize, the Ebola virus negatively impacts both humans and nonhuman primates in many ways, but due to the rapid collection of data and increased awareness on the virus, vaccines are being developed that aim to control the spread of the virus. Understanding what the Ebola virus is and how it affects humans, monkeys and fruit bats will help save lives, and understanding the virus more will lead to better strategies to protect individuals from the Ebola virus.

Taiylor Hackett-Kemp, Brooke Henderson, Ashley Rosales, & Kenia Herrera

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EUReka! Course: GECRT-SC 101 - How Do I Live in A Changing World

Hantavirus

The purpose of our project is to figure out how people in the western United States can reduce their risk of exposure to the Hantavirus. To achieve this, we plan to analyze reported cases in the western United States compared to those in other states using line graphs. These graphs clearly illustrate the significant gap between the number of reported cases compared to the western United States and the rest of the country. The western region has more reported cases indicating that Hantavirus has a more suitable transmission environment. Our research identifies key contributing factors. First, deer mice, the primary carriers of the Hantavirus, are more common in western states. Additionally, a spike in Hantavirus cases is observed during the warmer months. Which boosts the deer mice population with human increases in outdoor activities and the rodents seeking shelter. Together, these factors create higher risks of transmission during warmer seasons. The climate changes in western United States plays a significant role. The warm climate condition creates an environment that the virus can thrive in. Understanding these key factors provides insight into why the western region faces higher risk. This matters because we want to see the factors that affect the gaps between the different states, and we can this virus can minimize outbreaks. By addressing these environmental and behavioral factors, we aim to develop preventive measures that can close the gap in case numbers across regions, ultimately reducing the risk of outbreaks and saving lives.

Lauren Heath, Bethany Zierbarth, Constantin Williams, Lizbeth Carera-Garcia, & Leo Taveres-Mercado

Faculty Mentor: Julia Snyder

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1918 Influenza Pandemic (Spanish Flu)

In 1918, a deadly virus broke out, killing millions of people throughout the world, changing everyday life, and became known as the Spanish Flu, which was one of the deadliest viruses in history. The purpose of our project is to figure out what made the Spanish Flu such a deadly virus. We learned that the Spanish Flu originated in the United States and infected primarily young and elderly people, especially immunocompromised. Spanish flu is a strain of influenza, including general flu symptoms such as muscle fatigue, fever, dry cough, sore throat, chills, runny nose, etc. The virus travels down your respiratory tract and causes fluid buildup in the lungs, making breathing almost impossible and essentially drowning the infected person. We investigated trends in mortality rates within different age ranges. We found the data followed a U-shaped or W-shaped pattern that looked at mortality rate, with high infant death rates, low childhood mortality, a gradual rise in adulthood, and a steep increase after age 60 throughout numerous countries. What made the virus so deadly was a combination of factors, such as unclean living conditions and the lack of immunity. The Spanish flu pandemic ended by the summer of 1919 because the infected either died or developed immunity. There have been several other outbreaks, such as other variations of the flu, since 1919, but none has been as deadly. A proper licensed flu vaccine appeared in the 1940s, and discoveries of what made the Spanish flu so deadly weren't brought to light until 2008. Looking into the future, the Spanish flu has allowed for the evolution of other different strains of influenza relating to the original virus. Influenza is still affecting people to this day and will continue to spread.

Sam Justice, Bianka Morgan, Jadan Smith, Hailey Liu, & Jacqueline Fernandez-Patlan

Faculty Mentor: Julia Snyder

EUReka! Course: GECRT-SC 101 - How Do I Live in A Changing World

The Influence of Smallpox Eradication on Infectious Disease Research and Vaccine Development

Smallpox has been responsible for millions of deaths worldwide over centuries. It is also known as the variola virus and has an incubation period of seven to nineteen days. It is spread through direct contact with respiratory droplets, direct contact with someone carrying the disease, or through direct contact of a contaminated surface. Some symptoms include: fever, head and body aches, vomiting, progressive skin rash, bumps, scabs, and/or inflamed warts. This project explores the history of smallpox eradication and how influential it can be for current infectious disease research and vaccine development. Using a mixed-methods research approach, we investigated historical and epidemiological data from global health organizations such as WHO and CDC. The results show a global decline in the prevalence of smallpox beginning in the 1960s, leading to the eradication of the disease by 1980 through mass vaccination. Visualizations of global vaccination patterns also highlight the vaccine's utility as public health intervention. The virus's single human host and its unorthodox cytoplasmic replication mode were key factors in eradication efforts. These findings highlight the potential of using models established through smallpox eradication to inform responses to emerging disease outbreaks, including recent pandemics like the COVID-19 pandemic. Our conclusion reinforces that vaccination, if applied strategically, is an anchor of global disease control. Understanding past success can guide enhanced public health messaging, trust building, and preparedness for emerging diseases.

**Madeline Knapp, Daniela Castro-Cerrera, Samantha Molina, Ingrid Rosales
& La’Raeya Williams-Pierce**

Faculty Mentor: Julia Snyder

EUReka! Course: GECRT-SC 101 - How Do I Live in A Changing World

The Fight Against Yellow Fever: A Century of Medical Innovation

Yellow fever is a deadly virus that has been around for thousands of years and transmitted by *Aedes* mosquitoes; the name for yellow fever results from the yellowing of people’s skin. We explored the evolution of scientific research in combating yellow fever, focusing on the historical and modern innovations that have shaped prevention and treatment efforts over the past century. We conducted a historical and thematic analysis of peer-reviewed studies, global health reports, and epidemiological data about yellow fever from the 1800s to the present day about recorded cases in different geographical areas, including the Americas and Africa. This data shows that there were severe outbreaks in the past but have since decreased steadily now only a few countries getting cases a year thanks to significant milestones in research such as the identification of *Aedes aegypti* as the vector, the development of the 17D vaccine in the 1930s, and increased global vaccination coverage in the 21st century. Research also reveals a shift from reactive treatment to proactive immunization and vector control. Gaps remain in access to vaccines, long-term efficacy studies, and outbreak prediction tools. The findings suggest that while scientific innovation has drastically reduced yellow fever mortality, continued investment in surveillance, vaccine technology, and community engagement is essential. Outbreaks still occur in under-resourced areas, often exacerbated by climate change and inconsistent public health infrastructure. Scientific progress has made yellow fever a largely preventable disease, yet eradication remains out of reach without closing global equity gaps in health access and research. Understanding the century-long evolution of yellow fever research helps guide current efforts in epidemic preparedness, especially for vector-borne diseases in a changing climate.

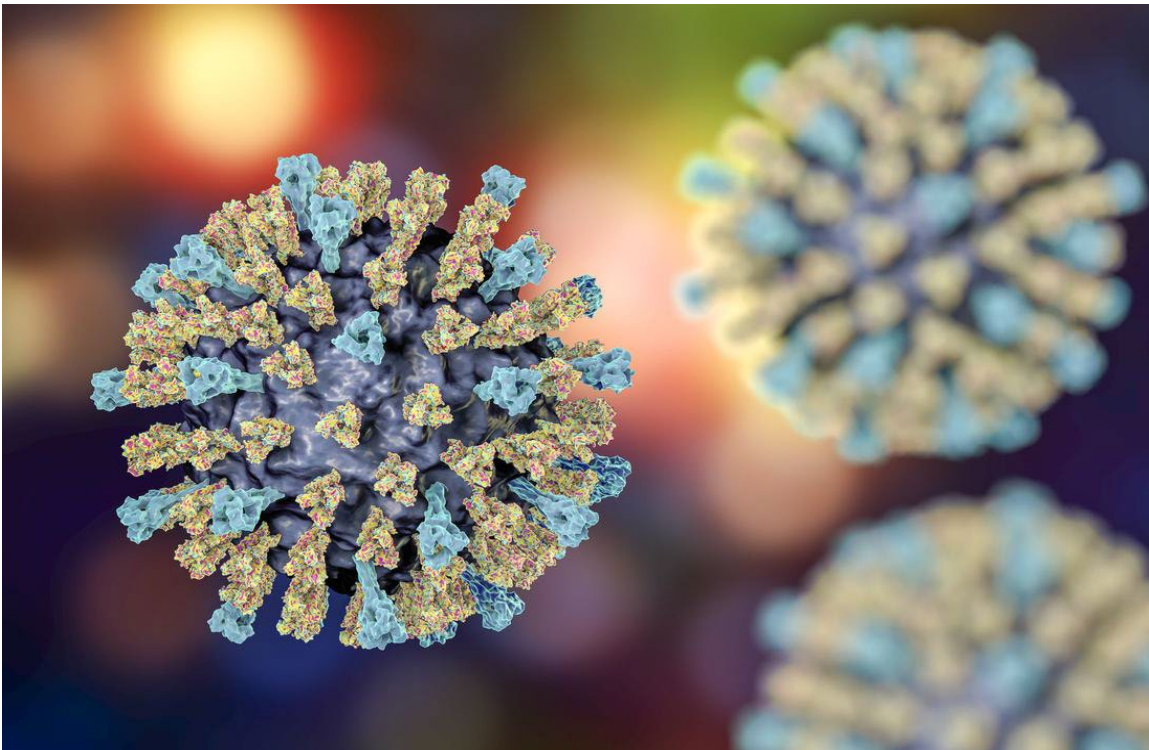
Vanessa Macharia, Yaretzi Alaffa-Corona, Corinne Fogarty, Zach Hardee, & Vincent Spriggs

Faculty Mentor: Julia Snyder

EUReka! Course: GECRT-SC 101 - How Do I Live in A Changing World

Vaccination Status and the Effects on Texas Measles Outbreak

We have researched the measles outbreak in West Texas and bordering Eastern New Mexico counties. US measles infection rates reached a peak in 1958 at nearly 763,000 cases, and 552 deaths, but there has been a recent increase in outbreaks nationwide. Our research on this specific outbreak has a specific focus on vaccination rates and other related statistics. We show clearly that MMR vaccination rates and measles rates are inversely related. Our approach to this statement was directed by the statistics such as the analysis of incidence of measles infections, vaccination status, measles outbreak location, and age groups affected. From these statistics we have determined that MMR vaccination rates are down in affected counties. The situation is a public health concern given that Measles occurs drastically more often in unvaccinated individuals (usually children), and the Texas outbreak has already caused 2 deaths (as of 4/1/2025). From our data we can conclude the following- that high vaccination rates are, and have been, an effective safety measure against measles outbreaks in vulnerable populations. This, of course, stands in direct contrast with current Secretary of Health, RFK Jr's position on vaccines, having stated falsely that "[the measles vaccine] causes deaths every year". For the sake of public health, there needs to be more effective outreach on Vaccines especially in marginalized communities.



**Allison Martinez, Betsaida Romero-Agustin, Isabella Fernandez-Adame,
Linda Whitsell, & Natalia Rosales**

Faculty Mentor: Julia Snyder

EUREKA! Course: GECRT-SC 101 - How Do I Live in A Changing World

Carcinogenic Potential of Human Papillomavirus (HPV)

Human papillomavirus (HPV) is the most prevalent sexually transmitted infection worldwide. This fact along with research indicating the increased risk of developing various urological cancers in men and women led to the development of a vaccine. Our interpretation of data in terms of HPV research focuses on the different perspectives of who it affects, prevalence, and the factors that lead to its carcinogenic nature. Our results show us that HPV is more common in younger women (14-30), than younger men the same age. While the percentage increases for men from age (30-59) and decreases for women the same age. People who had HPV infections had a 2.321 higher chance of getting PCa (Prostate cancer antigen) Zolfi E et al. (2025). HPV can cause a variety of cancers, by several different oncoprotein's that change signaling pathways by integrating into the host genome and altering gene expression. This data shows that men at a higher rate contract HPV at an older age. The lack of research and data on how HPV leads to urological cancer overall. There is more research on the cancer HPV causes in men based on my research showing me there is a more of a likelihood of HPV causing cancer in men. As the research may be more limited on the specific mechanisms that lead to cancer overall the lack of research on it in women seems to be prevalent. The research that we have come across shows how common HPV is and how it can be linked to cancer. By spreading awareness and informing others on the vaccine can help improve and possibly save the lives of people who are at risk of HPV.

Fatuma Mohamed, Emma Murray, Vanessa Rimpson, & Marissa Woodruff

Faculty Mentor: Julia Snyder

EUReka! Course: GECRT-SC 101 - How Do I Live in A Changing World

Adenovirus

The purpose of our project is to spread awareness about the human immune system to recognizing and responding to adenovirus infection. We collected some data including infection, recovered, and location data. Spending time learning how adenovirus invades the host cell, the immune response triggered, and the progression of the virus. Learning shocking facts like how you can have cold-like symptoms, but then later develop worse symptoms including pink eye or even a bladder infection. As there is no cure for Adenovirus there are steps to prevent it. As the average age to obtain this virus is ages 6-17. Adenovirus is a group of viruses that affect the respiratory tract by causing respiratory illnesses like a common cold, bronchitis, pneumonia and can cause pink eye. Adenovirus can affect anyone. There is no current treatment, but it is recommended to stay at home and use over the counter medication to treat symptoms. Learning that the immune response recognizes adenovirus using PRRs Triggers interferons and inflammatory cytokines to limit viral spread NK cells help clear infection cells that evade immune detection. Adaptive Immune Responses include CD8+ T cells killing infected cells via MHC-I recognition –CD4+ T cells enhance immunity through cytokine signaling B cells produce neutralizing antibodies targeting adenovirus capsid proteins. While immune Evasion by Adenovirus includes -Downregulates MHC-I to avoid cytotoxic T cells –Blocks interferon pathways to reduce antiviral defenses –produces anti-inflammatory proteins to suppress immune responses. The bigger picture/future looking leads us to map immune responses at the cellular level in different tissues, identifying host factors essential for adenovirus replication or immune evasion. While also allowing small molecule drugs targeting viral replication machinery and tailoring treatments based on patient specific immune profiles.

Levora Shelby, Keeli Austin, Megan Myers-Weary, & Marelyn Rivas Perez

Faculty Mentor: Julia Snyder

EUReka! Course: GECRT-SC 101 - How Do I Live in A Changing World

Federal Viral Funding in the Past Decade

Viruses and their research have become some of the most prevalent concerns for society in recent years, especially after the 2020 pandemic. Our research project explores how federal funding for five key viruses in the United States has changed over the past decade. We collected data from federal agencies about research grants awarded to studies of RSV, COVID-19, HPV, HIV, and the Influenza virus. We chose these specific viruses as they're some of the most relevant and influential to modern life. The results of our data have been telling about how current events shape resource distribution. For example, major spikes in COVID and HIV funding are correlated with increased rates of infection and public concern. There are also clear correlations to increases in funding leading to new methods of treatment that are more widely available than privately funded research efforts. Conclusively, the results of our project demonstrate the need, importance, and demand for publicly funded viral research. Without public grants, viral research could lose integral funding to learn how to treat prevalent viruses and how to limit their transmission. The future of publicly funded viral research remains in question. Through this work we hope to examine federal grants as a precedent that has shaped and contained major outbreaks in the United States and express the need for them in the future.

Emily Shoemake, Amira Ahmed, Isabel Velazquez, Robin Deimerly, & Lacey Braun

Faculty Mentor: Julia Snyder

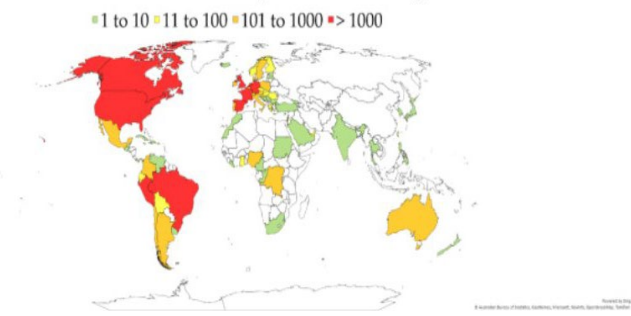
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**How Does the World Respond?:
A Comparative Analysis of The U.S. reactions to Mpox and COVID-19**

From 2014-2022 there was a period of deadly epidemics that turned into global emergencies. In this project, we divulge connections between Mpox and COVID-19 analyzing the acknowledgment of the crisis, the coverage, the vaccination, and policies that resulted from this period. Specifically, this research covers the United States but would expand to countries of varying economic development if time allowed. There is a mixture of qualitative and quantitative data that explains the varying severities of these deadly viruses. For example, the quantitative data shows us that high-income nations secured 70% of vaccines early, while low-income countries had only 2% coverage by mid-2021 (WHO, 2021), and the two viruses were labeled a crisis at different times 2 months for COVID-19 and 6 months for Mpox (Lee, 2022). Additionally and qualitatively, our data shows that stigmas, political beliefs, and the country's economic state contribute largely to vaccination rates. Comparing these viruses and how we, the public and our government, utilize our autonomy can allow us to expose inconsistencies from a cross-cultural and socio-economic standpoint and better prepare ourselves for future epidemics.



Number of confirmed cases by the end of August 2022



Araceli Valle, Tracee Woodard, Maria Barreto-Juarez, & Jazmin Zepeda

Faculty Mentor: Julia Snyder

EUReka! Course: GECRT-SC 101 - How Do I Live in A Changing World

Respiratory Syncytial Virus (RSV)

Respiratory Syncytial Virus (RSV) is an enveloped, nonsegmented negative-strand RNA virus, and the purpose of the project is to know what exactly is RSV and who is susceptible. We approached the project by researching information regarding RSV, such as the age groups affected, infection, prevalence, symptoms, treatment, and prevention. Through our research, we were able to identify groups most susceptible to RSV are infants and the elderly population. These groups contract severe symptoms of RSV due to their immune systems being either underdeveloped or weakened. Symptoms of RSV infection are headaches, sneezing, coughing, fever, congested nose, and bronchiolitis or pneumonia in severe cases. One of the prevention methods of RSV would be the maternal or infant (nirsevimab) vaccine. Other methods include social distancing, good hygiene practices, and wearing masks. Regarding susceptibility of infants or the elderly age increasing, the hospitalization rate increases as well. Vaccinations are effective in preventing RSV infections in infants. In conclusion, RSV is a respiratory virus causing cold-like symptoms that affects all age groups, but can be prevented. In future years, RSV will hopefully have more effective treatment options and prevention methods to prevent any more mortalities or severe cases.

Chaw Yatana, Kya Mwen, Leilani Bustamante, & Maddie Parker

Faculty Mentor: Julia Snyder

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Varicella-Zoster Virus Across Ages: Understanding the Impact on Children and Adults

Chickenpox is caused by the varicella-zoster virus—the same virus that can later reactivate as shingles. This happens because when an individual gets chickenpox when they are a child, the varicella-zoster virus lays dormant in the individual. It can later reactivate when the individual is an adult often when the immune system is weakened, which leads to shingles. The virus causes an itchy skin rash that has red spots and blisters. The purpose of this project was to compare how varicella-zoster virus affects children compared to how it affects adults. This is because when doing our research, we learned that varicella-zoster virus will later develop into shingles once you're an adult. We collected data from health reports from the CDC database, reviewed case studies to learn the patterns in chickenpox transmission between children and adults and researched long-term effects of the virus. We found children recover from the virus without major complications, while adults have a higher risk for more severe symptoms. Our research also showed early vaccinations significantly reduced the severity of the symptoms and the chance of getting the virus. Our findings suggest that vaccination is a key factor in reducing the spread of chickenpox. The number of cases gradually decreased by 97% once the United States began vaccinating children against the virus. Vaccination is crucial to help prevent chickenpox and reduce the risk of shingles later in life. This project emphasizes the understanding of how chickenpox affects both children and adults, as well as the importance of vaccinations that help to prevent the virus.

Aiden Young, Angelica Lam, Christion Wynn, Emmylou Swan, & Yuliana Galindo

Faculty Mentor: Julia Snyder

EUReka! Course: GECRT-SC 101 - How Do I Live in A Changing World

Avian Influenza/Bird Flu

Our group is investigating avian influenza, also known as bird flu, a highly contagious viral disease infecting birds with potential to also infect humans. Avian influenza symptoms in birds usually include respiratory problems and rapid mortality, whereas symptoms in humans range from mild to moderate. Mild symptoms include eye redness and irritation, mild fever, cough, sore throat, etc. Moderate symptoms include high fever, shortness of breath or difficulty of breathing, seizures, etc. Bird flu can bring complications to humans such as pneumonia, respiratory failure, sepsis, inflammation of the brain, and more. We collected and analyzed data to assess the transmission dynamics and risk factors. We used epidemiological data to track the disease outbreaks by collecting information on reported human cases, bird populations, and environmental factors to identify geographic regions with the highest infection rates as well as detect trends in disease spread over time. We can identify risk factors and possible transmission pathways by analyzing trends like peak outbreak periods and correlations between bird population density and human infection rates within different regions. This information is crucial for developing targeted prevention strategies, improving public health surveillance and ultimately mitigating the risk of future outbreaks.

25TH ANNUAL SYMPOSIUM OF UNDERGRADUATE RESEARCH & CREATIVE SCHOLARSHIP

Alphabetic List of Undergraduate Researchers, Scholars, & Artists

Name	Poster / Location	Presentation Time
Aamir, Mahrukh	24	1:00-3:30 pm
Ahmed, Amira	4	10:00-11:15 am
Ahmed, Fardowsa	37	1:00-3:30 pm
Alaffa-Corona, Yaretzi	30	10:00-11:15 am
Almutairi, Abdullah	14	10:00-11:15 am
Alqattan, Mohammad	70	10:00-11:15 am
Austin, Keeli	36	10:00-11:15 am
Balentine, Emily	6	11:30 am-12:45 pm
Barnt, Kailynn	43	10:00 am-12:30 pm
Barreto-Juarez, Maria	24	10:00-11:15 am
Barreto-Juarez, Maria	66	11:30 am-12:45 pm
Bashir, Abdalrahman	11	1:00-3:30 pm
Batts, Judy	61	1:00-3:30 pm
Beaupre, Jordyn	14	11:30 am-12:45 pm
Bellman, Thomas	17	1:00-3:30 pm
Benkhadra, Amgad	19	1:00-3:30 pm
Benton, Molly	16	11:30 am-12:45 pm
Bhakta, Steven	70	10:00-11:15 am
Bourquin, Julia	10	11:30 am-12:45 pm
Bowman, Haley	6	10:00-11:15 am
Braun, Lacey	4	10:00-11:15 am
Britton, Ace	46	10:00-11:15 am
Brown, Scott	70	11:30 am-12:45 pm
Bruno, Julia	41	1:00-3:30 pm
Bustamante, Leilani	28	10:00-11:15 am
Butler, Alec	49	10:00 am-12:30 pm
Cado, Gianna	12	10:00 am-12:30 pm

Name	Poster / Location	Presentation Time
Carr, Samantha	51	1:00-3:30 pm
Carrera-Garcia, Lizbeth	16	10:00-11:15 am
Cartwright, Sy	33	1:00-3:30 pm
Castillo, Brandon	14	11:30 am-12:45 pm
Castro-Cerrera, Daniela	42	10:00-11:15 am
Castro-Carrera, Daniela	4	11:30 am-12:45 pm
Clark, Akaria	48	11:30 am-12:45 pm
Cloutier, Tonie	6	10:00-11:15 am
Cobb, Meilan	6	10:00-11:15 am
Collette, Aurelia	27	1:00-3:30 pm
Covert, Claire	17	1:00-3:30 pm
Craig, Chloe	45	1:00-3:30 pm
Cranston, Anna	12	10:00 am-12:30 pm
Crawford, Miracle	70	11:30 am-12:45 pm
Creamer-Ellecamp, Daze	Oral Presentation	1:30 pm
Custis, Andrew	15	1:00-3:30 pm
Deimerly, Robin	4	10:00-11:15 am
Diep, Johnny	5	1:00-3:30 pm
Diosdado, Genesis	64	11:30 am-12:45 pm
Disney, Sol	60	10:00-11:15 am
Dobbie, Brock	24	1:00-3:30 pm
Donnell, Shelby	7	10:00 am-12:30 pm
Dorsey, General	37	10:00 am-12:30 pm
Dube, Annita	18	11:30 am-12:45 pm
Erce, Katelyn	67	1:00-3:30 pm
Fernandez-Adame, Isabella	50	10:00-11:15 am
Fernandez-Patlan, Jacqueline	38	10:00-11:15 am
Ficken, Sienna	2	10:00 am-12:30 pm
Ficken, Sienna	7	10:00 am-12:30 pm
Ficken, Sienna	9	1:00-3:30 pm
Fierro, Mariana	36	11:30 am-12:45 pm

Name	Poster / Location	Presentation Time
Fogarty, Corinne	30	10:00-11:15 am
Freeman, Camden	16	11:30 am-12:45 pm
Fritz, Olivia	5	10:00 am-12:30 pm
Funk, Liam	30	11:30 am-12:45 pm
Galindo, Yuliana	66	10:00-11:15 am
Gildo, Jackie	51	10:00 am-12:30 pm
Gilliland, Ryan	29	1:00-3:30 pm
Golladay, Sam	21	1:00-3:30 pm
Gonterman, Naomi	10	10:00-11:15 am
Gonzalez, Gabriel	35	10:00 am-12:30 pm
Gooden, Toni	16	11:30 am-12:45 pm
Griffin, Annabelle	47	1:00-3:30 pm
Hackett-Kemp, Taiyior	18	10:00-11:15 am
Hanon, Yasmeen	1	10:00 am-12:30 pm
Hardee, Zach	30	10:00-11:15 am
Hardesty-Biondo, Brianna	10	10:00-11:15 am
Hartman, Rebecca	57	1:00-3:30 pm
Hassan, Ruweyda	43	1:00-3:30 pm
Heath, Lauren	16	10:00-11:15 am
Henderson, Brooke	18	10:00-11:15 am
Hensley, Grace	60	10:00-11:15 am
Hensley, Grace	24	11:30 am-12:45 pm
Herman, Marc	65	10:00 am-12:30 pm
Herman, Samuel D.	2	10:00 am-12:30 pm
Herman, Samuel D.	55	1:00-3:30 pm
Hernandez, Janet	8	11:30 am-12:45 pm
Herrera, Kenia	18	10:00-11:15 am
Hodson, Logan	14	10:00-11:15 am
Hoover, Maddox	44	10:00-11:15 am
Hurd, Kierra	48	10:00-11:15 am
Ihenacho, Chinecherem	29	10:00 am-12:30 pm

Name	Poster / Location	Presentation Time
Jackson, Shelby	38	11:30 am-12:45 pm
Jaegers, Kaleb	44	10:00-11:15 am
Javvaji, Sai Bindhu	44	11:30 am-12:45 pm
Javvaji, Sai Sindhu	70	11:30 am-12:45 pm
Justice, Sam	38	10:00-11:15 am
Justiss, Lauryn	32	10:00-11:15 am
Karnes, Alan	25	10:00 am-12:30 pm
Keltner, David	5	1:00-3:30 pm
Kemp, Z	65	1:00-3:30 pm
Khambekar, Shree	39	1:00-3:30 pm
Khawar, Lyba	67	1:00-3:30 pm
Kibrom, Tehaguas	44	10:00-11:15 am
King, Nesyah	24	1:00-3:30 pm
Kleinsorge, Aubry	25	1:00-3:30 pm
Knapp, Madeline	42	10:00-11:15 am
Knapp, Madeline	42	11:30 am-12:45 pm
Kreeger, CJ	31	1:00-3:30 pm
Krovvidi, Abhinav	55	10:00 am-12:30 pm
Kumar, Sudhiksha	69	10:00 am-12:30 pm
Kumar, Sudhiksha	63	1:00-3:30 pm
Lagares, Audriana	32	10:00-11:15 am
Lam, Angelica	66	10:00-11:15 am
Le, Phuong	8	10:00-11:15 am
Liperuote, Sophia	8	10:00-11:15 am
Liu, Hailey	38	10:00-11:15 am
Liu, Hailey	48	11:30 am-12:45 pm
Lopez, Jerson	22	11:30 am-12:45 pm
Ludy, Erica	35	10:00 am-12:30 pm
Ly, Adrienne	33	10:00 am-12:30 pm
Macharia, Vanessa	30	10:00-11:15 am
Maldonado, Daisey	34	10:00-11:15 am

Name	Poster / Location	Presentation Time
Malik, Aqeel	67	1:00-3:30 pm
Mandla, Nikitha	26	11:30 am-12:45 pm
Marquart, Rachel	59	1:00-3:30 pm
Marrs, Brian	53	1:00-3:30 pm
Martinez, Allison	50	10:00-11:15 am
Martinez, Janissa	34	10:00-11:15 am
Matras, Julian	52	11:30 am-12:45 pm
McGovern, Brianne	46	10:00-11:15 am
McKenna, Creighton	26	10:00-11:15 am
Melgarejo, Catalina	Oral Presentation	3:00 pm
Menz, Vanessa	35	10:00 am-12:30 pm
Mitchell, Madison	69	1:00-3:30 pm
Mitchell, Nina	55	10:00 am-12:30 pm
Mohammad, Fatuma	22	10:00-11:15 am
Molina, Samantha	42	10:00-11:15 am
Moore, Key'Rra	7	1:00-3:30 pm
Morgan, Bianka	38	10:00-11:15 am
Murphy, Phoebe	2	10:00 am-12:30 pm
Murray, Emma	22	10:00-11:15 am
Mwen, Kya	28	10:00-11:15 am
Myers-Weary, Megan	36	10:00-11:15 am
Neerubai, Mitul	44	11:30 am-12:45 pm
Nelson, Ben	3	10:00 am-12:30 pm
Nevez, Taylor	27	10:00 am-12:30 pm
Nguyen, Cadao	19	10:00 am-12:30 pm
Niyonzima, Julius	Oral Presentation	2:00 pm
Norman, Spencer	63	10:00 am-12:30 pm
Olaby, Jessica	53	10:00 am-12:30 pm
O'Leary, Roslyn	41	10:00 am-12:30 pm
Oseguera, Valentina	37	10:00 am-12:30 pm
Parker, Maddie	28	10:00-11:15 am

Name	Poster / Location	Presentation Time
Paul, Jayda	17	10:00 am-12:30 pm
Paxton, Jordan	31	10:00 am-12:30 pm
Peddapalli, Rasagyna	26	11:30 am-12:45 pm
Phan, Hieu	55	10:00 am-12:30 pm
Pickering, Ainsley	57	10:00 am-12:30 pm
Polfer, China	29	1:00-3:30 pm
Putnam, Wylie	12	10:00 am-12:30 pm
Putnam, Wylie	15	10:00 am-12:30 pm
Ramos, Flor	52	10:00-11:15 am
Rankins, Alyssa	70	10:00-11:15 am
Reed, Alexis	40	10:00 am-12:30 pm
Reyes, Fatima	20	10:00-11:15 am
Reyes, Wendy	20	11:30 am-12:45 pm
Rigoli, Mark	34	11:30 am-12:45 pm
Rimpson, Vanessa	22	10:00-11:15 am
Rivas Perez, Marelyn	36	10:00-11:15 am
Roach, Sophie	52	10:00-11:15 am
Robinson, De'Vine	35	1:00-3:30 pm
Robinson, Kyndall	59	10:00 am-12:30 pm
Romero-Agustin, Betsaida	50	10:00-11:15 am
Rosales, Ashley	18	10:00-11:15 am
Rosales, Ingrid	42	10:00-11:15 am
Rosales, Natalia	50	10:00-11:15 am
Rose, Alexander	49	1:00-3:30 pm
Ross, Kathryn	70	10:00-11:15 am
Sadeqi, Yaser	67	10:00 am-12:30 pm
Salamed, Nermeen	21	10:00 am-12:30 pm
Salzsieder, Gavin	26	10:00-11:15 am
Sandhu, Himmat	24	1:00-3:30 pm
Sandoval Ojeda, Maria	26	10:00-11:15 am
Sauer, Charlie	20	10:00-11:15 am

Name	Poster / Location	Presentation Time
Shelby, Levora	36	10:00-11:15 am
Shoemake, Emily	4	10:00-11:15 am
Shoemake, Emily	13	1:00-3:30 pm
Siles, Ivey	40	10:00 am-12:30 pm
Simental Grijalva, Mariana	56	11:30 am-12:45 pm
Smith, Alessandra	1	1:00-3:30 pm
Smith, Dominique	48	10:00-11:15 am
Smith, Jadan	38	10:00-11:15 am
Smith, Lia	46	10:00-11:15 am
Songer, Robert	Oral Presentation	11:45 am
Spriggs, Vincent	30	10:00-11:15 am
Stewart, Desye	60	10:00-11:15 am
Sudduth, Jaidy	9	10:00 am-12:30 pm
Suleiman, Yusuf	58	10:00-11:15 am
Swan, Emmylou	66	10:00-11:15 am
Taffner, Bella	62	10:00-11:15 am
Taveres-Mercado, Leo	16	10:00-11:15 am
Thomas, Mya	13	10:00 am-12:30 pm
Torres, Keziah	62	10:00-11:15 am
Tracy, Coral	47	10:00 am-12:30 pm
Turner, Emily	53	1:00-3:30 pm
Uduthuri, Shruthika	26	11:30 am-12:45 pm
Valle, Araceli	24	10:00-11:15 am
Vandehey, Meaghan	64	10:00-11:15 am
Vang, Nevaeh	37	1:00-3:30 pm
Vaughn, Adalea R.S.	46	11:30 am-12:45 pm
Velazquez, Isabel	4	10:00-11:15 am
Vella, Olivia	3	1:00-3:30 pm
Vogt, Eli	46	10:00-11:15 am
Vogt, Eli	60	11:30 am-12:45 pm
Warner, Dannah	70	10:00-11:15 am

Name	Poster / Location	Presentation Time
Welch, Dallas	67	1:00-3:30 pm
Westley, Lyric	64	10:00-11:15 am
Whaley, Nevaeh	64	10:00-11:15 am
Whitsell, Linda	50	10:00-11:15 am
Whittington, Kedryn G.	58	10:00-11:15 am
Williams, Constantin	16	10:00-11:15 am
Williams-Pierce, La'Raeya	42	10:00-11:15 am
Wink, Daniel	34	11:30 am-12:45 pm
Woodard, Tracee	24	10:00-11:15 am
Woodruff, Marissa	22	10:00-11:15 am
Woods, Hannah	46	10:00-11:15 am
Wynn, Christion	66	10:00-11:15 am
Yarbrough, Kameron	60	10:00-11:15 am
Yatana, Chaw	28	10:00-11:15 am
Young, Aiden	66	10:00-11:15 am
Zahnter, David	54	11:30 am-12:45 pm
Zaitz, Beck	62	11:30 am-12:45 pm
Zepeda, Jazmin	24	10:00-11:15 am
Zierbarth, Bethany	16	10:00-11:15 am

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