SURC

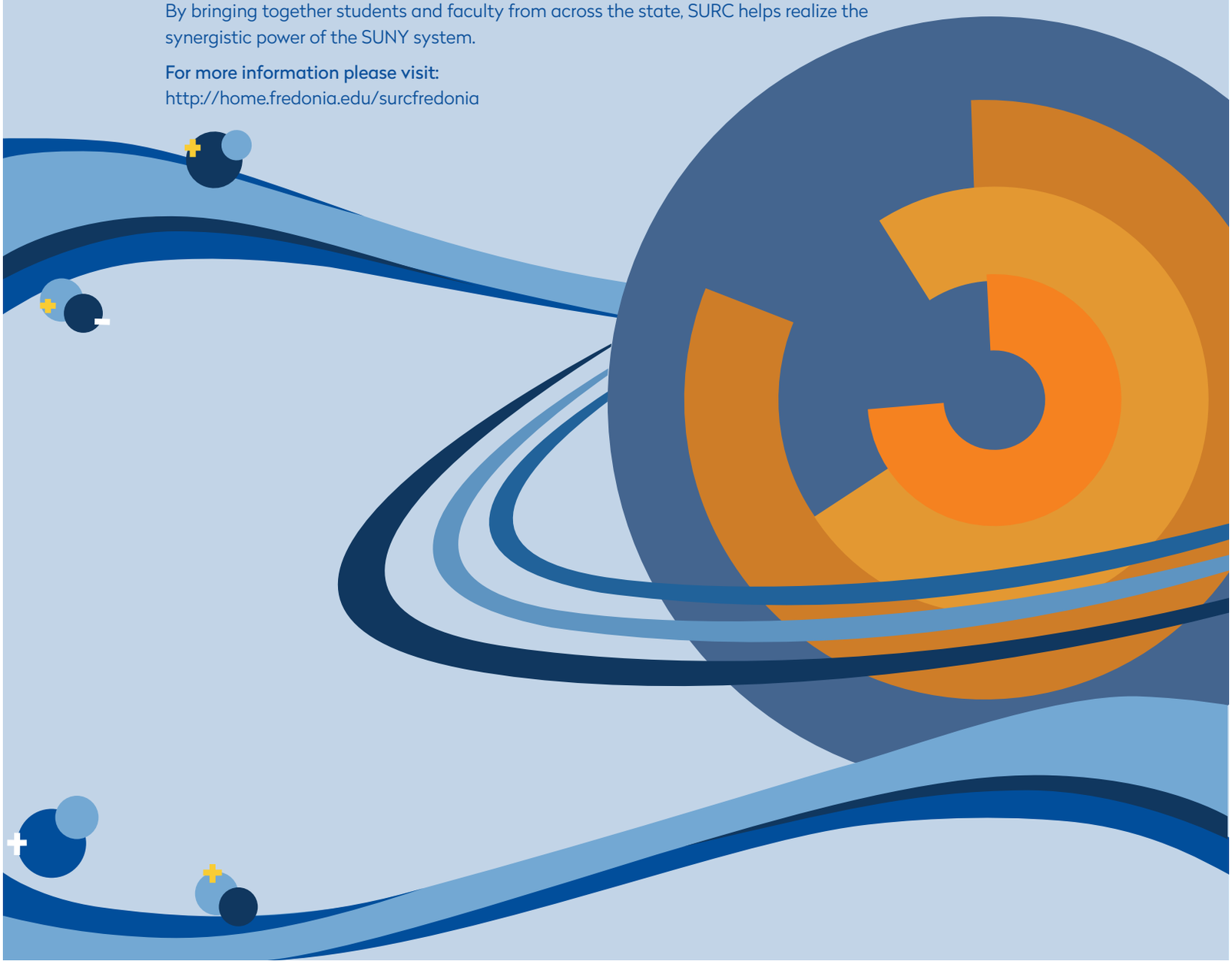
FREDONIA
STATE UNIVERSITY OF NEW YORK

SUNY The State University of New York

Third Annual
SUNY Undergraduate Research Conference
April 22, 2017

The SUNY Undergraduate Research Conference (SURC) is a multidisciplinary spring semester event hosted each year by different SUNY institutions. It brings together undergraduate student researchers and faculty mentors from across the SUNY system for activities, including sessions devoted to student presentations – oral, performance, artistic displays, and posters. By bringing together students and faculty from across the state, SURC helps realize the synergistic power of the SUNY system.

For more information please visit:
http://home.fredonia.edu/surcfredonia



SURC 2017 CONFERENCE SCHEDULE

Saturday, April 22, 2017

Registration – Natatorium Lobby	***Coffee & light refreshments served 8:00 – 11:00***	**8:30 – 11:45 am**
Oral Session I – Williams Center	***See program for details and locations***	**9:15 – 10:45 am**
Graduate School Workshop – Dods Hall, Room 101		**9:15 – 10:00 am**
Poster Session I – Steele Hall Lower Level	***See program for details and locations***	**9:45 – 10:45 am**
Career Development Workshop – Dods Hall, Room 102		**10:00 - 10:45 am**
Performances – Mason Hall	***See program for details and locations***	**10:00 – 10:45 am**
Keynote Address – King Concert Hall	***See program for details***	**11:00 – 11:45 am**
Lunch – Williams Center, Multipurpose Room		**12:00 – 12:45 pm**
Elsevier "An Introduction to Scopus" – Williams Center, Multipurpose Room		**12:30 – 12:45 pm**
Oral Session II – Williams Center	***See program for details and locations***	**1:00 – 2:30 pm**
Poster Session II – Steele Hall Lower Level	***See program for details and locations***	**1:00 – 2:00 pm**
Elsevier Workshop – Dods Hall, Room 101		**1:00 – 1:45 pm**
Graduate School Fair – Steele Hall Lower Level		**1:00 – 3:00 pm**
Study Abroad Fair – Steele Hall Lower Level		**1:00 – 3:00 pm**
Performances – Mason Hall	***See program for details and locations***	**2:00 – 2:45 pm**

Light afternoon refreshments will be served in Natatorium Lobby 2:00 – 4:00 pm

Career Development Workshop – Dods Hall, Room 102		**2:15 – 3:00 pm**
Graduate School Workshop – Dods Hall, Room 101		**3:00 – 3:45 pm**
Oral Session III – Williams Center	***See program for details and locations***	**3:00 – 4:30 pm**
Poster Session III – Steele Hall Lower Level	***See program for details and locations***	**3:00 – 4:00 pm**

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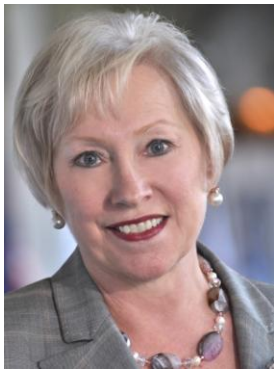
FREDONIA
STATE UNIVERSITY OF NEW YORK
2017

The State University
of New York

Nancy L. Zimpher
Chancellor

State University Plaza
Albany, New York 12246

www.suny.edu



April 2017

Dear Students, Faculty, and Friends,

It is my pleasure to welcome you to not just one but two days of the SUNY Undergraduate Research Conference—SURC East, brought to you by Suffolk County Community College and SURC West, at SUNY Fredonia.

A few years ago, we at SUNY identified what we think of as five "buckets" into which all of our work is organized: Access, Completion, Success, Inquiry, and Engagement. Our theory—and we're convinced we're right—is that as a public university system like SUNY drills down into these areas, expanding and enhancing each of them to new heights and depths, we will be able to meet society's most complex needs and challenges, such as health care, the environment, energy, and public safety.

During the two days of this, the third annual SURC, we're broadening our horizons in Inquiry through showcasing the research and creativity in which our undergraduate students are engaged. With more than 460,000 students enrolled each year, SUNY is creating the next generation of scientists, researchers, writers, performers, and teachers, and is also home to some of the greatest faculty and practitioners in the world today.

This two-day conference highlights exceptional academic work by students across disciplines and across our great SUNY system. I want to extend special thanks to Suffolk and Fredonia presidents, Dr. Shaun McKay and Dr. Ginny Horvath, for hosting these events, and to our renowned keynote speakers, Dr. Sam Stanley and Dr. Diane Pennica. Thanks, too, to the many organizers who will make these two days a success.

Best wishes to all of you—students, faculty, and friends—for an exciting two days at SUNY!

Sincerely,

Nancy L. Zimpher
Chancellor

MESSAGE FROM PRESIDENT HORVATH

Welcome to Fredonia and the SURC WEST Conference!

Undergraduate research and creative work is an important part of the learning experience, as students engage in understanding and asking the critical questions of their disciplines. At Fredonia, we see the value of this inquiry across all fields and disciplines, as students work alongside faculty and participate in the community of scholars. This conference is a wonderful celebration of all that such collaborations produce, and I am eager to hear from many of you across SUNY about the research and creative activity you undertake.

I'm also proud to welcome back to Fredonia Dr. Diane Pennica (Class of '73), who will give the keynote address for this conference. As a chemist who is well known for her development of the life-saving drug Activase®, she experienced the first joys of scientific discovery on this campus.

I hope you find the conference interesting and inspiring and the campus and community accommodating. My colleagues and I are very glad to have you here.

Virginia S. Horvath

Dr. Virginia Horvath
President
State University of New York at Fredonia

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KEYNOTE ADDRESS: "THE 50 YEAR JOURNEY TO THE DEVELOPMENT OF THE CLOT-BUSTER: T-PA"

Diane Pennica, Ph.D. ('73)

Dr. Diane Pennica received her Bachelor of Science in Biology from the State University of New York at Fredonia, her Ph.D. from the University of Rhode Island, and did a post-doctoral fellowship at the Roche Institute of Molecular Biology.

Dr. Pennica joined Genentech on May 1st, 1980 as the 60th employee and retired in July of 2010 after being with the company for 30 years.

Dr. Pennica is the co-discoverer of the heart attack and stroke drug, t-PA (Activase). In addition to cloning t-PA, she discovered a mutant form of p53, which was voted Molecule of the Year by Science magazine in 1993 for its critical role in helping to suppress cancer. She was also the first to isolate the gene for human Tumor Necrosis Factor, which is a major cause of arthritis in humans. Therapies based on this work, such as Enbrel, spare millions of people pain and degenerative changes.

Other significant accomplishments include being the first to clone the genes for cardiotrophin-1, urokinase, the WISPs, uromodulin, and interferon-gamma.

Her research during the last 10 years at Genentech was focused on trying to identify genes, which are over-produced during tumor development. These genes, and the proteins they encode, may be useful markers for cancer diagnosis and may be potential targets for cancer therapeutics.

Some of her awards and honors are, being chosen by Science Digest as one of the scientists involved in the top 100 innovations of 1984 for her work on t-PA. She received the Distinguished Alumni Award from Fredonia State University, and a Service to Humanity Award from the Fredonia Chamber of Commerce. In 1989, Diane received the Inventor of the Year Award from the Intellectual Property Owners Foundation in Washington, D.C. for her work on the discovery of t-PA. In 1995, she was named to the State University of New York Alumni Honor Role for excellence in career achievements. In 2006, she was one of the first recipients of the University of Rhode Island Dean's List Award for Outstanding Professional Accomplishment. In 2014, she received the Distinguished Achievement President's Award from the University of Rhode Island.

Dr. Pennica has 100 publications and 41 issued patents.

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Scopus®

Elsevier is a proud sponsor of SURC for 2017

Lunchtime ***An Introduction to Scopus***

Scopus Workshop ***Leveraging Scopus to Support Undergraduate Research and Study***

Elsevier provides information and analytics that help institutions and professionals progress science, advance healthcare and improve performance. Elsevier's goal is to expand the boundaries of knowledge for the benefit of humanity.

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SCOPUS CAN HELP EDUCATORS & STUDENTS:

- Find resources to complement course materials; locate articles and images to enhance lectures and engage students' interest
- Identify articles to inform the literature review process and support development of research papers and theses
- Find labs to collaborate with and identify potential internships or graduate school interests

ACKNOWLEDGEMENTS

SURC West Coordinators: Dr. Judith Horowitz, Associate Provost for Academic Affairs
Dr. Jack Croxton, Chair of Psychology and Director of the Office of Student Creative Activity and Research

We wish to thank the many people on our campus who helped to make the 3rd Annual SUNY Undergraduate Research Conference a reality. This was truly a team effort and we are extremely grateful for all the support that we have received. In particular, we wish to thank Robyn Reger, Carol Smith, and Donna Lee who went well beyond the call of duty to handle the countless details necessary to plan and carry out a successful conference such as this. We would also like to thank Mike Gerholdt and Justin Jakubowicz for all of the technical assistance they have provided throughout the process. Also, we want to acknowledge Tracy Collingwood and Wendy Dunst for developing the workshops that are taking place. Kudos to everyone who has contributed to this celebration of student achievements!

SURC 2017 West Sponsors:
SUNY University Faculty Senate
SUNY Research Foundation
The State University of New York at Fredonia Office of Student Creative Activity and Research
The Office of the President, State University of New York at Fredonia
ELSEVIER

Special Thanks to the following:
Rachel Barbato, Creative Design Intern
Tracy Collingwood, Career Development
Wendy Dunst, Graduate Studies
Erin Ehman, Communications Designer
Kathy Forster, Residence Life
Charlotte Morse, ITS
Jeffrey Woodard, PR, Marketing, and Communication

Special Thanks to SUNY:
Nancy Zimpher, SUNY Chancellor
Alexander Cartwright, SUNY Provost
Peter Knuepfer, President of SUNY University Faculty Senate
Philip Ortiz, Assistant Provost for Undergraduate and STEM Education
Jamie Spiller, SUNY Brockport
Susan Zimmerman, SUNY Cobleskill
SUNY Student Assembly
SUNY Faculty Council of Community Colleges

The State University of New York at Fredonia SURC Steering Committee:

Tracy Collingwood
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Judith Horowitz
Jason Jakubowicz
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Darin Schulz
Carol Smith
Paul Starcher
Susan Sturm
Katie Thies
Peter Tucker
Lisa Walters
Courtney Wigdahl-Perry

VOLUNTEERS

A special thank you to our group of student volunteers helping with our SURC program:

Jacob Bevilacqua
Katyanna Clement
Ryan Del Prince
Marianne Faivre
Brandie Fuller
Steven Garcia
Erica Gentile
Samantha Gibbs
Sydney Gominiak
Joseph Guarino
Hailey Hasseltine
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Amanda Rader
Anna Reinert
Justin Ruiz
Emily Schepisi
Sheneca Sharpe
Patrick Tracy
Sam Utley
Khrystina Warnstadt
Sarah Yi

GRADUATE SCHOOLS REPRESENTED

- Binghamton University, State University of New York
- SUNY Buffalo State Graduate School
- SUNY Cortland
- Fredonia
- The College at Brockport, SUNY
- University at Albany
- University at Buffalo Graduate School of Education
- University at Buffalo School of Architecture and Planning
- University at Buffalo School of Law
- University at Buffalo School of Management
- University at Buffalo School of Nursing

SCHOOLS REPRESENTED IN STUDY ABROAD FAIR

- SUNY Geneseo
- Fredonia

WORKSHOPS

Career Development Workshops

Interview with Confidence

10:00-10:45 am - Dods Hall 102
Presenter: Jennifer Wilkins, Internship Coordinator and Career Counselor, Career Development Office

An interview is your first face-to-face meeting with an employer/university to present your interpersonal skills, expand upon your application materials and demonstrate your understanding of the position/program you are applying for. This may feel overwhelming, but with practice and preparation you can equip yourself with the tools you need for success. Know yourself, know the employer and know how your skills will meet the needs of the employer.

Writing Effective Resumes

2:15-3:00 pm - Dods Hall 102
Presenter: Marjorie Plaister, Assistant Director, Career Development Office

A resume is often your initial contact with a prospective employer, and should be a purposefully designed document. Apply your field-specific knowledge to highlight skills/qualities that are sought by the employer (or graduate school, scholarship committee, etc.) – including your academic background, career-related and other experiences, accomplishments, and involvement in the world around you. In this workshop, both content and format will be discussed and samples shared. Organizing your resume can be a daunting project, so be sure to use your campus resources for assistance with this important document.

Graduate School Workshops

Graduate School Exploration Workshop: Interested in grad school but not sure how to begin? Learn about the application process from timeline to accepting your admission offer. We'll discuss creation of your application materials, such as your statement of intent and academic résumé, and soliciting appropriate recommendation letters. Wendy S. Dunst has been advising graduate students for over 10 years. Join her for this informative workshop and learn to effectively manage your transition to graduate school.

Graduate Student Panel: Join our panel session of current Fredonia graduate students as they answer your questions about planning for grad school, Fredonia graduate programs, housing, and the local area. General and specific topics will be explored. Got questions? Our grad students have answers!

ORAL PRESENTATIONS – SESSION I
9:15 – 10:45 AM

Williams Center G103-B — Science

Moderator: Jasmine Barrow

Capacitance-based nondestructive evaluation of three-dimensionally printed polymer
Patatri Chakraborty; **University at Buffalo**
Mentor: Deborah Chung

An Environmentally Safe Cooling System
Nathan DeMario, Joseph Carr, Ryan Amidon; **SUNY Alfred State**
Mentor: Jon Owejan

Hydrogen Fuel Cell Water Balance
Jeffrey Smith; **SUNY Alfred State**
Mentor: Jon Owejan

Design Optimization of 3D Printed Patient Specific Coronary Phantoms for Physiologically Accurate Flow Simulations
Kelsey Sommer, Lauren Shepard; **University at Buffalo**
Mentor: Ciprian Ionita

Williams Center G103-C — Humanities

Moderator: Hwibum Hur

Creating "Educated Citizens": Reflections on the Relevance of Dewey to Contemporary College Education
Noah Brigham; **SUNY Finger Lakes**
Mentor: Mark Worrell

PAP, Harry Frankfurt, and the Ginet/Mele-Robb Debate
Andrew Gill; **SUNY Brockport**
Mentor: Gordon Barnes

Should We Fear Death?: The Symmetry Argument in Epicurus
Bianca Gonzalez; **SUNY Buffalo State**
Mentor: Kimberly Blessing

Adams, Brontë, Child and Stowe: Separate Spheres and Female Literary History
Yue Wang; **SUNY Fredonia**
Mentor: Emily VanDette

Williams Center S204-A Social Science

Moderator: Shana Czekanski

The National Debt and Long Term Productivity

Blake Carter; **SUNY Onondaga**
Mentor: Kristen Costello

Consular Advocacy and Latino Immigrant Rights

Hannah Cho; **SUNY Cornell**
Mentor: Shannon Gleeson

Looking to the Future: Documenting Day Laborer Experiences and Exploring a New Method of Worker Power

Odalis Flores; **SUNY Cornell**
Mentor: Maria Figueroa

Exploring Labor Market Trends in the US Retail Sector

Destin Royer; **SUNY Cornell**
Mentor: Hassan Enayati

Effect of eWOM on the Valence of Consumers' Product Reviews

Kayla Szczepanski; **SUNY Brockport**
Mentor: Joon Seo

Williams Center S204-C Science

Moderator: Kim Lotocki

Quantification of lead solute present in the SUNY Alfred State College potable water supply

Lacee Hill, Jean-Marc Maurancy; **SUNY Alfred State**
Mentor: Ashley Shaloo

An Asteroseismic Analysis of the RGB Bump

Kenneth Roffo; **SUNY Oswego**
Mentor: Shashi Kanbur

Investigation of the Absorption Spectra of Gaseous Bromine and Iodine, and the Effect of Temperature

Mame Oumou Seck; **SUNY Fredonia**
Mentor: Michael S. Milligan

Williams Center S204-E Health and Human Performance

Moderator: Jessica Carson-Davis

Sleep and Health Among Pregnant Smokers

Arsalan Haghdel, Michael Danilov; **University at Buffalo**
Mentor: Xiaozhong Wen

The Cognitive Catalyst and Autobiographical Recall: The Role of Negative Cognitive Content and Rumination in Autobiographical Memory Deficits

Brandon Koscinski; **University at Buffalo**
Mentor: John Roberts

"Sports Cuties" Sell: The Impact Diet- and Fitness-Oriented Advertising Has on Body Dissatisfaction and Anxiety Development Among Women

Riagan McMahon; **SUNY Geneseo**
Mentor: Atsushi Tajima

Who Matters? The Perceived Motivational Climates Created by Coaches, Peers, and Team Captains and the Effect on Trait Self-Confidence and Enjoyment in High School & College Athletics

Bryan Urquhart; **SUNY Brockport**
Mentor: Stephen Gonzalez

Beauty by Design: The Socioeconomic Implications of Facial Features in America

Ashley Wright; **SUNY Monroe**
Mentor: Scott Rudd

Williams Center S222 Mathematics

Moderator: Erin Slegaitis

A Two-Stage Vehicle Routing Algorithm Applied to Disaster Relief Logistics after the 2015 Nepal Earthquake

Stephanie Allen; **SUNY Geneseo**
Mentor: Caroline Haddad

The maximum Laplacian Eigenvalue of an oriented Hypergraph

Ouail Kitouni; **SUNY Brockport**
Mentor: Nathan Reff

Discovering Parallels Between Euclidean Constructions and Origami Constructions

Michelle Persaud; **SUNY Fredonia**
Mentor: Julia Wilson

Mathematical Group Theory and Triadic Harmony

Rachel Schank; **SUNY Fredonia**
Mentor: Julia Wilson

ORAL PRESENTATIONS – SESSION II
1:00 – 2:30 PM

Williams Center G103-C — Social Science

Moderator: Hwibum Hur

Contemporary Forms of Slavery

Ledeebari Banuna; **University at Buffalo**
Mentor: Claude Welch

Designing of Computer Games in Object-Oriented C# Language

Shannon Grajek; **SUNY Fredonia**
Mentor: Gurmukh Singh

Pirate's Code: A Multimedia Tabletop Experience

Quinn Lachler, Waylon Wilson, Shane Murdock, Nate Noworyta; **University at Buffalo**
Mentor: David Pape

Mass Media Campaign to Promote Handwashing

Edward Yoest, Maria Bajwa, Myriah Bodie, Kayla, Boorom, Marisa Cicak, Donette Hutchison, Laura Kraus, Michael Mackey, Erin Page, Rebecca Polosky, Stephanie Rose, Matthew Slilaty, Austin Strauss, Jacob Yoest, Erik Young; **SUNY Broome**
Mentor: Kimberly B. McLain

Williams Center G103-B — Humanities

Moderator: Jasmine Barrow

Remaining in Limbo: The Gray Space of Reproductive Futurity and Queer Time on One's Body as Demonstrated in Arturo Islas' The Rain God

Rachel Campbell; **SUNY Brockport**
Mentor: Milo Obourn

Time as a Human Construction: Time Consciousness in Alice in Wonderland.

Ashley Farley; **SUNY Brockport**
Mentor: Megan Norcia

The Success of Japanese Boys' Love Manga in America: A Mirror Image

Rebecca Gasiorek; **University at Buffalo**
Mentor: Nona Carter

Ophelia's Legacy

Katherine Zito; **SUNY Geneseo**
Mentor: Melanie Blood

Williams Center S204-A Social Science

Moderator: Shana Czekanski

Views into the Mayan Culture at Palenque, Mexico

Alex Gregory; **SUNY Potsdam**
Mentor: Timothy Messner

Cooking with Rocks the Hopewell way: Experimenting with Earth Oven Efficiency

Tessa Horn; **SUNY Geneseo**
Mentor: Paul Pacheco

The Global Diffusion of Slum Tourism and the Issues it Raises

Nicholas Minett; **SUNY Geneseo**
Mentor: Darrell Norris

Applications of GIS in Ohio Archaeology

Sydney Snyder; **SUNY Geneseo**
Mentor: Paul Pacheco

Williams Center S204-C Science

Moderator: Kim Lotocki

Healthy Herpetology: What Salamanders Say About The Environment

Kyle Brooks; **SUNY Morrisville**
Mentor: Eric H. Diefenbacher

Factors Impacting Amphibian Abundance in Anthropogenic Vernal Pools

Thomas Franzem; **SUNY Oneonta**
Mentor: Dan Stich

Registration of Large Digitized Serial Histology Stacks for 3D Anatomy Quantification: Approaches and Challenges

Starr Johnson; **University at Buffalo**
Mentor: Scott Doyle

Microbial mercury methylation in Fayetteville Green Lake, NY

Anish Kirtane; **SUNY Environmental Science & Forestry**
Mentor: Hyatt Green

Williams Center S204-E — Arts

Moderator: Jessica Carson-Davis

Singing Production and Musical Perception: A Closer Look

Nicholas Nolan; **University at Buffalo**
Mentor: Peter Pfordresher

Searching for the Stage: Authenticity in Modern Fado Tourism

Amanda Paruta; **SUNY Buffalo State**
Mentor: Tiffany Nicely

Dating Anne Boleyn's Songbook: The Creation of MS 1070

Erin Petti; **SUNY Fredonia**
Mentor: James Davis

The Professor Paradox: Comparative Case Studies in Malinke Drumming Pedagogy

Cory Shelton; **SUNY Fredonia**
Mentor: Tiffany Nicely

ORAL PRESENTATIONS – SESSION III
3:00 – 4:30 PM

Williams Center G103-B — Arts

Moderator: Jasmine Barrow

Old Faces, New Perspectives: The Role of Studio Art in a Liberal Arts Education
Maya Lucyshyn; **SUNY Geneseo**
Mentor: Lynette Bosch-Borroughs

Dear Antigone: Female Artists, Trauma, and Mental Illness
Olivia Morris; **SUNY Geneseo**
Mentor: Alla Myzelev

Δ DANCE LIKE Δ
Sarah Simon; **SUNY Geneseo**
Mentor: Thomas MacPherson

Mierle Laderman Ukeles: Trashing the Maintenance System
Georgia Westbrook; **SUNY Binghamton**
Mentor: Kevin Hatch

Williams Center G103-C — Social Science

Moderator: Hwibum Hur

Electoral College, Its flaws, and How they could be fixed
Wesley Ebersole; **SUNY Geneseo**
Mentor: Aaron Herold

Hilary Clinton's image over her time in the presidential spotlight
Charlotte Luft; **SUNY Brockport**
Mentor: Marsha Ducey

Local 2300: A Case Study on Post-Manufacturing Unionization
Chad Stephenson; **SUNY Cornell**
Mentor: Cheryl Beredo

Exploring Social Instability in the United States
Katherine Zaslavsky; **SUNY Geneseo**
Mentor: Michael Restivo

Williams Center S204-A — Social Science

Moderator: Erin Slegaitis

Effects of gender and sexual orientation on sense of being understood by one's romantic/sexual target group

Jaqlyn Colangelo, Sapphire Jones; **SUNY Fredonia**
Mentor: Darrin Rogers

Belief in performative bisexuality and sexual aggression toward bisexual women

Ariel Gelfand, Elayna Kinney; **SUNY Fredonia**
Mentor: Darrin Rogers

Perceptions of Services for Intimate Partner Violence in the LGBTQ+Community

Taylor Kozuch, Brooke Park and Morganne Madonia; **SUNY Fredonia**
Mentor: Darrin Rogers

Unknowability and otherness in potential sexual partners in the LGBTQ+ community

Ernesto Mercado Irizarry, Kaitlyn M. Russell; **SUNY Fredonia**
Mentor: Darrin Rogers

Williams Center S204-C — Science

Moderator: Kim Lotocki

pH Tide: Are There Physiologic Consequences?

Jeffrey Capomaccio, Ashley Wright, Corrin Collins, Emily Pallotta; **SUNY Monroe**
Mentor: James Cronmiller

Gene Regulation: RNA-seq data analysis for adipocyte differentiation

Lucas Galbier; **SUNY Brockport**
Mentor: Rongkun Shen

Methamphetamine Mediated Mitochrondrial Dysfunction and Microglial Apoptosis

Elizabeth Quaye; **University at Buffalo**
Mentor: Supriya Mahajan

Determining the Persistence of Sperm DNA on Articles of Clothing and the Effects of Drying Time after Exposure to Detergent through Machine Washing

Brittany Richards; **SUNY Alfred State**
Mentor: Ashley Shaloo

Williams Center S204-E — Science

Moderator: Jessica Carson-Davis

A Study of Taphonomic Influences in Northern Broome County, NY

Meaghan Champney; **SUNY Buffalo State**
Mentor: Julie Wieczkowski

Year 1 Agronomy Trials for Growing Industrial Hemp in New York State

Christopher Domanski, Jeff Stewart; **SUNY Morrisville**
Mentor: Jennifer Gilbert-Jenkins

Ray-Tracing Analysis of Parabolic Solar Troughs for Drinking Water Treatment in Low Resource Settings

Matthew Falcone; **University at Buffalo**
Mentor: James N. Jensen

Effect of competitive growth on survival and fitness of native Asclepias syriaca and invasive Cynanchum rossicum

Holly Jackson; **SUNY Brockport**
Mentor: Kathryn Amatangelo

Experimental Investigation of Strain-Hardening Fiber-Reinforced Concrete with Improved Tensile Properties

Anandharam Mourougassamy; **University at Buffalo**
Mentor: Ravi Ranade

Williams Center S222 — Social Science

Moderator: Susan Sturm

The Civil War in Hollywood: Racism and Sexism Dominate Film

Meredith Hutchings; **SUNY Brockport**
Mentor: Angela Thompsell

College Students' Opinions and Perceptions about the Health and Criminal Implications of the Legalization of Cannabis

Eric Mikols; **SUNY Brockport**
Mentor: Ingrid McGuffog

Sir William Johnson: The Bridge Between Both Worlds

Melissa Schroeder; **SUNY Fredonia**
Mentor: John Staples

1882 Days of Dutch Despair

Chloe Smith; **SUNY Albany**
Mentor: H Peter Krosby

PERFORMANCES
10:00 – 10:45 AM

Mason Hall Diers Recital Hall

Moderator: Alexa Papadimatos

10:00 – 10:20 am

Let's Jam!

Andrea Velasquez, Brandon DiTieri, Alexia Lekos, Sam Wersinger, and Amelia Marotta; **SUNY Fredonia**
Mentor: David Rudge

10:25 – 10:45 am

"This is Not the America I Live In"

Leron Wellington, Nia Ferguson, De'sean Cruz; **SUNY Fredonia**
Mentor: Nestor Bravo Goldsmith

PERFORMANCES
2:00 – 2:45 PM

Mason Hall Diers Recital Hall

Moderator: Erin Slegaitis

2:00 – 2:20 pm

Fredonia Guitar Quartet

Michael Bunny, Steven Wong, Pennington Watson, Shane Bucci; **SUNY Fredonia**
Mentor: James Piorkowski

2:25 – 2:45 pm

The Song Tradition of Ireland

Katelyn Dietz, Maxwell Gucinski; **SUNY Fredonia**
Mentor: Daniel Ihasz

POSTER SESSION I
9:45 – 10:45 AM

Steele Hall — Floor Location

Moderator: Alicia Rutkowski

How Much Cream Cheese Can One Have on a Bagel **A1**
Cherlyse Alexander-Reid; **SUNY Brockport**
Mentor: Gabriel Prajitura

Coding Infant Behavior at End of Food Reinforcement Task **A2**
Parveen Attai; **University at Buffalo**
Mentor: Stephanie Anzman-Frasca

Synthesis and Characterization of Pyridinium and Anilinium Ionic Liquids **A3**
Brett Baker; **SUNY Fredonia**
Mentor: Allan Cardenas

Let's Get Sudsy: A qualitative and quantitative analysis of a mass media campaign to promote hand hygiene on a college campus **A4**
Myriah Bodie, Maria Bajwa, Kayla Boorom, Marisa Cicak, Donette Hutchison, Laura Kraus, Michael Mackey, Erin Page, Rebecca Polosky, Stephanie Rose, Matthew Slilaty, Austin Strauss, Jacob Yoest, and Erik Young,; **SUNY Broome**
Mentor: Kimberly B. McLain

Employees Satisfaction Level: A Business Case Study **A5**
Casey Brundage; **SUNY Fredonia**
Mentor: Mojtaba Seyedian

Algae community response to nutrient enrichment at Chautauqua Lake, NY. **A6**
Sarah Busch; **SUNY Fredonia**
Mentor: Courtney Wigdahl-Perry

Evolutionary origin and functional impact of the GHR deletion **A7**
Hannah Calkins; **University at Buffalo**
Mentor: Omer Gokcumen

Analysis of Ded1 phosphorylation in translation initiation and repression **A8**
Jessie Caprino; **University at Buffalo**
Mentor: Sarah Walker

The Influence of Cause Mareketing Alliamnce on Donation Types **B1**

Celena Chiu, Dina Rose Cornell, Anthony Santor; **SUNY Oneonta**
Mentor: Chien-Wei Lin

EEG-Based Personal Identification using Mallows Distance **B2**

Kun Woo Cho; **University at Buffalo**
Mentor: Wenyao Xu

The Benefits of Massage for Military Veterans **B3**

Amanda Coe; **SUNY Morrisville**
Mentor: Laurie Zbock

Analysis of gurken Internal Ribosome Entry Site Secondary Structure Through Differential SHAPE **B4**

Connor Dolce, Kevin Aumiller; **SUNY Fredonia**
Mentor: Matthew Fountain

Thiamine Concentration and Lipid Content in Lake Ontario Prey Fish **B5**

Nicholas Farese; **SUNY Brockport**
Mentor: Jacques Rinchard

Ventilation Rate of Trained Endurance Athletes on a Lower Body Positive Pressure Treadmill **B6**

Eli Feathers; **SUNY Cortland**
Mentor: Jim Hokanson

Structure- Function Analysis of gurken IRES activity **B7**

Brian Guy, Joshua Blundon, Anthony Tardibuono; **SUNY Fredonia**
Mentor: Scott Ferguson

A content analysis of online pregnancy message boards, mother to mother advice, and psychotropic medication used in pregnancy **B8**

Kara Hall, Brianna Stavola; **SUNY Fredonia**
Mentor: Catherine Creeley

Ultrasonic Polar Range Device **C1**

Andrew Hoffman, Brian Kelly, Travis Mcnichol, Mitch Marcin; **SUNY Alfred State**
Mentor: Maryam Nasri

Animal PTSD and suffering from a Cartesian perspective, and our ethical obligation **C2**

Kate Nicole Hoffman; **SUNY Potsdam**
Mentor: David Curry

FATTY ACID SIGNATURES OF PREDATORY FISH FROM LAKE MICHIGAN **D4**

Christopher Maier; **SUNY Brockport**
Mentor: Jacques Rinchard

The Shape of an IRES: Using SHAPE Chemistry to Map the Secondary Structure of the gurken mRNA 5' UTR from Drosophila melanogaster **D5**

Allison H Martin, Cory Emborski; **SUNY Fredonia**
Mentor: Matthew Fountain

The isoform-specific deletion of a bicarbonate-transporting membrane protein in mice **D6**

Alassane Mballo; **University at Buffalo**
Mentor: Mark Parker

Response Priming and Conflict Processing in Police Officers with PTSD Symptomatology: An Event-Related Potential Study **D7**

Melissa Meynadasy; **University at Buffalo**
Mentor: David W. Shucard

Optimal Image File Formats for Student Identification Using MATLAB Feature Extractions **D8**

Natalia Montilla; **SUNY Onondaga**
Mentor: Vicentica Valdes

Sound Level Reduction - Serta Simmons. LLC Jamestown

Jinwook Park; **SUNY Fredonia**
Mentor: Lisa Walters

Adding the South Asian Student Association as a Featured Student Organization to the Center for Multicultural Affairs **E1**

Mackenzie Peake, Puja Das and Hannah Shea; **SUNY Fredonia**
Mentor: Natalie Gerber

Relocation of Federally endangered Rayed bean mussel in Allegheny River **E2**

Zachary Piper; **SUNY Oneonta**
Mentor: Paul Lord

Effect of the Circadian Rhythm on Phosphoramide Mustard-induced Toxicity in the Urinary System **E3**

Paula Rebancos, Shannon Crehan; **SUNY Oneonta**
Mentor: Kristen Roosa

Effects of lithium on behavior and reproduction in the adult female mouse **F6**

Patricia Whetstone, Robert K Cooper, Lillian J Dixon, Matthew R Bussmann , Brianna Stavola, Kara G Hall, Ian J Richardson , Zachary T Eklum , Kelli M Michel; **SUNY Fredonia**
Mentor: Catherine Creeley

Synthesis, Characterization and Crystal Structure of an Overlooked Aggregate of 1-methyl-4-[2-(4-hydroxyphenyl)ethenyl]pyridinium iodide. **F7**

Calvin Wong; **SUNY Fredonia**
Mentor: Allan J Cardenas

Post-Traumatic Stress Disorder Status as a Predictor of Overgeneralized Memory **F8**

James Zemer; **University at Buffalo**
Mentor: Jennifer P. Read

POSTER SESSION II
1:00 – 2:00 PM

Steele Hall — Floor Location

Moderator: Alicia Rutkowski

Improving a Small Business Using Six Sigma Methodology **A1**
Rachel Ando; **SUNY Fredonia**
Mentor: Lisa Walters

Kinetics of Cadmium transport in Chara australis **A2**
Sundus Aziz; **University at Buffalo**
Mentor: Mary Bisson

When Vague Memories Make Things More Memorable **A3**
Luke Bamburoski; **SUNY Geneseo**
Mentor: Jason Ozubko

How Experiential Learning Impacts Success after Graduation **A4**
Diana Barva; **SUNY Fredonia**
Mentor: Susan McNamara

Synthesis of Chalcone Derivatives as Potential Tubulin Binding Agents **A5**
Samantha Betts; **SUNY Fredonia**
Mentor: Mark Janik

The Interaction Between Meaning and Forgetting **A6**
Molly Brady; **SUNY Geneseo**
Mentor: Jason Ozubko

Effect of lithium exposure on development and behavior using a mouse model of late- gestational exposure **A7**
Matthew Bussmann, Robert Cooper, Patricia Whetstone, Lily Dixon; **SUNY Fredonia**
Mentor: Catherine Creeley

GameTime: A Raspberry Pi Powered Goal Light **A8**
Muhamed Catovic; **SUNY Buffalo State**
Mentor: Sarbani Banerjee

Assessing the biochemical effects of PCB 105 exposure on Elliptio complanata (Eastern Elliptio) **B1**

Kaitlyn Clapp; **SUNY Oswego**
Mentor: James MacKenzie

Documenting and Optimizing House Plant Growing Conditions **B2**

Autumn Coe; **SUNY Monroe**
Mentor: Christopher Kumar

Exploring Physical and Electrical Properties of CdSe Quantum Dots **B3**

Nicholas Colletti; **SUNY Potsdam**
Mentor: Linghong Li

Oscilloscope'd: Polishing An Asteroids Clone Game **B4**

Arsenio Colon; **SUNY Buffalo State**
Mentor: Sarbani Banerjee

Weinreb-Nahm Synthesis in Synthetic Pheromone Production **B5**

Justin Davison; **SUNY Fredonia**
Mentor: Mathew Gronquist

Dynactin's p24 subunit is critical for microtubule organization and normal cell cycle progression **B6**

Alexander Dimitri; **SUNY Fredonia**
Mentor: Nicholas Quintyne

3D Technology Application in STEAM Curriculum **B7**

Jillian Dolder, Joseph Small, Sheela Patel, Miranda Yates; **SUNY Potsdam**
Mentor: Linghong Li

MATHEMATICAL MODELING OF A SUGAR ROCKET **B8**

Travis Donnelly, Tyler Bershad; **SUNY Potsdam**
Mentor: Linghong Li

Social Networking and Self-Presentation Study **C2**

Matt Evans; **SUNY Fredonia**
Mentor: Joseph McFall

Dysphagia **C3**

Margaret Fagan; **SUNY Fredonia**
Mentor: Christine Gerber

Mapping the rDNA Gene of Chamaelirium luteum's Genome **E8**

Benjamin Rouse; **SUNY Schenectady**

Mentor: Keylon L. Cheeseman, Lorena Harris

When does a person become an adult? **F1**

Samantha Scalise; **SUNY Fredonia**

Mentor: Joseph McFall

Raspberry Pi Based Smart Home Security **F2**

Abu Bakkar Shohag; **SUNY Buffalo State**

Mentor: Sarbani Banerjee

Impact of physical activity and sugar sweetened beverage consumption on arterial stiffness **F3**

Randi Snopkowski, Gregory Ruddy; **SUNY Brockport**

Mentor: Brooke Starkoff

Analyzing the Roles of the Vang and Derailed/Ryk Receptors in the Guidance of Projection Neuron Dendrites in Drosophila melanogaster **F4**

Jennifer Snyder; **SUNY Brockport**

Mentor: Huey Hing

Augmenting Smart Phones into Functional Tools for Home-Based Rehabilitation **F5**

Matthew Stafford; **University at Buffalo**

Mentor: Wenyao Xu

Effects of Companion Planting on Growth and Flavor Profiles of Beets and Lemon Basil Microgreens **F6**

McKenzie Swart; **SUNY Onondaga**

Mentor: Justin Fiene

Replication of A bad taste in the mouth: Gustatory disgust influences moral judgment **F7**

Colleen White, CJ Burris, Allysa Gullo, Alexis Bozza; **SUNY Fredonia**

Mentor: Joseph McFall

Effect of Type II Diabetes on Renal Megalin, Cubilin, and Catabolic Lysozyme Expression in the Zucker Diabetic Fatty (ZDF) Rat Model **F8**

Benjamin Yee; **University at Buffalo**

Mentor: Marilyn Morris

Study Abroad Poster Presentations (floor location G1-G10)

Study Abroad Poster
Madison Courtney; **SUNY Fredonia**

Study Abroad Poster
Eriyon Cruz; **SUNY Fredonia**

Cultural Awareness and Celebration of Diversity
Korrin Harvey: **SUNY Fredonia**

A Life-Changing Five Months Living With la Famille Francaise
Zachary Jones; **SUNY Fredonia**

What You Gain From Study Abroad
Sydney Lyons; **SUNY Fredonia**

Learning About the United States and Giving Back
Caitlin Monan; **SUNY Fredonia**

Language Immersion and Acquisition
Maggie Papia; **SUNY Fredonia**

Study Abroad Poster
Mondyna Prevot**; SUNY Fredonia**

Study Abroad Poster
Elizabeth Roman**; SUNY Fredonia**

Save, Budget, Travel
Eduvijez Sanchez; **SUNY Fredonia**

POSTER SESSION III
3:00 – 4:00 PM

Steele Hall — Floor Location

Moderator: Alexa Papadimatos

Student-Tutor Scheduling Made Easy Through an App **A1**
TJ Adeniji, Alaa Hamzi; **SUNY Buffalo State**
Mentor: Sarbani Banerjee

Gene Expression: Regulation of translation by eIF4A phosphorylation **A2**
Marium Ashraf; **University at Buffalo**
Mentor: Sarah Walker

Dysphagia in Parkinson's Disease **A3**
Brianna Barbarossa; **SUNY Fredonia**
Mentor: McLoddy Kadyamusuma

Dietary and Caloric Analysis of Dancers **A4**
Sarah Bass, Mercedes Smith and Lacey Dickerson; **SUNY Fredonia**
Mentor: Todd Backes

"Now U Know": An Assessment of Community-level Interventions to Reduce Colorectal Cancer Health Disparities in Underprivileged Communities **A5**
Leatrice Bennett; **University at Buffalo**
Mentor: Terry Alford

Deterring Prescription Drug Abuse through Mobile Apps **A6**
Kelli Bores; **SUNY Buffalo State**
Mentor: Sarbani Banerjee

A molecular analysis of the eastern blacklegged deer tick (Ixodes scapularis) for the presence of the Lyme disease-causing bacteria (Borrelia burgdorferi) **A7**
Andrew Boze; **SUNY Broome**
Mentor: Tracy Curtis

Analysis of different metal species found in tap water at SUNY Fredonia **A8**
Jack Choczynski; **SUNY Fredonia**
Mentor: Michael S. Milligan

The Effect of Environmental Enrichment on Nicotine Primed Ethanol Consumption in Male and Female Rats **B1**

Morgan Christie, Makenzie Schrader; **SUNY Cortland**
Mentor: Joshua Peck

Redshift Paralyzation using Dask **B2**

Marcello Cierro; **SUNY Oswego**
Mentor: Shashi Kanbur, Rahul Biswas

The Effect of Beverage Additives on Food Choices and Consumption at a Breakfast Buffet **B3**

Elizabeth Clifford, Jamie Valvo; **SUNY Buffalo State**
Mentor: Leah Panek-Shirley

Extended Aperture Photometry on K2 Variable Stars **B4**

Zachary D'Alessandro; **SUNY Oswego**
Mentor: Shashi Kanbur

Identification of Pheromones Attractive to Roundworms **B5**

Joshua Deschner; **SUNY Fredonia**
Mentor: Matthew Gronquist

The Memorizing Game: Powered by Python **B6**

Christina DiVita; **SUNY Buffalo State**
Mentor: Sarbani Banerjee

Monitoring Long Term Tree Disease, Deer Overgrazing, Climate Change Forest Plots, and Establishing Coarse Woody Debris Protocols **B7**

Samantha Fleming; **SUNY Fredonia**
Mentor: Jonathan Titus

Attribution of Blame as a Function of Consequences, External Circumstances, and Alcohol Consumption **B8**

Meghan Flynn, Ariel Gelfand, Connor Mauche; **SUNY Fredonia**
Mentor: Jack Croxton

Identification and Extraction of Botanicals for use in Cosmetics **C1**

Victoria Hannahoe; **SUNY Cortland**
Mentor: Gregory Phelan

The Effects of Neuromuscular Electrical Stimulation on Leg Strength Post-ACL Reconstruction: a Novel Approach **C2**

Adam Hansen; **SUNY Geneseo**
Mentor: Sara Burch

Mind Wandering Quasi-Replication
Mackenzie Hardy, Kyle Natwora, Felicia Ostrowski, Ryan Upson; **SUNY Fredonia** **C3**
Mentor: Joseph McFall

Classic Meiotic Mapping Meets Illumina Sequencing to Identify New Regulators of gurken Translation **C4**
Elias Jacobs, Alex Mandriota; **SUNY Fredonia**
Mentor: Scott Ferguson

The Effects of Chronic Methylphenidate on [3H] MK-801 Binding **C5**
Khadijatu Jalloh, John Hamilton; **University at Buffalo**
Mentor: Panayotis Thanos

Hydraulically Actuated Myoelectric Exoskeletal Limbs **C6**
Joe Jaracz, Asad Esa, Othmane Brika, Connor Smith, Jason Jordan, Paul Babala, Manikandan Sundararajan; **University at Buffalo**
Mentor: Jason Armstrong

Re-Reading Roger Williams: Adventures in Documentary Editing **C7**
Liam Kingsley, Austin Raetz; **SUNY Potsdam**
Mentor: Thomas Baker

Alzheimer's Dementia **C8**
Mary Klimek; **SUNY Fredonia**
Mentor: McLoddy Kadyamusuma

Daily Diet App **D1**
Keilon La Barrie; **SUNY Buffalo State**
Mentor: Sarbani Banerjee

Synthesis of B-ring Modified Colchicine and Isocolchicine Analogs **D2**
Emily Lasher; **SUNY Fredonia**
Mentor: Mark E. Janik

Fall Prevention on Inpatient Psychiatric Units **D3**
Jessica Layton; **SUNY Upstate Medical Center**
Mentor: Roberta Rolland

Investigation of insect species for bat-insect acoustic interactions research **D4**
Sara Madison, Kelsey Lowery; **SUNY Fredonia**
Mentor: Karry Kazial

Growing Industrial Hemp for Edible Greens **E8**

Jeff Stewart, Chris Domanski; **SUNY Morrisville**
Mentor: Jennifer Gilbert Jenkins

Significance of the Nuclear Gene RAD54 in Mitochondrial Genome Stability of Saccharomyces cerevisiae **F1**

Melissa Stoj; **SUNY Brockport**
Mentor: Rey Sia

The effects of fatigue on risk taking behavior and work performance during simulated occupational tasks **F2**

Justin Vitale, Amir Baghdadi, Shaher Yar Jahangir; **University at Buffalo**
Mentor: Lora Cavuoto

Effective and Efficient Visual Stimuli Design for Quantitative Autism Screening: an Exploratory Study **F3**

Tri Vu, Hoan Tran; **University at Buffalo**
Mentor: Wenyao Xu

Self-Handicapping as a Drinking Motive **F4**

Leah Waldman; **SUNY Buffalo State**
Mentor: Michael MacLean

Limnology and Phytoplankton Community Structure of Bear Lake (Chautauqua County, NY) **F5**

Jennifer Wasielewski; **SUNY Fredonia**
Mentor: Courtney Wigdahl-Perry

UB Talker **F6**

Megan Yoerg, Jennifer Barker, Devon Rennoldson; **University at Buffalo**
Mentor: Kris Schindler

Project WaterFED **F7**

Jacob Zelko, Joseph "Joe" Davis, Andy Diffenderfer, Casey Hale, Patrick Pruden; **SUNY Corning**
Mentor: William Jarvis

ABSTRACTS

Student-Tutor Scheduling Made Easy Through an App

TJ Adeniji, Alaa Hamzi; **SUNY Buffalo State**
Mentor: Sarbani Banerjee

Student-Tutor Scheduling Made Easy Through an App
Currently, there is an urgent need for a system for setting up an appointment with a tutor without contacting the tutors by phone. Students who need help with difficult subjects like Calculus or Writing typically call the tutoring help desk to schedule an appointment. The goal of the current research project is to create an App which will help the students to schedule an appointment with a tutor to receive assistance with their work.
This project will be using Android Studio (version 2.2.3) for the Windows operating system to develop this application. Android Studio's base framework is based on Java and includes elements of XML. Java is an object-oriented development language that is very similar to C++. XML (eXtensible Markup Language), is a metalanguage that is very similar to the web programming language such as HTML, XML is used primarily to store and transport data. Android Studio uses these two languages in its Integrated Development Environment (IDE), to develop applications.
This project will be used by students for an easier way of setting up appointments, canceling, and changing their appointment with their tutors. This application will also simplify things for tutors by creating a way for them to reschedule or cancel appointments as well as sending emails to the student. By creating this scheduling application, it simplifies the steps taken by students to meet with tutors. If for any reason the student, advisor, or tutor needs to cancel the appointment they will be able to do so, and each of them would receive an email whenever changes take place.

How Much Cream Cheese Can One Have on a Bagel

Cherlyse Alexander-Reid; **SUNY Brockport**
Mentor: Gabriel Prajitura

If we cut the bagel with a knife revolving about the circular axis of the bagel we divide it into two intertwined Mobius like surfaces. We will show how big is the area of the cut in this case compared to the one obtained in the usual way to slice the bagel. In each case we will find a parametrization of the cut and use it to compute its area.

A Two-Stage Vehicle Routing Algorithm Applied to Disaster Relief Logistics after the 2015 Nepal Earthquake

Stephanie Allen; **SUNY Geneseo**
Mentor: Caroline Hadded

Disaster relief distribution can be optimized across a variety of objectives such as time, coverage, and the fulfillment of demand. Regardless of the objective, operations research

models can enable users to find more efficient ways of distributing necessary supplies to affected areas. After the 2015 Nepal Earthquake, the Himalayan Disaster Relief Volunteer Group (HDRVG) distributed supplies to affected areas and, during this distribution, the organization kept detailed records of all of their missions and made the information public. In this project, we model the organization's delivery of supplies to areas in need as a vehicle routing problem – whereby we seek to find the quickest way of routing the delivery vehicles to the locations the organization identified. The vehicle routing problem has an extensive literature regarding possible modeling and solution techniques. We focus on a two-stage method which first allocates locations to vehicles via an integer program and then routes the vehicles according to a specific algorithm. In the routing stage, we explore multiple metaheuristics to find the one which minimizes the distance traveled by the vehicles. We present the results of this two-stage method for each of the 26 days during which the HDRVG distributed supplies, and we also discuss the sensitivity of the model.

Improving a Small Business Using Six Sigma Methodology

Rachel Ando; **SUNY Fredonia**
Mentor: Lisa Walters

Improving a Small Business Using Six Sigma Methodology

Mamacita Beadworks, a local small business, began ten years ago, with a mom with a desire to bring an organic touch to all-American, high quality pewter beads, buttons, clasps and pendants. The store's focus is to create original jewelry designs for those customers who have appreciate uniqueness and artistry. Mamacita Beadworks takes the time to build quality into each and every bead piece and to ensure that every beautiful design is both unique and significant. With each piece of work, there is a story of origin and inspiration. Although this is such an incredible and inspirational business, there is room for improvement.

By using the Six Sigma problem solving methodology of DMAIC (Define, Measure, Analyze, Improve and Control), our team of advanced operations management students sought to improve the business in terms of its profitability. After careful gap analysis of activities at the store, our team determined that inventory management appeared to be the most significant detractor from profits, in that much inventory that existed in the store was work-in-progress (WIP), the most evil type of inventory, as it cannot be readily converted to cash.

By analyzing data, our team determined the highest selling items, and prepared bill of materials for these items. From forecasting, we could determine how much inventory should be on hand by use of reorder points.

Although the team was not able to see the improvements through to implementation due to time constraints of the semester, the recommendation was turned over to Fredonia's Enactus team for implementation. We estimated at least $1000 in savings for the upcoming year.

Gene Expression: Regulation of translation by eIF4A phosphorylation

Marium Ashraf; **University at Buffalo**
Mentor: Sarah Walker

Translation, the second step of gene expression, is a key event underlying cell development and differentiation. During translation, ribosomes read mRNA sequences to synthesize proteins, with the aid of eukaryotic initiation factors. Recent findings show that upregulation of several of these factors by increased protein levels or phosphorylation promotes tumor development (Modelska, 2015; Robichaud, 2014). This research investigates the importance of eIF4A phosphorylation by evaluating effects of phosphosite mutations in yeast cells. This study could provide insights into molecular events contributing to cancer.

Coding Infant Behavior at End of Food Reinforcement Task

Parveen Attai; **University at Buffalo**
Mentor: Stephanie Anzman-Frasca

Previous research has shown that individuals with obesity are reinforced more by food than non-food stimuli (Saelens & Epstein, 1996). The reinforcing value of a stimulus is how hard an individual will work to obtain it. This project uses data from one of the first studies of infant food reinforcement. The study involved 9-16-month-old infants from Buffalo (Kong, 2016). Reinforcing values of two stimuli, the infant's favorite food and exposure to music, were studied through a task, in which the infant was taught to earn the stimulus by clicking a computer mouse. A ratio was calculated to understand the reinforcing value of the food versus the non-food stimulus for each infant. The current coding project focused on the food reinforcement task only. Coders were trained to identify certain behaviors exhibited by infants at the end of the task (e.g., distraction) with agreement >75%. Preliminary results, such as the frequencies of these behaviors, and implications will be discussed.

Kinetics of Cadmium transport in Chara australis

Sundus Aziz; **University at Buffalo**
Mentor: Mary Bisson

Cadmium (Cd), a toxic heavy metal, occurs in the environment from weathering of Cd-containing sediment as well as agricultural and industrial actions. The large fresh water alga, Chara australis have the ability to take up Cd from its wet environment, which can then be harvested, suggesting a potential for Chara in phytoremediation. Phytoremediation is the process of using living green plants for the containment or removal of pollutants such as Cd. Isolated Chara cells are exposed to different concentrations of Cd, including radioactive 109Cd, and accumulation of radioactivity is monitored with a gamma radiation counter after a brief incubation. This allows us to determine the mechanism of uptake. We propose that Cd enters the cells using zinc transporters. Thus, the experiments will be repeated in the presence of zinc, to see if it interferes with the uptake of Cd (competitive inhibition).

Synthesis and Characterization of Pyridinium and Anilinium Ionic Liquids

Brett Baker; **SUNY Fredonia**
Mentor: Allan Cardenas

Ionic liquids are defined as salt with melting point lower than 100 °C. Ionic liquids has been gaining popularity in terms of research and its application due to its flexibility in terms of both chemical and physical properties. As a solvent, ionic liquids has been used in battery production, in pollutant capture and in industry as solvents. It is also considered a "green" solvent since it is non-volatile. The goal of this study is to synthesize organic salt form aniline and its derivatives and carefully study how minute changes in structure can affect the properties, such as viscosity and melting point, of this ionic liquids as pure salt and as a hydrate.

When Vague Memories Make Things More Memorable

Luke Bamburoski; **SUNY Geneseo**
Mentor: Jason Ozubko

The production effect is the finding that words spoken aloud are remembered better than words read silently. One proposed explanation for the production effect is that reading aloud renders memories more distinctive than reading silently. If reading words aloud makes words more memorable because of distinctiveness, then we hypothesized that engaging in an even more distinctive process (such as singing words) should further enhance memory, whereas engaging is a less distinctive process (such as mumbling words) should reduce memorability. The present study utilized two groups. Participants in each group studied a series of words which were read silent, aloud, or sung/mumbled. During a memory test, participants were shown studied words along with new words and for each word indicated whether the word was old (i.e., studied) or new. Surprisingly, mumbled, sung, and read aloud words were all remembered equally well. However, Participants in the mumble condition had a significantly higher false alarm rate (i.e., more false memories for new words) than participants in the sing condition. We discuss the singing results in the context of musical experience and the mumbling results in the context of representational vagueness. In essence, mumbling may enhance false memories because it creates fuzzy traces that can match to both studied and new words at test, leading to false feelings of familiarity.

Contemporary Forms of Slavery

Ledeebari Banuna; **University at Buffalo**
Mentor: Claude Welch

During the hundreds of years that chattel slavery was widespread in the Americas and Europe as a result of the Trans-Atlantic Slave Trade, many organizations and movements were formed to address the grievous human rights violation of enslavement. One such organization is Anti-Slavery International, the oldest human rights non-governmental organization and an early pioneer in anti-slavery efforts. During the 20th century, as global conditions changed rapidly, many nations became industrialized, and post-World War 1, new/alternate forms of slavery took hold worldwide. For organizations like Anti-Slavery, the fight was not over; it had merely

taken on deceptive new forms. This research aims to further expand upon the previous work on Anti-Slavery published in 2009 by Professor Claude Welch. The original published article focused on Anti-Slavery almost exclusively. With the current research, the article will be updated to reflect new information, organizations, and situations in the field of anti-slavery as well as more recent work of Anti-Slavery. In addition, the scope of the original article will be extended chronologically and theoretically to consider the work of other notable non-governmental organizations in advocating for an end to all forms of slavery. We seek to address four questions, all of which have significant bearing on evaluating the current impact of abolitionist organizations in achieving their goals. The four questions are: 1) How do anti-slavery organizations reach out to others? 2) How can an organization, if it should, make appeals for all types of slavery related issues? 3) How have current economic trends allowed slavery to flourish? 4) Does publicity really work against recalcitrant governments?

Dysphagia in Parkinson's Disease

Brianna Barbarossa; **SUNY Fredonia**
Mentor: McLoddy Kadyamusuma

Parkinson's disease occurs as a result of cell loss that affects the central nervous system, especially cell loss in the substantia nigra, which is responsible for producing dopamine. The chemical dopamine is responsible for transmitting electrochemical signals responsible for allowing coordination of movement. One of the symptoms that can occur in patients with Parkinson’s disease is dysphagia, a complication that can result in swallowing difficulties. These complications in swallowing can lead to the aspiration of solids and liquids. In order for swallowing to proceed smoothly there is need for some voluntary and involuntary processes during the swallow. However, due to motor deficits affecting muscle function in those with Parkinson’s, reduced pharyngeal constriction and delayed airway protection are just some of the prevalent swallowing abnormalities that can occur. Dysphagia has been correlated with negatively influencing quality of life, which can be evaluated using the Swallowing Quality of Life Questionnaire (SWALQOL). Evaluating and assessing swallowing abilities is crucial to understand the patient's anatomy and their physiological capabilities. The goal of the Speech Language Pathologist is to treat the individual’s symptoms, if possible, in order to improve their quality of life as the disease progresses. Having professionals trained to evaluate and assess swallowing function is critical for the health and safety of those with swallowing dysfunction to prevent consequences such as silent aspiration.

Keywords
Parkinson's Disease, aspiration, quality of life

How Experiential Learning Impacts Success after Graduation

Diana Barva; **SUNY Fredonia**
Mentor: Susan McNamara

Alongside my business professor, Dr. Susan McNamara, and leadership faculty, we are analyzing over 150 students on how they define success. These responses will be used to identify which

aspects of the classes are more impactful and the amount of skills/knowledge that is gained as a result. Content analysis is being used to analyze the open-ended questions. We have established inter-rater reliability on the first of our themes- “How to define success”. The leading definition of success, at a 44% occurrence rate, defines success as having a job that is enjoyed. Our presentation will report on this and other data including which aspects of experiential learning are most impactful and if there are differences in what is learned in classes vs. a structured club.

Dietary and Caloric Analysis of Dancers

Sarah Bass, Mercedes Smith, Lacey Dickerson; **SUNY Fredonia**
Mentor: Todd Backes

Assessment of resting metabolic rate and body composition determination provide useful tools in the dietary and caloric analysis of active individuals. Collegiate dancers are a population of highly active individuals that may engage in restrictive diets because of body composition concerns. Additionally, because of their very high activity levels, the dancers may not be fully aware of their daily caloric needs. Restrictive diets combined with high levels of activity can have long term and lasting negative health outcomes. The purpose of this observational study is to determine resting metabolic rate, perform a dietary analysis, estimate daily caloric requirements, and measure body composition of collegiate dancers. Resting metabolic rate will be determined via indirect calorimetry. Subjects will be fitted with a metabolic gas calibration mask and breath by breath oxygen consumption will be measured for a 20-30 minute period. Body composition will be determined by a BODPOD via the whole body plethysmography method. This method first determines body density then the COSMED BODPOD software will calculate body composition percentage based on the age, gender, and ethnicity appropriate regression equation. Subjects will submit food logs and nutritional analysis will be performed with NUT Nutrition Software. We hypothesize that the dancers will have higher resting metabolic rates compared to their age, gender, and body mass population norms and they will have lower body fat percentages compared to their gender and age population norms. Additionally, we expect the dancers to be calorically (and possibly nutrient) deficient compared to their measured resting metabolic rate and estimated daily caloric requirements.

"Now U Know": An Assessment of Community-level Interventions to Reduce Colorectal Cancer Health Disparities in Underprivileged Communities

Leatrice Bennett; **University at Buffalo**
Mentor: Terry Alford

Colorectal Cancer (CRC) is the second leading cause of cancer death in the United States, particularly in underprivileged communities. The high frequency of CRC can be linked to poor lifestyle choices, cultural beliefs, limited access to healthcare and lack of education. "Now U Know" is an initiative facilitated by Roswell Park Cancer Institute's Office of Cancer Health Disparities Research that aids high-risk populations through community-level intervention and outreach. In addition to raising awareness of the benefits of early screening and treatment, we

will assess the efficacy of community-level intervention programs to reduce CRC health disparities in underprivileged communities.

Synthesis of Chalcone Derivatives as Potential Tubulin Binding Agents

Samantha Betts; **SUNY Fredonia**
Mentor: Mark Janik

A current focus in chemotherapy is the development and synthesis of drugs that inhibit tubulin, which is a protein that during the mitosis of cancer cells assists in the segregation of chromosomes. A particular site of interest on tubulin is the colchicine-binding site as drugs that bind there not only inhibit tubulin, but are also known to show selectivity to tumor vasculature. An important class of colchicine- binding agents are chalcone derivatives, which have shown potent tubulin inhibition.

OBJOBJGiven the promising activity of this class of compounds, it has been decided that a series of modified chalcone analogs will be synthesized with the goal of testing their tubulin binding activity. The synthesis of these analogs starts with the synthesis of compound 3. This compound was synthesized with the use of the reagents, 3, 4, 5- trimethoxybenzaldehyde and 4-methoxybenzyl chloride. After purifying the product using column chromatography it was analyzed via 1HNMR. Compound 3 will then be reacted with piperidine and a series of aromatic moieties to produce the chalcone analog 4.

Let's Get Sudsy: A qualitative and quantitative analysis of a mass media campaign to promote hand hygiene on a college campus

Myriah Bodie, Maria Bajwa, Kayla Boorom, Marisa Cicak, Donette Hutchison, Laura Kraus, Michael Mackey, Erin Page, Rebecca Polosky, Stephanie Rose, Matthew Slilaty, Austin Strauss, Jacob Yoest, and Erik Young,; **SUNY Broome**
Mentor: Kimberly B. McLain

Handwashing can prevent up to 80% of diseases (CDC, 2016), reduce diarrhea and respiratory illness, and the incidence of antibiotic resistance (CDC, 2015). While studies have found participants stated they understand the importance of handwashing, only a small percentage know how to and perform it (White, et al., 2005; Surgeoner et al., 2009; Borchgrevink et al., 2013). Students exposed to hand hygiene campaigns understood the benefits of, practiced it more, and experienced less illnesses than those not exposed (Moe et al., 2001; White, et al., 2005). We propose college students have a lack of awareness about proper hand hygiene; however, improvements in knowledge and performance will occur with targeted media campaigns.

A campus-wide survey was conducted to assess participants' knowledge, practice, and observations of others' hand hygiene habits. A total of 936 participants (71% female, 27% male) completed the survey; 78% were students and 22% were faculty/staff. The majority (60%) were in the 16-25 year age range. Thirty percent (30%) were from Health Studies, 28% Liberal Arts, 19% Business/Public Services, 18% STEM, and 4% undeclared.

Preliminary data indicates 92% reported handwashing is important in the prevention of disease. Only 22% were aware of the proper length of time and only 25% knew the two most

important factors for effective handwashing: friction and running water. While 92% stated they washed their hands after using the restroom, 76% reported they saw someone leave a restroom without doing so.

Following a campus educational event in fall 2016, focus groups were conducted to obtain qualitative data about the impact of student produced print ads in comparison to those used by the Centers for Disease Control (CDC). A survey to assess changes in hand hygiene knowledge and practice will be conducted in the spring, post a campus-wide media campaign to promote hand hygiene awareness.

Deterring Prescription Drug Abuse through Mobile Apps

Kelli Bores; **SUNY Buffalo State**
Mentor: Sarbani Banerjee

Opioid abuse is a serious problem in America. Many die every year through overdoses on medications that have been prescribed to them by their doctors. Patients will take their medications more frequently or more in number to help alleviate their constant pain. Addictions happen quickly and without warning; anyone is susceptible to addiction and in turn abuse. Through this research project an app will be made help combat this epidemic. Programmed in JavaScript, CSS, and HTML, this app will be written for Android devices. Notepad++ will be used to write this program. This app will allow the user to set timers to remind them when to take their medications so they are not taking too many a day or taking too many each time they are scheduled to have a dose. It will have the function for the user to input a list of drugs they are taking and when they got them, so they will know when to refill them. In addition to helping manage the times and functions of the medications, this app will help identify potential dangers of abusing these drugs and the risks associated with them. It will also encourage users to not take more medications then they should. The goal of this App is to make the user feel like their pain is indeed manageable and in turn make them less likely to develop an addiction.

Binaural Audio - The Future of Audio is 3D

Mark Boucher; **SUNY Finger Lakes**
Mentor: Paul Engin

Technology breakthroughs have become an ordinary occurrence in the modern world. Everyday life is full of news consisting of the latest technologies and new ways to see the world and experience it.

Recently, there has been a giant outbreak in the field of virtual reality. This technology provides a new way to see life around us and experience artificial settings. However, it is often forgotten that audio also has the power to transport and immerse us into seemingly different locations or even worlds. Meet binaural audio, a process focused on recording audio which can audibly transport us into the world we are listening to.

You might ask, hasn't this concept already been semi-popularized with 5.1 and 7.1 surround sound? While they can both create similar effect while listening, binaural audio has a much

larger mass appeal because it works with any pair of stereo headphones (currently experimenting with getting it to work with a stereo speaker setup as well).
I accomplished creating binaural audio recordings by making a mic setup that mimics the human head and the way we hear with our ears. I first took a Styrofoam mannequin head, drilled holes where its ears would be, and placed microphones in those locations. Then, I recorded each microphone to separate channels, panning the left ear to the left channel in the mix and right ear to the right channel in mix. Putting on headphones and then listening to the recording really makes you feel like you're engulfed in whatever you are listening to, and creates such a realistic sound-stage. Currently in our research, all of our participants actively looked around for the sounds being played back.
While it sounds fantastic right now, I am taking more steps to achieve the most authentic form of realness possible. Next I plan on 3D printing ears and ear canals, and then placing the microphones were the human ear drums would be, making it record as close to the way the human ears hear as possible. Binaural audio opens up a whole new world of audio possibilities that can be used to enhance storytelling, music, Autonomous Sensory Meridian Response (ASMR), or any kind of project one can imagine. I am so thrilled and passionate to be a part of the content creators who help increase the public awareness of binaural audio and push the platform's limits.

A molecular analysis of the eastern blacklegged deer tick (Ixodes scapularis) for the presence of the Lyme disease-causing bacteria (Borrelia burgdorferi)

Andrew Boze; **SUNY Broome**
Mentor: Tracy Curtis

From October 2013 to November 2016, approximately 1,028 eastern blacklegged (deer) ticks (Ixodes scapularis) were collected from Chenango Valley State Park (Port Crane, NY) and the SUNY Broome Community College nature area (Binghamton, NY). Of these 1,028 ticks, 316 ticks were tested for the presence of Borrelia burgdorferi, the bacteria known to cause Lyme disease in humans. The molecular techniques used to determine bacterial presence were tissue lysis, DNA extraction, Polymerase Chain Reaction (PCR) and Gel Electrophoresis. This data was used to compare the presence of B. burgdorferi in ticks with respect to gender (adult male versus adult female) and location (Chenango Valley State Park versus SUNY Broome CC). Of the 316 ticks tested, 31.1% of those found in Chenango Valley State Park tested positive for B. burgdorferi, while 34.6% of those found in the SUNY Broome Community College nature area tested positive. In addition, 32.1% of male ticks tested positive for B. burgdorferi while 31.8% of female ticks tested positive. Overall, there was no significant difference in the percent of ticks carrying B. burgdorferi with respect to tick location or gender. However, the percent of ticks found to be positive for B. burgdorferi in these public areas (31.1 and 34.6%) suggest that individuals should take precautions to avoid tick exposure.

The Interaction Between Meaning and Forgetting

Molly Brady; **SUNY Geneseo**
Mentor: Jason Ozubko

Memory can be separated into two categories: rich and detailed memories (recollection) and feelings of familiarity. Past studies have shown that familiarity-based memories for meaningful items (such as words) are forgotten at a slower rate than familiarity-based memories for meaningless items (such as nonwords, like "HENSION") (Ozubko & Seli, 2016). The forgetting rates for recollective memories are not affected by the meaning of what is stored. The present study investigated the effect of artificially induced semantic encoding on forgetting. During a study phase, participants were shown sets of three words, which were either semantically related (DOG-CAT-BIRD) or unrelated (CLOWN-GRASS-FRIDGE). Memory for each set of words was tested at two later intervals to assess whether the items were familiar or recollected, and then to see if the items were remembered or forgotten at a final test. Results revealed that words learned in semantically related sets were more likely to be remembered at the final test than words learned in unrelated set, but only if they were familiar. The forgetting rates of recollected words was unaffected by whether they were learned in related or unrelated sets.

Creating "Educated Citizens": Reflections on the Relevance of Dewey to Contemporary College Education

Noah Brigham; **SUNY Finger Lakes**
Mentor: Mark Worrell

The ideas of John Dewey on the topic of Democracy will be discussed at length. These ideas include that democracy must not serve only as a political form but also as a way of life. This way of life as conceived by Dewey must permeate all aspects of the democratic society especially those in which interpersonal interaction is a key component. These include the church, the family, the school, and industry. Dewey would argue that academic institutions must have the goal of producing individuals who are more capable of nurturing the democratic way of life based on their mature participation guided by informed conviction. The goals and virtues of twenty-first century academic institutions and the students who populate them will be examined. This investigation will argue that students no longer view college as a basis for improving themselves as citizens and furthering their education but rather see academia as a means to an end. That end is the attainment of a career, with that career again serving as a means to an end. This final end consists of the typical materialistic goals of many young Americans that identify a particular conventional socio-economic status. It will be further argued that this is not only a result of American capitalist culture but is also caused by the financial burden universities place on students. It will then be argued that a career-oriented education does not instill informed conviction and democratic virtues whereas a liberal education does. By not reinforcing this realization in their students our academies are failing their role in facilitating democracy as a way of life.

Healthy Herpetology: What Salamanders Say About The Environment

Kyle Brooks; **SUNY Morrisville**
Mentor: Eric H. Diefenbacher

The ability to accurately determine environmental health can create crucial information for both conservation and policy making. Some semi-aquatic environments acquire the most

information out of the use of studying salamander biodiversity within its boundaries. The focus of this study was to create baseline data within a seep in upstate New York at Rogers Environmental Education Center in Sherburne, NY. Eight plots were searched by a group of students for the equivalent of one person hour each. Information gathered included snout vent length (SVL), species, and gender if noticeable. Results revealed that the area contained a large salamander population consisting of Desmognathus fuscus, D. ochrophaeus, Plethodon cinereus, Eurycea bislineata, and Gyrinophilus p. porphyriticus. Desmognathus ochrophaeus made up the majority of the salamanders found while only one G. p. porphyriticus was found during this survey. Juveniles along with adults of most species were found suggesting that the salamander populations are thriving in this area. This data will contribute to future research at Rogers Environmental Education Center and aid in future conservation efforts.

Employees Satisfaction Level: A Business Case Study

Casey Brundage; **SUNY Fredonia**
Mentor: Mojtaba Seyedian

The premise for my presentation will be based from my team's business consulting project with FSA on the satisfaction of the student workers in Cranston Marche. A survey will be sent to the student workers to collect their views of FSA and possible changes they wish to see. Using the results, my team will do further research in various businesses on their employment satisfaction and incentives. From the research, my consulting team will generate a report and possible implementations the HR of FSA can work into the workplace, in an attempt to change the views of FSA to be more positive.

Fredonia Guitar Quartet

Michael Bunny, Steven Wong, Pennington Watson, Shane Bucci; **SUNY Fredonia**
Mentor: James Piorkowski

The Fredonia Guitar Quartet, run by director James Piorkowski, is a select ensemble which performs a technically difficult level of repertoire, most of which was created or used by the Buffalo Guitar Quartet. This group performs regularly around Fredonia and Dunkirk and is potentially a touring ensemble. Its inclusion demonstrates the musical potential of SUNY Schools, along with the general standards of all arts.

Algae community response to nutrient enrichment at Chautauqua Lake, NY.

Sarah Busch; **SUNY Fredonia**
Mentor: Courtney Wigdahl-Perry

Chautauqua Lake (NY) has been experiencing increases in the frequency of algae blooms during the summer in recent years. These blooms reduce water quality, pose potential public health risks, and affect the tourism industry centered around the lake. In order to better understand the causes of these blooms, we tested algae community changes under different nutrient additions in June 2016. We amended whole lake water from the North Basin of Chautauqua Lake for the following treatments: control (C, no nutrients added), nitrogen (N) as nitrate plus

ammonium, phosphorus (P) as phosphate, and nitrogen plus phosphorus (N+P). Bulk chlorophyll results indicate that algae responded most to the N+P addition, with response also to the N addition. It was observed that the various species of diatoms had the highest response to the addition of N, P and N+P. These data suggest that algae at Chautauqua Lake are co-limited by nitrogen and phosphorus in the early season, with nitrogen playing a more important role than phosphorus. We plan to share this information with stakeholders around Chautauqua Lake to help with the development of effective management strategies.

Effect of lithium exposure on development and behavior using a mouse model of late-gestational exposure

Matthew Bussmann, Rober Cooper, Patricia Whetstone, Lily Dixon; **SUNY Fredonia**
Mentor: Catherine Creeley

Lithium is a commonly used drug as treatment for bipolar disorder. Pregnant women with bipolar disorder must choose whether to remain on the drug during pregnancy. Because lithium is a known 1st trimester teratogen, it is not uncommon for women to refrain from taking their medication until later in pregnancy. Previous research shows that fetal exposure to lithium, especially during the brain growth spurt period, has the potential to affect neurodevelopment, and to cause long-term behavioral effects. We used a neonatal mouse model to investigate the effects of third trimester exposure to lithium. Litters of Swiss-Webster mouse pups were randomly assigned to receive saline or a lithium (3 mEq/kg) injection from postnatal day 4 to 7 (P4-P7). Body weights were measured daily. Righting reflex, walking initiation and rotarod testing were conducted through P21. Cognitive performance was assessed using the Morris water maze from P50 to P65. It was hypothesized that postnatal lithium exposure would result in short-term neurobehavioral and long-term cognitive deficits. Results show that neonatal exposure to lithium had no significant impact on normal growth and development, and did not cause long-term learning and memory impairment.

Evolutionary origin and functional impact of the GHR deletion

Hannah Calkins; **University at Buffalo**
Mentor: Omer Gokcumen

The size of the human body varies amongst individuals. However, the genetic basis of this variation remains largely unknown. Recent studies have shown that hundreds of genetic variants among humans are associated with human height, and consequently with overall body size. One of these variants is the common deletion of the third coding exon of the growth hormone receptor gene (GHR). The deleted version of this gene codes for a shorter peptide. Functionally, the deletion has been associated with increased response to growth hormone treatment and smaller birthweights. However, the evolutionary origins of this deletion and its exact functional impact are not known. To bridge this gap in knowledge, we created a transgenic mouse model so that we can directly study the impact of the deletion to organismal-level phenotypes (e.g., size during development, response to fat-rich or fat-poor diets), transcription levels of the gene, and the protein activity. We observed that mice with the homozygous recessive growth hormone receptor genotype are shown to grow more slowly in

their earlier days of life as compared to their wildtype counterparts. Using polymerase chain reaction and digital polymerase chain reaction based approaches, we further explored the variation of growth hormone receptor at the transcriptional level in mice with heterozygous and homozygous deletions. We also observed unexpected phenotypic variation, such as loss of hair, lower frequency of births and lower offspring survival. Our results will be the first direct study of the functional and evolutionary impact of the common deletion affecting growth hormone receptor in humans.

Remaining in Limbo: The Gray Space of Reproductive Futurity and Queer Time on One's Body as Demonstrated in Arturo Islas' The Rain God

Rachel Campbell; **SUNY Brockport**
Mentor: Milo Obourn

In a critical analysis of Arturo Islas' The Rain God, I will show that three characters, Miguel Chico, Mama Chona, and Felix, all have different identities that place them in between reproductive futurity as defined by Lee Edelman and queer time and space by Judith Halberstam. This can be defined as limbo. Islas disrupts the established discourse that does not allows these two differing lifestyles to intersect. I employ Edelman's definition of reproductive futurity, which he describes as a political ideology that operates to save white, abled-bodied, heteronormative, male children, also I use Halberstam's definition of queer time and space, which is defined as a temporal and spatial lifestyle that does not contribute to a capitalistic structure. In this paper, I will show that the two parallel characters, Mama Chona and Miguel Chico, as well as Felix to demonstrate that reproductive futurity and queer time and space are not mutually exclusive. Miguel Chico enters limbo through his queer identity and disability. His sexuality hinders him from producing a family, yet his disability hinders him to enter sexual relationships. Mama Chona enters limbo through her racial and gender identity. Her queer space is her racial background, which she sanitizes in her family, but accepts her Mexican heritage in death. Felix enters limbo through a racial and queer identity. His queer space is his race and sexuality and Felix is accepted both ways. In the end, I hope to expand the discourse of Angel family to comforts others from the establish discourse that does not include the possibilities of complex lifestyles.

pH Tide: Are There Physiologic Consequences?

Jeffrey Capomaccio, Ashley Wright, Corrin Collins, Emily Pallotta; **SUNY Monroe**
Mentor: James Cronmiller

Our study assessed whether ingestion of acidic or alkaline fluids changes blood pH enough to activate homeostatic mechanisms. Body pH is maintained within narrow life sustaining limits by three mechanisms: buffers, respiratory and urinary systems. Buffers maintain pH by adding or removing hydrogen from body solutions. The urinary system maintains pH by adding or removing hydrogen or bicarbonate to/from the blood or urine. Chemoreceptors monitor body pH levels and are tied to respiration which modulates carbon dioxide levels, intrinsically tied to pH, through breathing. Ten volunteers drank three different fluids, deionized water (control), caffeine free diet soda (acidic solution), and bicarbonate (alkaline solution), over 1 ½ hours on

three separate days. Urine pH was obtained at baseline and every half hour to ascertain whether there was a changed in blood pH. Minute ventilation (volume x respiratory rate over a minute) was determined at the same time points to determine whether respiratory compensation was activated. Drinking deionized water did not affect blood pH or minute ventilation. Drinking caffeine free diet coke decreased blood pH and increase minute ventilation and drinking bicarbonate solution increased blood pH and decreased minute ventilation. It appears drinking alkaline or acidic liquid does effect pH stabilizing mechanisms.

Analysis of Ded1 phosphorylation in translation initiation and repression

Jessie Caprino; **University at Buffalo**
Mentor: Sarah Walker

During translation, ribosomes attach to and move along mRNA sequences in order to make proteins. Ded1 is a DEAD-Box RNA helicase that promotes initiation of translation by unwinding mRNA secondary structures that block ribosome attachment at the 5' end of the mRNA or ribosome scanning of the 5' UTR. Ded1 is seen to have opposing roles in both initiation of translation and repression of translation. We are investigating the role of post-translational modifications to Ded1 that have been observed in Saccharomyces cerevisiae, and hypothesize that modification of Ded1 could modulate its functions in activating or repressing translation. Here we use CRISPR-Cas9 to make precise point mutations of known phosphorylation sites in the Ded1 gene. This strategy employs a plasmid encoded Cas9 gene and engineered sgRNA coupled with a mutation-containing template for homology directed repair. We evaluate strains that are either phosphodeficient (Serine to Alanine) or mimic constitutively phosphorylated Ded1 (Serine to Aspartate) in growth assays. In the future, we will use reporter assays to assess the ability of each Ded1 mutant to promote or repress translation, and test the ability of the mutant proteins to unwind RNA structures in vitro.

The National Debt and Long Term Productivity

Blake Carter; **SUNY Onondaga**
Mentor: Kristen Costello

During the last election cycle, the economy has become one of the most important topics among voters. With the reduction of the use of facts and the misuse of statistics, politicians have created an atmosphere of ambiguity involving the economy and more specifically the severity of the national debt. With the national debt reaching record numbers, making decisions can have lasting implications on future productivity.
In this presentation, I am going to explain why it is more important to invest in education, technological advances, and renewable resources, than it is to cut meaningful government programs to pay down the national debt. While I agree having debt isn't a successful long term plan, carrying a debt to focus on productivity is more beneficial. I am going to explain the national debt and attempt to clear up misinformation associated with the economy. To achieve this, I am going to use statistics and historical data to briefly explain different topics like: The difference between debt and deficit, the components of the federal budget and government spending, as well as how the government sells debt and who buys it. Finally, I am going to

explain how investing in education and renewable resources will have long-term economic benefits. Because these topics are often popular talking points in political conversations, having a basic understanding of the topics in my presentation will help people make better informed decisions that will affect efficiency and productivity for future generations.

GameTime: A Raspberry Pi Powered Goal Light

Muhamed Catovic; **SUNY Buffalo State**
Mentor: Sarbani Banerjee

In the modern era most of the everyday mundane tasks are becoming automated. Normal devices and appliances used to do those tasks now also have the ability to connect to the Internet. These devices are generally referred to as “The Internet of Things” (IoT) or “Smart Devices”. This research project will look into the possibility of attaching a Raspberry Pi (a cheap computer the size of a wallet) onto an ordinary Goal Light to transform it into a "Smart Device" and have it become automated.

The Goal Light is a battery powered light that resembles the lights seen behind the goals in hockey arenas that lights up indicating that a goal has been scored. The Raspberry Pi and the light will be connected together by attaching wires going from the Input/Output pins on the Raspberry Pi to the wiring of the button that is used to activate the light. The Raspberry Pi will have a program written in Python (version 3.0), a general purpose programming language, that reads live JSON (JavaScript Object Notation) data to determine if a goal has been scored in order to activate the light. On a graphical interface created with a Python library called Tkinter, users will be instructed to choose their favorite team so the light will only activate for the selected team. Advanced analytics and stats about current games will also be displayed to give users a more comprehensive experience.

Capacitance-based nondestructive evaluation of three-dimensionally printed polymer

Patatri Chakraborty; **University at Buffalo**
Mentor: Deborah Chung

Three dimensional (3D) printing is an emerging technology that fabricates a physical object from a 3D digital model. Due to the layer-by-layer fabrication involved, 3D printing can build complex objects with a wide variety of materials and functions. In this research project, a novel capacitance method has been developed to probe the microstructure of the printed material within and between the layers. The capacitance is measured in the through-thickness and in-plane directions, using an impedance meter. The printing involves bottom-up stereolithography, using an acrylic ester UV-curable resin. The degree of in-plane preferred orientation of the polymer molecules increases with decreasing layer thickness. The preferred orientation increases the electric permittivity, thereby increasing the capacitance. Preferred orientation is known to affect the mechanical properties. The through-thickness permittivity of the printed material is higher than that of the bulk polymer, due to the preferred orientation. Stress relaxation decreases the through-thickness permittivity for (approx)3 hours after printing, after which the permittivity increases gradually for (approx)3 hours. The through-

thickness capacitance of the interlayer interface is infinity, which indicates that this interface does not contribute to the capacitance of the printed material (which amounts to capacitors in series, with each layer corresponding to a capacitor) and reflects the high quality of this interface. This method can also be applied to monitor the printing process in-situ.

A Study of Taphonomic Influences in Northern Broome County, NY

Meaghan Champney; **SUNY Buffalo State**
Mentor: Julie Wieczkowski

This study was done on animal predation on un-fleshed remains to determine if there is a correlation between the size of the bone and the size of the predator. Chicken bones were used to represent small decomposing remains and beef or lamb bones were used to represent larger remains. It was hypothesized that larger animals would prey on the larger bones and smaller animals would prey on the smaller bones. There were five site locations in upstate New York in northern Broome County where one chicken bone and one beef or lamb bone were placed for at least six days. These five sites were spread out over approximately three acres of land. This was done four times with new bones being set out at each site every six days. Data regarding the movement of bones and any marks left on them by predators were measured each day around 4pm for the duration of the twenty-four-day study period. Maps were made for each of the bones that were moved in order to compare movement patterns between the smaller and larger bones. Of the forty bones that were placed at sites, fifteen were moved by predators and one of the chicken bones has extensive gnawing marks on it. The large bones were moved a total of twenty-eight times for an average of 3.8 meters each time. The small bones were moved a total of ten times for an average distance of 2.2 meters. Marks left on the chicken bone were measured and compared to known predation marks to determine what species of animal caused them. Eight of the bones were not recovered at the end of the study period. This research will aid forensic anthropologists when human remains are found and bones of varying sizes have been scattered.

The Influence of Cause Marketing Alliance on Donation Types

Celena Chiu, Dina Rose Cornell, Anthony Santor; **SUNY Oneonta**
Mentor: Chien-Wei Lin

Recently, it is increasingly common to find firms involved in strategic alliances with other firms to execute the Cause Marketing (CM) campaign—CM alliance. There are two types of CM alliance: within-industry alliance (e.g., General Mills has teamed up with the three other major food companies to donate meals to Feeding America) and cross-industry alliance (e.g., the Product (RED) campaign). Using data from an online CM news website, we empirically investigated 335 CM campaigns in 2015 and identified different types of charitable donation. Specifically, firms can initiate the CM campaign by providing foods, goods, or services; donating money without any conditions; or donating money based on consumers' purchases. This marketing research project answers three important questions: (1) How many CM campaigns across varies industries? (2) Are there any differences between within- and cross-industry alliances on choosing the donation type? (3) How other factors (e.g., repetition, and social

media usage) affect the above relationship? Our results show that cross-industry alliance leads to more cause marketing campaigns (vs. pure donation) than within-industry alliance. Cross-industry alliance is also less sustainable than within-industry alliance.

Consular Advocacy and Latino Immigrant Rights

Hannah Cho; **SUNY Cornell**
Mentor: Shannon Gleeson

This research examines the genesis and evolution of the Mexican Consulate as an advocate for immigrant labor rights in the United States. Immigrant workers face a plethora of challenges in the workplace, especially in terms of immigration status and barriers to claims-making. This research analyzes local variation in outreach models and collaboration with advocacy groups in 12 major metropolitan centers, including traditional and new immigrant destinations. We examine the dynamics of four major sectors of civil society: immigrant rights groups, labor unions, legal aid organizations, and worker centers – each of which cater to different constituency of immigrants, rely on varied sources of funding, and interact with consular officials in distinct ways. We are currently coding over 160 organizational interviews using Atlas TI. Our goal is to understand the nature of consular collaborations, especially during the annual Labor Rights Week/Semana de Derechos Laborales. The consulate is an important resource and alternative to U.S. government bureaucracies that immigrants are unwilling or unable to engage. However, our preliminary findings reveal an array of challenges to accessing and maintaining formal and informal alliances with the consulate. In particular, places with a variety of worker rights organizations rely less on the consulate, while the consulate plays a more important role in rural regions and those cities with fewer advocates available. Consular leadership also matters; as staff turnover lines of communication must be rebuilt, and sometimes this on the ground outreach becomes de-prioritized.

EEG-Based Personal Identification using Mallows Distance

Kun Woo Cho; **University at Buffalo**
Mentor: Wenyao Xu

While the study in using Electroencephalogram (EEG) activity for diagnosis of brain disorders has been extensively researched, EEG activity for biometric-based personal identification has also grown in recent years. In this paper, we develop a novel automatic EEG-based identification system by modeling EEG data as a distribution. Our distribution similarity is measured by Mallows distance, a cluster similarity sensitive distance that is robust to signal noises. In this work, EEG signals are decomposed into the segments using several statistical feature extraction methods, discrete wavelet transform (DWT), and fast Fourier transform (FFT). With the dataset obtained from real field EEG data, our proposed system achieved an average accuracy of 89.20%, which demonstrates the feasibility and effectiveness of utilizing EEG signals for the identification system.

Analysis of different metal species found in tap water at SUNY Fredonia

Jack Choczynski; **SUNY Fredonia**

Mentor: Michael S. Milligan

Water samples were collected from around the campus at SUNY Fredonia from taps and drinking fountains to have their contents analyzed by Inductively Coupled Plasma – Optical Emission Spectroscopy (ICP-OES). ICP-OES is an instrumental techniques that is very effective in identifying and quantifying trace levels of many elements in aqueous solution. Older buildings like Gregory Hall and Thompson Hall were targeted, but other buildings' water sources were not excluded. Nonmetals such as sulfur and phosphorus were also detected as well as some metalloids. A majority of the detected elements had similar concentrations between different sources; while iron, phosphorous, and zinc were detected only in some samples. Many samples from the Science Center showed a much higher copper concentration; one sample detected copper in one part per million (ppm), while the EPA Maximum Contamination Level (MCL) is 1.3 ppm. Lead was not detected in any of the samples. Water hardness was rated as soft, as the combined concentrations of calcium and magnesium fell below 17 ppm. Concentration of a water sample by a factor of 15 detected the presence of molybdenum and yttrium, which fell below detection limits in other samples.

The Effect of Environmental Enrichment on Nicotine Primed Ethanol Consumption in Male and Female Rats

Morgan Christie, Makenzie Schrader; **SUNY Cortland**
Mentor: Joshua Peck

Nicotine and alcohol are the two most commonly abused drugs worldwide and account for over 9 million deaths per year combined. Studies in human populations consistently demonstrate an interaction between nicotine and ethanol abuse. In fact, chronic nicotine use activates stress/reward-related brain regions that facilitate compulsive alcohol drinking. Unfortunately, medications for the co-substance abuse of nicotine and alcohol have fallen short of supporting long-term abstinence. One potential treatment strategy that could help sustain long-term nicotine and alcohol abstinence is Environmental Enrichment (EE). We examined if the implementation of EE after nicotine primed (administered nicotine injections, 0.08 mg/kg) ethanol self-administration training will significantly reduce continued ethanol consumption (abstinence) in male and female rats. We found that EE significantly reduced ethanol consumption for male and female rats after both protracted abstinence periods (7 and 30 days) during the 1-hr relapse test. The results suggest that enriched life conditions are important in facilitating long-term abstinence in nicotine and alcohol co-substance abuse.

Redshift Paralyzation using Dask

Marcello Cierro; **SUNY Oswego**
Mentor: Shashi Kanbur, Rahul Biswas

In this project, my team was given the opportunity to enhance a working redshift processor. Originally, the code given would process through a supernova API, going through each data calculation one at a time at about 20 seconds per calculation. Through the work of our team, we utilized a python library called 'Dask' in order to parallel process the calculations, decreasing

the time per process to ~8.1 seconds per super nova. We tested the scale of this and found that the time per calculation changes very slightly when processing through 10, 100, 1000, etc processes. Additionally, the only limiter in our code is the amount of cores available in a computer, allowing better computers to process more data even quicker. For our use we had a 4 core intel i5 processor.

Assessing the biochemical effects of PCB 105 exposure on Elliptio complanata (Eastern Elliptio)

Kaitlyn Clapp; **SUNY Oswego**
Mentor: James MacKenzie

Polychlorinated biphenyls (PCB) are strongly hydrophobic toxicants and while they are now highly regulated in the US, they still prevail in today's environment. PCBs are known to bioaccumulate in species of higher trophic levels, for example humans. For this reason, it is critical to have the ability to quantify PCB levels and understand the biochemical effects of PCB exposure. The purpose of this study is to use the aquatic invertebrate Elliptio complanata to determine the effects of PCB exposure. E. complanata are bivalves which are known to be efficient biomonitors owing to the fact that they are sedentary filter feeders. Mussels were exposed to PCB 105 in a controlled laboratory setting and the toxicant levels were quantified using gas chromatography. It was verified that the unspiked mussels (control) had a PCB 105 concentration of 0.00 ± 0.00 ng/g tissue (n = 5). The mussels that were exposed to PCB 105 had an average uptake of 26.64 ± 8.75 ng/g tissue (n = 7). Reactive oxygen species (ROS) are normally produced throughout metabolism and are counteracted by antioxidants. Toxicants can increase the production of ROS and can cause damage to lipids, protein, and DNA. ROS overproduction, an indicator of oxidative stress, can be measured indirectly by assessing the caused damage, specifically protein carbonylation. As such, we determined the protein cabonylation in treated and control mussels.

The Effect of Beverage Additives on Food Choices and Consumption at a Breakfast Buffet

Elizabeth Clifford, Jamie Valvo; **SUNY Buffalo State**
Mentor: Leah Panek-Shirley

As obesity rates continue to climb, conflicting evidence regarding recommendations to reduce energy intake abound. Common suggestions include taking one's time while eating or consuming caffeinated products as appetite suppressants. Limited research exists on the impact of eating speed with or without caffeine on energy intake by weight status. The purpose of this study was to identify and describe interactions of caffeine, BMI, and eating speed on energy intake, appetite, and satiety. 18-50 year old adults visited the laboratory on four separate occasions to complete a double-blind, placebo controlled, randomized, cross-over study. On the first three visits, participants consumed a beverage containing 0, 1, or 3 mg/kg caffeine (order randomized). Thirty minutes later, they consumed a buffet breakfast ad libitum. After leaving the laboratory, participants completed hourly appetite assessments. We hypothesized more than ten minutes to consume a meal would result in increased fullness and satiety and decreased energy intake compared to less than ten minutes and this effect would

be moderated by caffeine dose and BMI. At all caffeine doses, fewer calories were consumed <10 min compared to 10-30 min (all $p < 0.05$). At low caffeine dose (1 mg/kg), overweight and obese subjects consumed significantly more energy than normal weight subjects at 10-30 min ($p = 0.001$). Our findings support intake of fewer calories in a shorter period of consumption. Acute caffeine can have a small effect on meal intake, but these effects are not likely to result in significant reduction in energy intake over the long term.
Keywords: caffeine, BMI, intake, time

The Benefits of Massage for Military Veterans

Amanda Coe; **SUNY Morrisville**
Mentor: Laurie Zbock

According to the American Massage Therapy Association, massage therapy is effective in producing significant reductions in pain and stress (amta.org). Despite this, massage therapy is currently not a recognized benefit by the U.S. Department of Veteran Affairs (va.gov). With this in mind, I began a research project in which I will apply various techniques and advanced modalities of massage therapy to improve the stress, pain and performance levels of two U.S. Veterans. In this study, I hope to improve the quality of life for these Veteran clients through the use of traditional western massage, cupping, hot stone, hydrotherapy, reflexology, stretching and range of motion. Stress, pain and performance levels of each client will be measured throughout the study to determine whether or not massage therapy is beneficial for these ailments.

Documenting and Optimizing House Plant Growing Conditions

Autumn Coe; **SUNY Monroe**
Mentor: Christopher Kumar

As of 2014, more than half of the world's population lived in cities. As urbanization increases, access to fresh produce becomes more difficult, especially for cities in colder climates where the outdoor growing season is short. This project was conceived as a way to take advantage of the temperature controlled state of most homes and make growing plants (produce, herbs, flowers) indoors easier. It automates the watering and lighting of indoor plants and documents their growing conditions for later optimization.

Each plant pot, or group of similarly sized pots, will have a moisture sensor and solenoid water valve. The valve will open and dispense water when the moisture level in the soil falls below a given threshold. Lights above the pots will have their intensity modulated by a light sensor to meet the lighting needs of the plant (full sun, partial sun, shade etc.).

The soil moisture and light level data will be automatically documented along with room temperature and amount of water supplied. Each time a plant is grown, the documented growing conditions can be compared to the results. With repeated use, this growing condition data can be analyzed and the controllable factors optimized.

Effects of gender and sexual orientation on sense of being understood by one's romantic/sexual target group

Jaqlyn Colangelo, Sapphire Jones; **SUNY Fredonia**
Mentor: Darrin Rogers

Belief in the fundamental unknowability of people in one's romantic/sexual target group may be related to important aspects of both heterosexual/cisgender and LGBTQ+ relationships. Equally unexplored is the question of how perceptions of being understood by members of one's target group might affect one's approach to romantic or sexual relationships. The effects of being perceived by others have been well explored in areas such as social facilitation and group dynamics. In romantic relationships, individuals spend significant effort in impression management. It is reasonable to hypothesize that one's sense of how well one is understood by potential romantic partners, in addition to how one is perceived in general may be an important element in relationships; furthermore, as in several other variables involved in relationships, this sense may vary by one's sex and/or sexual orientation.
This question will be explored with qualitative analysis of interviews from approximately 30 young adults, including both LGBTQ+ and non-LGBTQ+ participants. Data analysis will be according to principles of Grounded Theory; patterns and themes in responses will be identified and discussed in light of established factors in sex and gender studies.

Exploring Physical and Electrical Properties of CdSe Quantum Dots

Nicholas Colletti; **SUNY Potsdam**
Mentor: Linghong Li

Quantum dots are a semi-conductive nano-particle used in a variety of electrical devices for their unique electrical properties properties. Synthesized CdSe quantum dots vary in size based on the heating time of the reaction. The longer the reaction, the greater the radius of the dots. We measured the size of the dots using UV/VIS spectrophotometer. By spin coating a small film onto conductive glass slides and solar panels we determined how radius effects the conductivity of CdSe quantum dots. Furthermore we have determined which radius gives the most efficient increases in conductivity.

Oscilloscope'd: Polishing An Asteroids Clone Game

Arsenio Colon; **SUNY Buffalo State**
Mentor: Sarbani Banerjee

For Global Game Jam 2017 event, a game called Oscilloscope’d was developed. It is an asteroids-based clone that uses “sound waves” to attack the enemies and stay alive until your health points reach zero. The idea for the project was derived from someone playing with an oscilloscope, and displaying 3D images on it via oscilloscope “music”. The initial goal of the project was to make the aesthetics as close to how an oscilloscope looks like in real life. The final goal and the scope of the project is to embellish the game’s already existing systems, add user interface elements to the game, make a game menu, add more levels, add a “boss battle”

stage, with an overarching goal of improving the “game feel”. To achieve this, Unity 5 will be used. It is a popular cross platform game engine that uses C# (C-Sharp), a widely used programming language in the gaming industry that runs on the .NET framework. C# will be used to code and implement various systems needed for the game. Unity is a powerful game engine, used in 34% of the top 1000 free mobile games, and used by both independent developers and large companies in the industry. Due to Unity 5’s multi-platform engine and package builder, the game will be able to run on both PC and MAC. The intended audience is meant for casual gamers of all ages, although an experienced gamer may have an easier time playing the game due to increased hand-eye coordination.

Extended Aperture Photometry on K2 Variable Stars

Zachary D'Alessandro; **SUNY Oswego**
Mentor: Shashi Kanbur

ABSTRACT TITLE: Extending the EAP Method to Cepheids in Campaign 7 of NASA's K2 Mission
ABSTRACT:
The EAP method is a routine to optimize the aperture "mask" to be placed over Kepler pixel-by-pixel photometric data to preserve astrophysical variability in resulting light curves, while avoiding contamination from nearby stars. Our goal was to execute the EAP method on 9 Cepheids near the Galactic Center observed by Kepler in Campaign 7 of the K2 Mission. Apertures were defined to contain the movement of each star within the target pixel mask for each respective, pixel-by-pixel flux measurement. Multiple iterations of the method were performed on each observation to achieve an optimal aperture that yielded the most useful light curve.

Weinreb-Nahm Synthesis in Synthetic Pheromone Production

Justin Davison; **SUNY Fredonia**
Mentor: Mathew Gronquist

Some species of roundworm from the order Aphelenchida use volatile pheromones in mate attraction. Preliminary analyses of volatiles collected from active worm cultures reveals that a defined set of short chain ketones and alcohols may comprise the pheromone mixture. In order to obtain sufficient sample amounts for complete characterization and further biological evaluation, a synthetic sequence utilizing the Weinreb-Nahm ketone synthesis as a key step was developed.

An Environmentally Safe Cooling System

Nathan DeMario, Joseph Carr, Ryan Amidon; **SUNY Alfred State**
Mentor: Jon Owejan

An Environmentally Safe Cooling System Refrigerants, including the pervasive hydrofluorocarbons (HFCs), have improved our lives by providing us with a relatively safe means of cooling our buildings and our food; however, relative to carbon dioxide, refrigerants have about 2,000 times more global warming potential. Water is typically a poor refrigerant

due to the high pressure ratio required for condensing, so it is typically used for evaporative cooling in open systems like swamp coolers and cooling towers. These technologies are best applied in drier climates as cooling is limited by the dew point of outside air. This talk will describe a new cooling system architecture capable of cooling and dehumidifying in any climate. Water selective membranes are used to isolate water vapor from humid air and evaporating liquid water coolant. This water vapor is then expirated to the outside air through a second membrane system, resulting in precise control of relative humidity and temperature. An experimental setup for investigating flow distribution design and membrane performance has been developed. Modeling and experimental data are described and related to current expectations in the cooling systems industry. Further, system design for a 7 kW demonstration unit that utilizes waste heat, instead of electricity, to drive the cooling processes will be presented. The key parameters impacting cost and performance will also be discussed.

Keywords: Alternative Energy, HVAC, Membrane, Heat Pump, Water Vapor, Thermo-Fluids

Identification of Pheromones Attractive to Roundworms

Joshua Deschner; **SUNY Fredonia**
Mentor: Matthew Gronquist

Some roundworms within the order Aphelenchida, including species which are economically important as agricultural pests, have been shown to produce volatile, small-molecule pheromones which play a role in mate attraction. Preliminary analyses by gas chromatography-mass spectrometry (GC-MS) of volatiles collected above active roundworm cultures have identified several candidate compounds for the active pheromones. In order to confirm tentative identities, as well as to carry out further biological testing, a chemical library of potential pheromone candidates is being synthesized. With this work, we describe the synthesis and characterization of a family of C-8 ketones and alcohols which will be subsequently evaluated as roundworm pheromones.

The Song Tradition of Ireland

Katelyn Dietz, Maxwell Gucinski; **SUNY Fredonia**
Mentor: Daniel Ihasz

We will prepare a performance of songs learned from our travels to Donegal, Ireland this March for the 28th Inishowen International Folk Song & Ballad Seminar.

Dynactin's p24 subunit is critical for microtubule organization and normal cell cycle progression

Alexander Dimitri; **SUNY Fredonia**
Mentor: Nicholas Quintyne

Dynactin is a multi-subunit protein complex that is integral for almost all functions of the minus-end directed motor cytoplasmic dynein. Individual subunits of dynactin are responsible for a variety of cellular processes involving stable dynein movement along microtubules as well

as microtubule anchoring at the microtubule-organizing center, spindle pole formation, chromosome alignment and timely mitotic entry. One subunit of dynactin, p24, was analyzed to understand the functional role it plays within dynactin. p24 is associated with the microtubule and motor binding sites of dynactin and is believed to be involved with proper microtubule organization and microtubule binding between dynactin and dynein. Knockdown and overexpression of p24 was performed to study how manipulation of p24 affects microtubule organization, cell proliferation and cell cycle progression. Knockdown of p24 was performed by transfecting p24 shRNA plasmids into COS-7 cells. Overexpression of p24 was performed by transfecting green fluorescent protein tagged p24 plasmid DNA into COS-7 cells. Knockdown of p24 at 72 and 96 hour incubation times led to a significant decrease in mitotic frequencies as well as an increase in microtubule disorganization. Knockdown also led to significant increases of cells in S phase and a significant decrease of cells in G2/M phase of the cell cycle when measured using flow cytometry. Cells containing overexpressed GFP-tagged p24 at a 15 hour incubation time led to a significant drop in mitotic index value as well as an increase in microtubule disorganization. Overexpression of p24 also led to a significant decrease of cells present in G2/M phase of the cell cycle. p24 is now observed to play a critical role in dynein-dynactin dependent cell cycle progression and proper microtubule organization within COS-7 cells.

The Memorizing Game: Powered by Python

Christina DiVita; **SUNY Buffalo State**
Mentor: Dr. Sarbani Banerjee

This research project would create a learning game for kids with cognitive disabilities. The program would fulfill the need to help special needs kids improve their vocabulary knowledge. Python (Version 2.7), a programming language, would be used to create the memorizing game. The game would include pictures and words as well as audio features where kids would try to match the pictures with the common vocabularies that they see on the screen. There would be a main menu where the kids can pick a category of their choice. The purpose of creating this game is to have a well-designed game for special needs kids with cognitive delays. The HTML (Version 5) would be used for creating the framework for the game and Java programming language would be used for the active events needed for the matching to work properly. Once the game is developed, it can be downloadable to any laptop or desktop with Windows Operating Systems.

The game tested by kids from 5-8 years of age who have some kind of disabilities that make them unable to do things that are normal for other kids. These kids attend the Cleveland Hill elementary and middle school. The game would provide different levels of difficulties, ranging from easy to moderate, that the kids are able to do. This would be a fun and interacting game for all kids with or without disabilities to learn new words, since the game would improve their knowledge of vocabulary.

Analysis of gurken Internal Ribosome Entry Site Secondary Structure Through Differential SHAPE

Connor Dolce, Kevin Aumiller, Allison HH Martin, Cory Emborski; **SUNY Fredonia**

Mentor: Matthew Fountain and Scott Ferguson

Selective 2' - Hydroxyl acylation analyzed by primer extension (SHAPE) is a chemical probing technique used to identify the secondary structures of RNA molecules. The process utilizes small Hydroxyl-selective electrophiles to measure the reactivity of the ribose 2' - hydroxyl group through the formation of chemical adducts. The secondary RNA structure studied in this lab is the proposed internal ribosomal entry site (IRES) in the gurken mRNA from Drosophila melanogaster. IRES structures in eukaryotes can provide an alternate translation pathway for important proteins during times at which the normal, cap-dependent pathway is inhibited.

The proposed structure is located in the 5' untranslated region (UTR) upstream from the start codon on the mature mRNA coding for the gurken gene. Differential SHAPE utilizes three reagents: 1-methyl-7-nitroisatoic anhydride (1M7), 1-methyl-6-nitroisatoic anhydride (1M6), and N-methylisatoic anhydride (NMIA), each with different reactivities. 1M6 selects for bases with an open face available for stacking interactions. NMIA selects for nucleobases with long-term dynamics. The 1M7 reagent is used to measure local nucleotide flexibility; its ability to react more rapidly than NMIA and 1M6 allows for adduct formation on intermittently base-paired riboses, such as those found in pseudoknots. The adducts formed by the reagents can be quantified through reverse transcriptase-mediated primer extension. In this process, the reverse transcriptase stops at the locations at which the chemical adducts exist, resulting in a pool of cDNA fragments of varying sizes, relative to 2'-OH reactivity. With the use of fluorescently tagged primers, cDNA fragments of a specific size are represented as peaks read during capillary electrophoresis, with the height of the peaks corresponding to a frequency of termination at a given nucleotide. The QuSHAPE program was used to generate reactivity profiles for the three reagents and RNAStructure was used to predict overall structure.

3D Technology Application in STEAM Curriculum

Jillian Dolder, Joseph Small, Sheela Small, Miranda Yates; **SUNY Potsdam**
Mentor: Linghong Li

There are very few programs that allow students to model and create 3D objects at colleges around the United States. We have developed a lab manual curriculum that will be used for the SUNY Potsdam's STEAM (arts and sciences) education. Within this lab manual students can discover basic scientific concepts from the realms of biology, chemistry, earth science, and physics. Alongside the concepts, students will learn how to model and create 3D objects in 123Design to later be printed on MakerBot Replicator Printers. This course focus on training students' critical thinking, problem solving, and collaboration. This lab course will blend together the ideas of a STEAM curriculum that will be available to all students on the campus with an interest in 3D printing. After students take this class, they can apply the modeling skills to their other class assignments.

Year 1 Agronomy Trials for Growing Industrial Hemp in New York State

Christopher Domanski, Jeff Stewart; **SUNY Morrisville**
Mentor: Jennifer Gilbert-Jenkins

As part of New York State's Industrial Hemp pilot program, Morrisville State College received a permit to investigate basic agronomic requirements of hemp production. A crop was planted in early July 2016, and the focus of the first year of study was nutrient management in organic production. Specifically, the study aimed to determine how different combinations of manure supplied plant available nitrogen throughout the growing season, when all manure is applied at the same rate (150 lbs total N./acre). Additionally, the plant available nitrogen was compared to seed yield. For the experiment three similar fields of Channery silt loam were chosen totaling to approximately 30 acres. Each field was divided into four sections and equally fertilized with different manures; liquid dairy, liquid dairy with pelletized poultry, pack pig with pelletized poultry, and pack pig respectively. Soil samples were taken in July, August and September to analyze the plant available nitrogen, estimated as NO3- in solution and extractable NH4+. Results of this first year of data did not show any significant difference in exchangeable nitrogen between the different manure treatments. Each plot was then harvested and recorded separately to compare the yield to manure type. The results did not show any correlation between yield and exchangeable nitrogen (R2 = 0.0072). Yields varied from 11 bu./acre to 20 bu./acre with an average total yield of 16 bu./acre or 704 lbs./acre for the full 30 acres. The sections with low yields suffered from weed problems throughout the growing season potentially confounding the nutrient availability versus yield comparisons. The conclusion from the first year of the experiment is that the data did not show statistical significance, but instead helped guide our methods for the second year of this project. Data collection will continue into year two with adjustments that will include: decreasing the number of manure combinations and increasing the N application rates, tissue analysis to evaluate how much nitrogen is actually being taken up by the plant and when, as well as a focus on weed control strategies.

MATHEMATICAL MODELING OF A SUGAR ROCKET

Travis Donnelly, Tyler Bershad; **SUNY Potsdam**
Mentor: Linghong Li

Everything from GPS, Communications, studying climate and Defense depend on being able to get satellites into orbit. Being able to do this cheaply and safely is important for our collective technological future. The purpose of our project is to create and test a mathematical model of the thrust created by a sugar rocket. We will construct a small rocket and conduct a static firing of it to collect data and compare that data to the prediction of the mathematical model. There isn't a wealth of publicly available information on the modeling of thrust of solid fuel rockets so our goal will be to show that this can be done cheaply.

Electoral College, Its flaws, and How they could be fixed

Wesley Ebersole; **SUNY Geneseo**
Mentor: Aaron Herold

Ever since its Inception the electoral college system of the United States has been criticized as untrue to the Democratic nature of our nation's founding. When the Constitution was ratified in

June of 1788 it replaced the much weaker Articles of Confederation as the ruling document of these United States. However to prevent abuses by the government, a series of amendments were put into place. Contrary to this last statement however in order to override the rule of the masses when necessary, the Electoral College was established. Two of the last five presidential elections were won by a candidate who did not have the popular vote and although that might not seem like a lot that is a 40% failure rate of a system that is supposed to predict the will of the people. Through this evidence and much more we can establish that the Electoral College is flawed as it stands and it requires some revisions. This presentation will delve into how the Electoral College works and some proposed methods of fixing it.

Social Networking and Self-Presentation Study

Matt Evans, Connor Mauche, Alberto Gonzalez; **SUNY Fredonia**
Mentor: Joseph McFall

The majority of those who use social media have the belief that it brings about more good than any potential adverse effects. If there is a subset of the population from which the inverse of this notion is true, shedding light on it might bring an end to a potential ceaseless cycle of compounding gloom. It has been shown that individuals who have been rated as having lower self-esteem tend to have positive views toward social media and their ability to use it as a tool to socialize without any of the negative aspects associated with in person contac (Forest & Wood, 2012). This aforementioned article will be replicated, with this in mind an additional research question and hypothesis was formed. When shown intentionally ambiguous Facebook posts from an artificially made account, those who have been rated as lower self esteem will rate such posts as being more negative, additionally it is also believed that those who rated higher on a self esteem scale will rate ambiguous posts as having more positive traits. The expected results will be that there will be a significant rater difference between the high and low self-esteem raters when compared to those who were rated as having a median range self-esteem. This data acquisition and analysis has yet to be finished at the time of the writing of this synopsis, and will be completed before the conference date. This research is the next step in uncovering the way that social media influences us in our daily lives, and could lead finding better ways for everyone to get the most advantageous results from social media use while reducing the most amount of adverse effects.

Dysphagia

Margaret Fagan; **SUNY Fredonia**
Mentor: Christine Gerber

Dysphagia, or difficulty swallowing, is a life threatening disorder. This disorder can result from a number of acquired and congenital conditions including stroke, traumatic brain injury, Multiple Sclerosis, Parkinson's, Cerebral Palsy, and other neuromotor diseases. This difficulty can be seen in one or multiple phases of the swallow: the oral, pharyngeal or esophageal phase. Difficulties in swallowing impact the very essential survival skill of eating. Throughout my semester long independent research I studied informational websites, articles, and real world experiences to fully grasp the disorder. I focused in on the essential information speech-

language pathologists (SLPs) should be well versed in in order to give these individuals the best and safest care possible. The impairment of one's swallow can easily be life threatening. Throughout my research I also focused on the details that are crucial in providing clients with the ability to exercise a safe swallow. It is the responsibility of the SLP to be attuned to the signs and symptoms that are indicative of Dysphagia, as well as being proficient in carrying out the proper screening and assessment measures to recognize this disorder as soon as possible. My studies found common items between popular screening measures that are proven high predictors compared to others. The role of the SLP does not end once the diagnosis and recommendations are made. My research concluded that the importance of the specific recommendations made for an individual are many times overlooked by the caregiver. Mealtime routines are where the importance lies in individuals with Dysphagia. The client and the persons responsible for maintaining the proper recommendations for the client during mealtimes must be aware of the seriousness of this. The consultation from the SLPs to these caretakers must be thorough and reinforced on a regular basis. Neglecting the specific SLP recommendations can lead to choking, infection, and death for patients with Dysphagia. This reinforcement of safe mealtime routines must a priority for SLPs out in this field.

Fredonia Enactus Competition 2016-2017

Marianne Faivre; **SUNY Fredonia**
Mentor: Susan McNamara

Every year, Enactus holds regional and national competitions for Enactus teams all over the country to come together to present their positive impacts on their communities. Enactus' goal is to empower the local community through entrepreneurial actions to allow them to sustain themselves in the future. And we've done just that! Our poster will be a collage of all of Fredonia Enactus' outcomes from this last year. This year our poster highlights our divisions that work closely with at risk youth and small businesses in the Fredonia/ Dunkirk area. Our divisions Life, Next and Steam have made positive impacts on the lives of many local youth groups through the creation of weekly, biweekly, or monthly workshops. These workshops aim to increase the students' communication skills, team building skills, leadership skills, and career exploration. We've also been able to empower local business through our divisions AdValue and Edge. Advalue has worked with local businesses who have their operations running smoothly, but are looking to add value to their business through marketing means. This year alone, AdValue has created marketing materials for 7 businesses and continues to grow! Unlike AdValue, Edge works with business owners who are struggling and need some assistance. This year, Fredonia Enactus has worked with many clients on multiple projects. One of these projects included helping a young married couple manage the operations of their new business "Cath 18" in order to maintain a steady cash flow year round. Another project involved working with an immigrant women in hopes of helping her achieve her dreams to open a restaurant. Enactus has other divisions with other great outcomes that weren't able to make the "competition cut". But the SUNY Undergrad Research Conference is a great place to give them their needed recognition.

Ray-Tracing Analysis of Parabolic Solar Troughs for Drinking Water Treatment in Low Resource Settings

Matthew Falcone; **University at Buffalo**
Mentor: James N. Jensen

According to the World Health Organization, over 1.8 billion people drink contaminated water, which leads to 760,000 annual childhood deaths from diarrheal diseases alone. The introduction of household-scale treatment devices in low-resource areas has the potential to greatly reduce the incidence of waterborne disease. The parabolic solar trough is a device which is intended to sustainably disinfect drinking water at no operating cost to the end user. It utilizes the reflective geometric properties of a parabolic surface to magnify incoming solar radiation, exposing water to adequately high temperatures for human consumption. Previous work on the parabolic solar trough includes a quantitative model which analyzed the effects of varying parabolic curves on adjustment frequency over time. While the results of this study showed that it is possible to treat a household supply of water with a reasonably sized parabolic solar through, it assumed that light reflected perfectly off the metal surface. This presentation will discuss the construction and ray-tracing analysis of a parabolic solar trough to determine the precision of the path of light against the model. A laser mounted above the curve will simulate solar radiation as it enters the trough. The final destination of the light ray will be recorded as a location on the axis of symmetry, where a pipe containing the water will be located. These data will be compared to the predicted path of light and the model will be readjusted before full-scale construction and field testing.

Thiamine Concentration and Lipid Content in Lake Ontario Prey Fish

Nicholas Farese; **SUNY Brockport**
Mentor: Jacques Rinchard

Thiamine deficiency complex is prevalent in salmonines throughout the Great Lakes region. Thiamine plays major roles in growth, reproduction, and neurological development of fish and can only be obtained through diet. Recent studies have provided evidence of a link between lipid content and thiamine concentration in prey. Therefore, the objective of this study was to determine the extent of this relationship in forage fish from Lake Ontario (i.e., alewife, round goby, and rainbow smelt). Samples were collected using trawling nets during the annual assessment surveys conducted by the US Geological Survey – Lake Ontario Biological Station and NYS Department of Environmental Conservation. Thiamine concentrations were measured using high-performance liquid chromatography. Preliminary results showed that alewife had the lowest total thiamine concentration (2.9 ± 2.3 nmol/g), while round goby had the highest concentration (8.0 ± 4.2 nmol/g). Thiamine pyrophosphate was the dominant vitamer in rainbow smelt and round goby (65% and 69%, respectively), whereas free thiamine was the most prevalent in alewife (55%). These results suggest that predators consuming alewife will have less thiamine available to them than those feeding on either rainbow smelt or round goby, possibly increasing their likelihood of developing a thiamine deficiency. It will be discussed whether thiamine concentration and lipid content correlate.

Time as a Human Construction: Time Consciousness in Alice in Wonderland.

Ashley Farley; **SUNY Brockport**
Mentor: Megan Norcia

Part of the human condition has been an obsession with the tracking and physicality of passing time. This can be seen with the inventions that have evolved to accommodate the need of documenting time. During the nineteenth century, the world was experiencing the growth of industrialism, encouraging people to begin integrating technology into their daily lives (Beer). Part of that integration was the pocket watch, a growing accessory that helped signify the complex industrialism that was occurring at the time. Qualities like belatedness, anxiety, and the physical props (i.e. the pocket watch) all are representative of the individual in a society living in a time-regulated society. As such Carroll's obsession with time throughout his novel mainly pertains to the historical focus on it during that time, resulting from the boom of the Industrial Era.

The use of the pocket watch in Lewis Carroll's novel critiques the growing concept of time as a physical and tangible thing throughout Alice in Wonderland. Carroll's overall purpose in his novel, is to render every common occurrence and quality of everyday life non-functional; doing this with the public school system, the process of law, the traditional tea-party, and especially time.

While the abstraction of time passing is a universal experience in the natural world, animals and plants aging as part of the natural processes of life, the "possession" of time is a strictly human quality that comes from the development of the technological age. This means that the tangibility of time is strictly human, only achieved by calendars, clocks, and similar inventions. Within his novel, Carroll's criticism of the growing obsession with time in Wonderland is a reflection of the dependency of the growing industrial world on keeping track of time. Carroll's exploration of time within the world is not limited to merely the tangibility of time, but the overall idea of it. In making time nonfunctional, Carroll also explores the structure of linear time, and what may occur if that foundation is broken up. By destructing order, he almost negates time, creating a timeless space where even the abstract time becomes irrelevant to Wonderland.

Ventilation Rate of Trained Endurance Athletes on a Lower Body Positive Pressure Treadmill

Eli Feathers; **SUNY Cortland**
Mentor: Jim Hokanson

The use of Lower Body Positive Pressure treadmills (LBPPT) has become an option in the rehabilitation and training for endurance athletes. These treadmills reduce ground impact force and allow athletes to train at a lower body weight (BW). Ventilation rate (VE) and breathing rate (BR) are important information for endurance athletes to sense their training intensity. There is a lack of research on VE and BR on LBPPT notably with endurance trained runners. It is also unclear if changes in VE and BR are proportional to the decrease in body weight on LBPPT. PURPOSE: To measure VE and BR during steady state running on a normal running treadmill (100% body weight), and LBPPT (60, 75, and 85% of body weight). METHODS: Fifteen trained endurance athletes (21.7 ± 2.9 yrs, 61.9 ± 8.45 kg), who have participated in collegiate cross-

country and can run a 7-minute mile pace for 5 km, completed two sessions of exercise where they ran on (i) normal treadmill, and (ii) a LBPP treadmill. During each session they ran at three steady state speeds (2.9, 3.4, and 3.8 m·s-1) for four minutes each. Oxygen consumption, CO2 production, and VE and BR were collected using open flow indirect calorimetry. RESULTS: VE increased linearly with speed at each weighted condition. Volunteers' average (±SD) VE on normal treadmill at each speed was 50.6 ± 11.1, 59.2 ± 11.2, 68.9 ± 9.5 L/min, respectively and at 60% BW was 33.5 ± 8.9, 39.8 ± 9.4, and 45.6 ± 11.3 L/min, respectively. Average (±SD) BR on normal treadmill at each speed was 34.5 ± 8.2, 37.0 ± 8.2, and 42.0 ± 9.8 br/min, respectively. At 60% BW, BR was 32.1 ± 9.3, 35.5 ± 8.6, and 37.7 ± 9.0 br/min, at each respective speed. BW of 75 and 85% showed similar relationship. CONCLUSION: Ventilation rate and BR increased as a function of speed. Ventilation rate was lower with decrease in body weight yet BR seemed to be less affected by weighted condition. This may be important for training, as runners typically match BR and stride frequency.

Monitoring Long Term Tree Disease, Deer Overgrazing, Climate Change Forest Plots, and Establishing Coarse Woody Debris Protocols

Samantha Fleming; **SUNY Fredonia**
Mentor: Jonathan Titus

Twenty-nine 900m2 permanent plots have been established in 6 upland and wetland forests in Chautauqua County. In the plots all trees are tagged and DBH measured is annually along with snags and downed woody debris assessments. Each plot contains 3 16m2 understory quadrats. This long-term study is driven by the dramatic forest change occurring across the region due to forest pests including emerald ash borer, hemlock woolly adelgid, beech bark disease, invasions by aggressive invasive plant species, intense deer grazing, and climate change.
Thus far, it has been found that the upland plots have the largest trees, fastest growth, and the highest productivity. Younger sites grew much more slowly. Trees at Elm Flats exhibited hump-shaped basal regions and had a high proportion of shade-tolerant trees. This suggests that Elm Flats may have some old growth characteristics. The other wetlands have characteristics similar of successional forests.
This is part of a long-term study to determine over and understory vegetation change. The data collected will be used to see which specific aspects of the natural areas have changed the most over the course of many years.

Looking to the Future: Documenting Day Laborer Experiences and Exploring a New Method of Worker Power

Odalis Flores; **SUNY Cornell**
Mentor: Maria Figueroa

Day labor has become an increasingly visible occupation over the last 15 years. As men and women across U.S. cities gather on street corners and seek informal employment in the construction, domestic work, and other industries, they often experience significant labor rights violations. This research focuses on gathering data on day laborers in the New York City area through three approaches. First, non-participant observations of day laborer sites were used to

gather qualitative data on worker demographics and their interactions with potential employers and the surrounding community. Our research found differences between corners in terms of their gendered nature, worker camaraderie, and employer negotiations. Secondly, two surveys were fielded at ten worker centers located in the boroughs of the New York metropolitan area to gather information on day laborers' working experiences and their technology literacy. The data gathered from these preliminary surveys indicates that a significant number of participants experienced some form of wage theft and participant familiarity with smartphone usage varied. Finally, the ongoing portion of this research involves a pilot project to disseminate the Jornaler@ App, which is a smartphone application designed to prevent wage theft. The application is being introduced to members of worker centers with the goal of providing a data gathering and sharing tool that would enable workers and advocates to record violations of labor and employment laws and facilitate enforcement. Overall, the documentation of trends identified through this research is useful for future worker organizing and public policy initiatives.

Attribution of Blame as a Function of Consequences, External Circumstances, and Alcohol Consumption

Meghan Flynn, Ariel Gelfand, Connor Mauche; **SUNY Fredonia**
Mentor: Jack Croxton

Many studies have looked at the attributions that people make when assigning causality for negative outcomes. The purpose of our study was to gather information regarding how individuals judge and attribute blame for an accident. We conducted a study that focused on the consequences regarding injury, weather, and alcohol consumption associated with vehicular accidents. College students were given one of twelve randomly assigned scenarios regarding a car accident involving two individuals, where one driver (Jordan) was either sober or intoxicated, and the other driver (Riley) sustained either mild injuries, or was killed. We performed a 2x3x2 factorial design, varying the extent of injury (mild/deadly), weather conditions (bad weather anticipated/bad weather unanticipated/good weather), and presence of alcohol (intoxicated/sober). We measured the attribution of responsibility and assignment of punishment for the accident on 7-point Likert scales. It was expected that participants would hold Jordan more responsible and assign more punishment if Riley was killed in the accident. We predicted that subjects would express more anger toward Jordan if Riley was killed. We anticipated a main effect for alcohol consumption. Participants would hold Jordan more responsible and assign more punishment for being intoxicated at the time of the accident. We predicted that subjects would express more anger toward Jordan if they were intoxicated. We also anticipated that subjects would assign the most responsibility when Jordan knowingly went out in bad weather, and assign the least responsibility when bad weather was unanticipated. We predicted an interaction between alcohol consumption and extent of injury. The impact of alcohol consumption would be greater if Riley was killed in the accident. Results of this study will be shared at the conference.

Factors Impacting Amphibian Abundance in Anthropogenic Vernal Pools

Thomas Franzem; **SUNY Oneonta**
Mentor: Dan Stich

Vernal pools are small ephemeral wetlands that constitute a critical feature of upland ecosystems. Seasonal drying prevents fish from establishing in these pools, which can allow other animals to take advantage of this predator-free environment. Among other functions, vernal pools serve as vital breeding grounds for many amphibian species. Unfortunately, vernal pools aren't widely studied and lack of adequate knowledge and protection has led to their disappearance from many ecosystems from a multitude of causes. Human created vernal pools have been implemented in a number of locations to offset these losses and promote conservation of pool-breeding amphibians that rely on them. However, the effectiveness of anthropogenic vernal pools often goes unstudied. While anthropogenic vernal pools have the potential to serve as a valuable conservation tool for amphibians, they also have the potential to act as ecological traps if not properly sited and constructed. The goal of this study is to investigate factors influencing the use of anthropogenic vernal pools by frogs and salamanders in an upland habitat in Cooperstown, New York. Starting in Spring 2016 and continuing through Spring 2017 we, conducted surveys during the amphibian breeding season; we used these data to relate amphibian occupancy and abundance to environmental variables at multiple ecological scales over the breeding seasons through the use of multi-species occupancy models. This research will be useful in assessing ecological benefits of these human-created pools, and will have direct implications for future construction of vernal pools for amphibian conservation. Furthermore, our results will provide basic life-history information that may be useful for understanding factors that might influence population resilience with respect to ongoing and projected changes to global climate.

Biochemical Analysis of the Effects of T450 Phosphorylation on LGN Protein Function

Justin Galardi; **SUNY Brockport**
Mentor: Brandy Sreenilayam

Breast cancer is a relatively common disease, developing in 1 in 8 women in the U.S. statistically. Currently, no cure is available. The basis of this study centers around LGN protein, named specifically for its characterized repetition of leucine (L), glycine (G), and asparagine (N) residues in the N-terminal half. The protein holds an important role in mammalian cell division and has been determined to have notable effects, including in both mitotic spindle alignment and cell polarity. LGN has a high concentration in most breast cancer cells and it has been determined that the 450th threonine residue (T450) is phosphorylated. The goal of this project was to explore the biochemistry of both wild-type LGN and two T450 mutants of LGN to gain insights as to how LGN phosphorylation results in proliferation of breast cancer cells. PCR is being utilized to generate the T450A T450D mutants, which mimic the unphosphorylated and phosphorylated T450 residues of LGN. Isolation of LGN is currently attempted via immunoprecipitation using anti-rabbit LGN primary antibody and Protein A/G Plus-Agarose beads, but is still being optimized. SDS-PAGE and Western blotting techniques are also currently

used to evaluate presence of LGN. Characterization of LGN function relative to phosphorylation status of T450 could lead to development of novel treatments for breast cancer.

Gene Regulation: RNA-seq data analysis for adipocyte differentiation

Lucas Galbier; SUNY Brockport
Mentor: Rongkun Shen

During cell differentiation, the expression of different genes within a cell experiences various changes. Using next-gen sequencing, RNA-Seq is an approach to measure the transcriptional profiles in an unbiased way on a whole-genome scale. Because of huge amounts of data, the RNA-Seq data analysis usually requires biology knowledge and bioinformatics expertise. Traditionally, the process started with aligning all the sequencing reads to the genome and unmapped reads were aligned to splice junctions of annotated transcripts. Then all the reads mapped either to the genome or splice junctions were counted and assigned to each gene (isoforms of each gene were merged). It usually takes half a day to days to finish. In this study, we used a totally new alignment algorithm called kallisto. It builds up the index for all the annotated transcripts (mm10 RefSeq annotation in this study) but doesn't care about the genome. Although information seemed to be missing, it has proven valid. Aligning RNA-Seq reads is much faster, completing within an hour. Because of sequencing technology limitations, we trimmed the bases with low quality scores both at the beginning and the end, keeping bases from position 7 to 106. Another program called sleuth was then employed to discover more than 100 significantly changed genes during cell differentiation. We are working on functional analysis to decipher the biological meaning of those genes.

The Success of Japanese Boys' Love Manga in America: A Mirror Image

Rebecca Gasiorek; **University at Buffalo**
Mentor: Nona Carter

This paper examines the conditions under which Japanese Boys' Love (BL) manga has gained success in the United States of America. Japanese Boys' Love functions as an expression of female sexuality, featuring homoerotic relationships between two males. The early history and development of the genre as well as the conditions for its early reception by female audiences in Japan in the 1970s, relied on the use of the borrowed space of a foreign country and the imagined foreigners living within those borrowed cultures. The purpose of this paper is to determine whether Japanese Boys' Love manga published in the United States meet the aforementioned criteria of representing a foreign nationality and foreign setting. For American audiences, this foreign setting is Japan. The data used in this paper were Boys' Love manga titles offered by Juné publishing company, just one of the handful of English-license manga publishing companies in the United States specializing in Boys' Love manga. Nationality was determined by the character's name, or being explicitly stated. Setting was determined in a similar way; relying on the cultural cues such as phrases which cannot be easily translated, the presence of translator's notes, imagery (such as obento lunchboxes), etc., when not explicitly stated. Of the 139 Boys' Love manga sold by Juné publishing company in November 2016, 131 titles were set in Japan and 264 out of 278 characters featured in each title's main coupling

were Japanese. This data shows that the American reader's affinity and acceptance for homoerotic stories unfolding in a foreign setting acts like a mirror-image to Japanese readers' acceptance of those very stories in the 1970s, constructing the same fantasy in which female sexuality can be freely explored.

Belief in performative bisexuality and sexual aggression toward bisexual women

Ariel Gelfand, Elayna Kinney; **SUNY Fredonia**
Mentor: Darrin Rogers

Belief in performative bisexuality (BPB) is the belief that bisexual women have sexual relations with other women predominantly to please heterosexual men (Fahs, 2009). BPB may plausibly lead to sexual coercion of bisexual women by lesbian women and heterosexual men--i.e., pressure to sexually perform with other women--with important implications for understanding and preventing sexual aggression toward this sexual minority. The current study will test this hypothesis with an anonymous online survey of approximately 200 young adults, including a significant purposive sampling of LGBTQ+ individuals, recruited from student researchers' social networks, both in person and via online social media. Participants will rate the deviance of sexual aggression towards straight and bisexual women, respectively, in two vignettes presented in counterbalanced order, as well as a measure assessing BPB. The researchers hypothesize a negative correlation between BPB and deviance ratings of sexual coercion in vignettes depicting coercion toward bisexual, but not heterosexual, women. Additional free-response questions about sexual coercion and aggression in LGBTQ+ and non-LGBTQ+ communities will be analyzed using qualitative methods to further understand patterns in the structured questions. Findings will be discussed in in light of research on sexual aggression toward and within marginalized sexual subcultures.

Fahs, B. (2009). Compulsory bisexuality?: The challenges of modern sexual fluidity. Journal of Bisexuality, 9(3-4), 431-449.

PAP, Harry Frankfurt, and the Ginet/Mele-Robb Debate

Andrew Gill; **SUNY Brockport**
Mentor: Gordon Barnes

The Principle of Alternative Possibilities (PAP) is an important and controversial premise in a commonly cited argument for incompatibilism in the current debate on free will and determinism. PAP is stated as the following: "An agent S is morally responsible for its being the case that p only if S could have made it not the case that p" (Ginet, 1996). Frankfurt (1969) sparked a controversy on the plausibility of PAP by providing a case in which it seems that an agent is morally responsible for his action in spite of the fact that he could not have done otherwise. Frankfurt's paper received many responses, including one particularly persuasive paper by Carl Ginet (1996), in which Ginet argues that the Frankfurt's example is not a sufficient counterexample to PAP. Mele and Robb (1998) respond to Ginet and offer a new, altered scenario that is intended to accommodate Ginet's objection and that supposedly constitutes a true counterexample to PAP. Since the publication of the said paper, the debate has continued on with further responses from Ginet (2003), Mele and Robb (2003), and Ginet and Palmer

(2010). Although many find Mele and Robb's responses convincing, I see a problem with their scenarios as presented. In this presentation, I will put forth Frankfurt's point of view regarding PAP; I will state and explain the positions of Carl Ginet, David Palmer, Alfred Mele, and David Robb; and I will weigh in on the debate to present a novel challenge as to why the examples that Mele and Robb provide may be incoherent. I will ultimately argue that their counterexamples rely on genuine simultaneity, which would be inconsistent with the Special Theory of Relativity. Since the Special Theory of Relativity is well-supported empirically, we should therefore reject the coherence of their scenarios.

Should We Fear Death?: The Symmetry Argument in Epicurus

Bianca Gonzalez; **SUNY Buffalo State**
Mentor: Kimberly Blessing

This paper explores an argument that defends an essential component of Epicurean philosophy, that death is nothing to fear. The Epicurean system of ethics is designed to make ataraxia, a state of freedom from all pains of the soul, possible. One way the Epicureans try to achieve ataraxia is to provide arguments that eliminate anxiety rooted in the fear of one's own death. Lucretius presents the symmetry argument in On Nature (c. 50 BCE), in which he says that death -- that is, the cessation of existence -- is nothing to fear, because postmortem nonexistence is similar to prenatal nonexistence, and therefore one should adopt the same attitude towards both. I will analyze the symmetry argument for its effectiveness in deeming the fear of death irrational. I will also examine common objections to the argument, such as claiming that since there is a sense of loss in postmortem nonexistence that is not as present in prenatal nonexistence, the two kinds of nonexistence are dissimilar. I will examine the Epicurean responses to these, and finally analyze the implications of the soundness of the symmetry argument on other aspects of Epicurean ethics.

Designing of Computer Games in Object-Oriented C# Language

Shannon Grajek; **SUNY Fredonia**
Mentor: Gurmukh Singh

There is general consensus that there is a shortage of female students who join and graduate in Computer Science in our country. Additionally, there is a general trend that not many female students design computer games and participate in computer gaming competitions. To overcome this stereotype taboo and being a female student of Computer Science, I started this senior project under the guidance of Dr. Singh to obtain some practical experience of creating computer games so that I could graduate from Fredonia University at the end of spring 2017. The basic objective of this senior project is to prove that female students could also develop computer gaming algorithm in high level languages such as C#. Once again, I want to reiterate that C# language course was taught by Dr. Singh for the first time during spring 2016 in the Department of Computer and Information Sciences, and I took this course with him. Therefore, C# language became a relevant choice for this senior project work under the guidance of Dr. Singh. Main advantage of C# language is that it is well-structured object-oriented language. Consequently, C# language avoids a number of the tricky problems encountered in its

counterpart Java language. Therefore, MS Visual Studio.NET framework that supports C# language was a natural consequence to be employed for the current computer gaming senior project. In this poster, we shall simulate the problem of rolling of several dice in a casino game to figure out the probability of victory. We strongly believe that our efforts of designing and developing of this gaming problem will be very beneficial for higher education students of Computer Science, Information Systems, Natural Science, Engineering and Mathematics (more specifically for STEM education). Nowadays, almost all populations of students have laptops with MS Visual Studio.NET and MS Office software preinstalled. Therefore, such like gaming programs definitely introduce both male and female learners to the most basic concepts of probability and statistics without requiring any additional software installation.

Indirect Effects of Intergroup Contact on Bystanders' Responses in a Party Situation

Claire Grant, Natalie DuBois; **SUNY Geneseo**
Mentor: Christine Merrilees

The goal of the current study was to examine the role of intergroup contact on white women's intentions to directly intervene when observing a black woman at risk of being sexually assaulted. Bystanders can preemptively stop sexual assaults; however it has been suggested that white women are less likely to report intent to help a black woman than a woman perceived to be white (Katz, Merrilees, Hoxmeier, Motisi, in press). Drawing from the contact hypothesis (Allport, 1954) the current study sought to examine the relations between intergroup contact frequency and quality on four potential mediators thought to impact the likelihood of positive intergroup attitudes and behaviors: intergroup anxiety, empathy, intergroup bias, and diversity beliefs. Extending work by Abbott & Cameron (2014) that showed white students with more intergroup contact were more likely to intervene in a bullying situation with a black immigrant, the current study looked to extend this work by examining the effects of contact on female college students' intentions to directly intervene with a black potential victim. All participants (N = 139) self identified as white/European-American women and completed surveys measuring intergroup contact frequency and quality, in group bias, diversity beliefs, empathy, intergroup anxiety, and intent to intervene. Path analyses suggest that intergroup contact frequency predicts only intergroup anxiety. Intergroup contact quality predicts intergroup anxiety, diversity beliefs, and white empathy. In turn, diversity beliefs is the only mediator in our model which predicts bystander interventions. The results suggest that the quality of intergroup interactions influence diversity beliefs which in turn predict the likelihood of direct bystander behavior. These results might be used to inform public health programs to improve the quality of intergroup interactions to in turn increase the likelihood of intervention.

Views into the Mayan Culture at Palenque, Mexico

Alex Gregory; **SUNY Potsdam**
Mentor: Timothy Messner

In a world that is rapidly changing and careening towards an era of ever increasing human - environmental impact, we need new methods to preserve and analyze cultural heritage sites. My project represents the future of archaeological preservation. I am utilizing ArchiCAD to

three-dimensionally reconstruct two plazas located in the ancient Mayan site of Palenque, Mexico (AD 250-900). I have completed the digital reconstruction of the first plaza, known as the Cross Group, and I am currently working on the second plaza, called the Palace. The Cross Group has been drawn through ArchiCAD and implemented into Geographic Information Systems. This plaza consists of three temples that I have then put through a viewshed analysis. In doing this, I am able to identify sightlines and visibility between any location within the plaza and the surrounding landscape. Viewshed analyses allow me to see the landscape as past cultures did. This analysis helps to answer important questions about the past. For instance, what was the intended function for the structure? How did past people interact with these structures on a daily basis and, more generally, what sociopolitical ties did the buildings have within the society. Through these digital reconstructions, this ancient site has been brought back to life. While temples and palaces weather and erode from natural and anthropogenic forces, we need a way to protect and store these once great capitals. The digital world offers such a solution. This study, therefore, demonstrates the future of our understanding, and protecting the past.

Structure- Function Analysis of gurken IRES activity

Brian Guy, Joshua Blundon, Anthony Tardibuono; **SUNY Fredonia**
Mentor: Scott Ferguson

Gurken (grk) is an EGFR ligand that establishes dorsal-ventral and anterior-posterior patterning in oocyte development in Drosophila melanogaster. Spindle-B is required for for double stranded DNA break repair during homologous recombination in meiosis. Females that are mutant for spn-BBU, have persistent DNA double stranded breaks during early oogenesis and this causes a ventralization of the eggshells due to a lack of Grk at later stages. This accumulation of DNA double stranded breaks cause the activation of the ATR/Chk2 meiotic checkpoint and subsequent inactivation of Vasa by phosphorylation. Vasa is an RNA helicase that is required for grk translation. We have found that spn-BBU mutants that are subject to dietary restriction lay more wild type eggs re□□ecting the return of Grk expression. We hypothesize that the grk mRNA has an Internal Ribosomal Entry Site (IRES) that initiates translation via recruitment of the ribosome independently of the 5’ cap. Using an in vitro translation dual luciferase assay, our current data
suggests the IRES is located in the grk 5’UTR. This assay allows us to control the cap-binding status by adding free competitor cap. In this assay, we have shown that grk translation is resistant to repression by excess free cap. Using a series of deletion mutants, we have identified regions required for IRES activity in vitro. We have also performed a CRISPR mutagenesis screen on the endogenous grk 5’ UTR and found some InDel alleles that disrupt IRES activity. To determine the structures that are required for IRES translation, we performed a SHAPE experiment on the grk 5’ UTR. In combination with the mutagenesis study, we have begun to identify the structures that facilitate IRES function.

Sleep and Health Among Pregnant Smokers

Arsalan Haghdel, Michael Danilov; **University at Buffalo**
Mentor: Xiaozhong Wen

We aimed to examine the trajectories, predictors, and health effects of sleep duration and quality among pregnant smokers.
We used data of 52 pregnant smokers enrolled in a smoking cessation intervention study conducted in Buffalo, NY during 2015-2016. Sleep quality and duration were measured with Pittsburgh Sleep Quality Index (PSQI) repeatedly at 3 study visits: pre-test, post-test, and end-of-pregnancy. A higher PSQI indicated lower sleep quality, with poor sleep being defined as a score of 5 or higher. Multivariable linear regression was used to identify potential predictors of sleep quality and duration including socio-demographics, initiation age and frequency of smoking, mental health, and pre-pregnancy body mass index (BMI). Multivariable logistic regression was used to examine the consequences of sleep quality and duration on the success in smoking cessation and gestational weight gain.
The sleep quality of pregnant smokers decreased during pregnancy (mean PSQI score 7.14 [SD,] at pre-test vs. 10.44 [SD,] at post-test), while sleep duration did not changed substantially (6.18 [SD,] vs. 5.77 [SD,] hours). At the pre-test, Depression was associated with lower sleep quality: women with moderate or severe depression has significantly higher mean PSQI score (9.0 vs. 5.5) than women without depression. The frequency of smoking was also associated with lower sleep quality: heavy smokers (10+ cigarettes/day) had marginally higher mean PSQI score (8.7 vs. 4.7) than light smokers (1 to 4 cigarettes/day). Although not significantly, poor sleep (vs. good sleep) at pre-test seemed to predict a higher risk of failure in smoking cessation (27.8% vs. 16.7%) and insufficient gestational weight gain (25.0% vs. 14.3%).
Depression and heavy smoking negatively affect sleep quality among pregnant smokers, which could potentially lead to failure in smoking cessation and insufficient weight gain.

A content analysis of online pregnancy message boards, mother to mother advice, and psychotropic medication used in pregnancy

Kara Hall, Brianna Stavola; **SUNY Fredonia**
Mentor: Catherine Creeley

The purpose of this study is to examine the knowledge of and advice shared between women about taking prescription drug medications during pregnancy by analyzing mother-to-mother message board content. We will collect data from posts and comments that are publicly available on babycenter.com message boards. Message board questions will be selected using search terms related to Zoloft, Paxil, Xanax, Klonopin, Lithium and Tegretol use during pregnancy. All drugs evaluated in this study are classified as class C or D drugs, which have been found to cause birth defects or death in the fetus. The goal of this study is to determine if accurate advice is being shared online using message boards popular among pregnant women. The method is Consensual Qualitative Research (CQR) which is the process of finding themes within a qualitative data set, and then classifying the extracted themes. The CQR requires an "external auditor" or researcher who is not a member of the research team to look over the data set and extract their own themes. The "external auditor" will review the research teams classified themes to add an additional perspective and double check for accuracy. The questions we are analyzing will be those presented by pregnant women pertaining to the safety of use of the above drugs during pregnancy. The comments will be observed and organized by

recurring themes relating to types of advice provided by women who answer the posted question about drug safety. We believe that the majority of commenters will give advice that is not supported scientifically. Rather, the advice will reflect their own experiences with the named drug or similar drugs.

Identification and Extraction of Botanicals for use in Cosmetics

Victoria Hannahoe; **SUNY Cortland**
Mentor: Gregory Phelan

Botanical extracts are emerging in the cosmetic industry becoming one of the biggest additives in skincare. These extracts possess many beneficial qualities that improve the skin's complexion. Pepita seeds are found in pumpkins and are composed of several fatty acids that all offer specific qualities that benefit the skin. These fatty acids have the ability to moisturize, hydrate, and exfoliate the skin while smoothing the appearance of fine lines and wrinkles. Our research focuses on two main areas; identification of sustainable techniques to extract these materials from natural sources and formulation of these materials into possible cosmetic products. A cold extraction was conducted to measure the efficacy of extraction and to determine which fatty acids were easily extractable. The seeds were placed in a specific solvent, allowing the natural ingredients within the seeds to be released. Samples were collected each day and analyzed by several spectroscopic techniques. We looked at time dependence and compared against extraction run mechanically at temperature. Initial work was done to incorporate the extracts in lotion formulations.

The Effects of Neuromuscular Electrical Stimulation on Leg Strength Post-ACL Reconstruction: a Novel Approach

Adam Hansen; **SUNY Geneseo**
Mentor: Sara Burch

Anterior Cruciate Ligament (ACL) Reconstruction is a minimally invasive procedure, in which the orthopedic surgeon removes the torn ACL and replaces it with one of many possible autografts. The recovery following this procedure can be quite difficult for the patient in terms of pain and long term strength deficits. The role of Neuromuscular Electrical Stimulation (NMES) is highly disputed among therapists due to the wide range of results, some showing positive influences, some showing no distinct effect, and others even negative results. 40 patients from OrthoNY were randomly placed into two treatment groups: Group 1 which received an additional NMES unit to use at home and in a clinical setting and Group 2 used NMES in the clinical setting only. Patients were tested at 2 separate times: preoperative and 6 week postoperative. At all testing times a one legged one repetition leg press maximum was recorded. In addition to a leg press measurement, the leg girth (width of the thigh) were measured at 6 cm and 15 cm proximal to the superior pole of the patella; leg girth has a direct relation with the strength of the patient and is supplementary to the strength measurement for accurate results. The results of this study showed a significant increase in strength for Group 1 ($p=.046$) Leg girth measurements were not significant at 6 cm ($p=.16$) or 15 cm ($p=.46$). Although leg strength significantly increased, leg girth did not. This was unexpected because leg girth and strength have a strong

correlation and may require additional investigation into the disparity between the two measurements.

Mind Wandering Quasi-Replication

Mackenzie Hardy, Kyle Natwora, Felicia Ostrowski, Ryan Upson; **SUNY Fredonia**
Mentor: Joseph McFall

The primary goals of this study are to examine the frequency and effects of mind wandering while reading passages from a text. This study is a replication of a previous study conducted by Feng, D'Mello and Graesser circa 2013. The aforementioned study hypothesized that mind wandering would occur more frequently in difficult reading texts than in easy texts, and that mind wandering would have a greater impact in easy texts which is in contrast to previous studies. They found that mind wandering was in fact more prevalent while reading difficult texts, however it still had the greatest impact on participants while reading the difficult texts. This is consistent with our hypothesis in which we expect to find the same result, but with added variables to expand the generalizability of this research. We have added mood and age as additional variables with the intention of finding out how someone's mood as well as their age could affect mind wandering. We hypothesize that a negative mood will induce more mind wandering and that older participants will have less mind wandering than their younger cohorts.

Resolution of mitotic defects induced by carcinogen treatment in cancer and noncancer cells

Rebecca Hartling; **SUNY Fredonia**
Mentor: Nicholas J Quintyne

Genomic instability is a characteristic found in many tumor cells, and has been correlated to tumor progression. Exposure of cancer cells to carcinogens has been linked to enhanced tumor progression, likely due to an increase in the rate of genomic instability, resulting in more aneuploid cells. Genomic instability can manifest due to both chromosomal rearrangement as well as gain and loss of entire chromosomes. In addition to causing mutations to individual sites in the DNA, carcinogens can affect these large-scale changes to the genome. One possible mechanism by which the carcinogen can work is by increasing the rate of mitotic spindle defects during proliferation. We have been examining the occurrence rates of lagging chromosomes, multipolar spindles, anaphase bridges, as well as failure of cytokinesis in several cancer cell lines and comparing these rates to a noncancer cell line. Mitotic defect analysis has been performed for three cells lines: human small cell lung cancer (A549), human oral carcinoma (UPCI:SCC103), and a normal non-fetal skin fibroblast line (GM03349). We analyzed the cells by microscopy and flow cytometry. Varying concentrations of Fulvestrant, a chemotherapeutic agent, were added to all three cell lines for different durations in separate time trials. We determined the upper limits of time and fulvestrant concentration beyond which cell viability was compromised via flow cytometry and used conditions that would not kill the majority of cells. In those populations, we observed that cells have significant delays in progressing through mitosis, and the majority of mitotics that do progress beyond metaphase exhibit one or more type of mitotic defect. We are currently performing live cell imaging of the

cell lines, using SiR-DNA stain to mark chromatin as the cells progress through mitosis. Preliminary analysis shows that mitotic defects arise at a greater frequency in treated cells, many of these cells fail at all stages of mitosis, and that micronuclei can result from these failed mitoses.

Synthesis of 2-(Trimethylsilyl)-methyl-2-propen-1-ol Derivatives

Jackson Hernandez; **University at Buffalo**
Mentor: Nancy I. Totah

The main objective of this project was to demonstrate a safer, more economical method for the synthesis of 2-(trimethylsilyl)-methyl-2-propen-1-ol derivatives. The new synthetic pathway consists of three operationally simple steps, starting from inexpensive propargyl alcohol. The key step is a cobalt catalyzed coupling reaction of a vinyl halide with trimethylsilylmethylmagnesium chloride. This method is compatible with a variety of functional groups including ether, and ester protecting groups.
Jackson J. Hernandez, M. Tariq Riaz, Ivanna Pohorilets, Jeovanna Rios, and Nancy I. Totah

Quantification of lead solute present in the SUNY Alfred State College potable water supply

Lacee Hill, Jean-Marc Maurancy; **SUNY Alfred State**
Mentor: Ashley Shaloo

The goal of this research is to determine whether an atomic absorption spectrophotometer (AAS) is an effective tool for measuring lead levels in communal drinking water sourced from water fountains. Samples of water will be taken from three academic buildings on the SUNY Alfred State College (ASC) campus. We hypothesize that water collected from older buildings on campus will have higher levels of lead than water collected from newly constructed buildings. We also hypothesize that lead levels in the water on campus across the board will be within the limits defined by the Environmental Protection Agency (EPA). To begin, we will calibrate our AAS using a series of lead standard solutions using lead nitrate and 1% nitric acid. These standards will allow for the determination of the lower detection limit of the instrument as well as create a standard curve which should span the range of expected (or anticipated) levels of lead in the experimentally collected samples. Water samples will be taken from the proposed academic buildings over the course of 10 days. Comparisons of the AAS water sample readings to our standard curve will then be performed, and the levels of lead present in the water will be calculated. After data collection, we will analyze the results to determine whether the lead levels present are within the environmental limits defined by the EPA. This project will provide information and awareness regarding lead levels in communal water fountains on the ASC campus to students, staff and the public at large.

Ultrasonic Polar Range Device

Andrew Hoffman, Brian Kelly, Travis Mcnichol, Mitch Marcin; **SUNY Alfred State**
Mentor: Maryam Nasri

The objective of this project is to create a radial ultrasonic radial ranging device with a continuously updating table of distances at given angles. As robotics systems grow more complex and dynamic, sensor devices must evolve alongside it. For hobbyist level obstacle detection, your choices are narrowed down to simple, linear ultrasonic or inferred proximity sensors (i.e. HC-SR04). These linear detectors cannot easily detect objects omnidirectionally. In industry, LiDAR (Light Imaging, Detection, And Ranging) systems that create rapidly updating tables of radial distances have been in existence for several years, yet there is no hobbyist equivalent. Without such an equivalent, radial mapping concepts like SLAM (Simultaneous Localization And Mapping) become expensive to implement. This paper will describe the construction of an ultrasonic polar range device built around two fixed ultrasonic transceivers and a rotating metal acoustic reflector. Ultrasonic sensing has limitations in range, resolution, and refresh rate due to the speed of sound. By using a feedback control system, we can dynamically control values like radial velocity and refresh rate to create the most accurate map. Preliminary research has been done to create a prototype acoustic reflector with an effective range of 75 cm. Addition features will be added to maximize echo strength. The final system will include a rotating reflector, polar coordinate MATLAB display, and a target effective range of 150 cm.

Animal PTSD and suffering from a Cartesian perspective, and our ethical obligation

Kate Nicole Hoffman; **SUNY Potsdam**
Mentor: David Curry

The purpose of my project is to find evidence of animal suffering sufficient to counter Descartes's conception of animals as machines. Descartes famously argued that animals are incapable of experiencing pain, and merely react reflexively to bodily harm. If this were the case, then we would have no obligation to treat them ethically. In the first part of the paper, I explain Descartes's position, and what kind of evidence would be needed in order to counter his argument. In the second section, I argue that animals can experience Post-Traumatic Stress Disorder, and that this indicates that animals can truly suffer. Using specific case studies, I examine and match up the behavior of animals who have been affected by a traumatic event with the symptoms of human PTSD detailed in the Diagnostic and Statistical Manuel V. I then argue that animal PTSD is the simplest and best way to explain the behavior of the specific animals described in the case studies. If animals can experience PTSD, then they can suffer in a way that defies Descartes's view of animals as machines. In the final section of the paper, I explain why we have an ethical obligation to animals that can suffer.

Artifacts in Surveying Affective Forecasting

Leanne Hofstead; **SUNY Fredonia**
Mentor: Joseph McFall

Previous research suggests that temporal discounting leads people to choose a smaller or lesser reward right now then to wait for a better reward in the future. Research by Kassam, Gilbert, Boston, and Wilson (2008) attempted to explain this tendency with “future anhedonia”, the idea that people’s perceived enjoyment of a present reward is greater than their perceived

enjoyment of the reward later. McFall's (2008) lab found quantitative and qualitative evidence that participants wanted the reward now due to instant gratification. They believed that Kassam's (2008) finding was an artifact of the survey research design. The goal of the current survey study is to pinpoint how instant gratification may account for the difference in happiness reported for present and future rewards. In a between subjects design, the three variables being manipulated are: needing the reward (do not need, need now, need later), receiving the reward (get now, get later), and spending the reward (spend now, spend later). Participants rated their level of happiness on a scale of 0-9 for receiving $20. Although we are still collecting data to meet our target of 180 participants, a preliminary analysis using an ANOVA of the 120 survey participants seemed to show instant gratification over future anhedonia. Results will be discussed within the context of affective forecasting and temporal discounting.

Design and Generation of Humanized Anti-topotecan Single Chain Variable Fragment for Inverse Targeting Strategy

Jie Hong; **University at Buffalo**
Mentor: Dhavalkumar K. Shah

'Inverse Targeting' is a strategy designed to minimize the dose limiting systemic toxicity of intraperitoneal (IP) topotecan chemotherapy, which is used to treat ovarian cancer. This strategy employs systemic (IV) co-administration of anti-topotecan antibodies with IP administration of topotecan. It is hypothesized that after co-administration of anti-drug antibody IV and chemotherapy IP, the presence of anti-drug antibodies in the systemic circulation would lead to rapid complexation of drug that diffuses out of the peritoneum, effectively reducing peak plasma free drug concentrations and the cumulative systemic exposure to unbound drug. The reduced unbound drug concentration in blood will in turn reduce the extravascular distribution of the anti-cancer drug, leading to a decrease in the dose limiting systemic toxicity. We have previously shown that a high affinity murine anti-topotecan antibody (i.e. 8C2) is capable of achieving Inverse Targeting of IP topotecan chemotherapy and reducing its systemic toxicity. In this poster, we present extension of our previous work towards the use of single-chain variable fragment (scFv) of 8C2 for inverse targeting of IP topotecan chemotherapy. Here we present design of murine as well as humanized version of 8C2 scFv fragment, and expression of these proteins using stably transfected CHO cells. The humanized scFv was designed using computational modeling to increase the homology of framework region amino acid sequence to human antibodies. The ability of both the scFvs to bind to topotecan was evaluated using ELISA method. Our result shows that it is possible to de novo design humanized scFv for a murine antibody and stably express it in mammalian cell line.

Cooking with Rocks the Hopewell way: Experimenting with Earth Oven Efficiency

Tessa Horn; **SUNY Geneseo**
Mentor: Paul Pacheco

My research generates data to show which attributes make an earth oven successful and efficient. To answer this question, I built earth ovens of different size, shape, and depth. A thermocouple was used to monitor the temperatures throughout each cooking event. This

allowed me to compare the effectiveness of the different ovens using temperature vs time graphs. The size of the ovens and the quantity of rocks used were extrapolated from archaeological data from three Ohio Hopewell habitation sites, Balthaser Home, Brown's Bottom #1, and Lady's Run. By recreating earth ovens of varying shapes, sizes, and depths, I attempt to explain how different combinations of variables effect the efficiency of earth ovens, comparing how these differences are reflected in the archaeological record. My continued research uses data from previous trials to go a step further and predict temperature outcomes of earth ovens.

The Civil War in Hollywood: Racism and Sexism Dominate Film

Meredith Hutchings; **SUNY Brockport**
Mentor: Angela Thompsell

The nation's romanticized perspective of the American Civil War has shaped the remembrance of the war. The romanticization began in the South during Reconstruction. Licking their Southern battle wounds and hoping to keep some honor, they developed a watered-down narrative that spread across media. The development of film amplified the nostalgic view of the war and created a new platform for racial and gender stereotypes. In particular, historians have argued that the desire to omit "ill-fitting" information from film narratives, especially commendable women and African-Americans, caused many filmmakers to create, intentionally or not, a pro-Confederate and white male remembrance of the war. Civil War movies have portrayed African-Americans and women in a helpless and demeaning light. Stereotypical African- Americans in film played "Sambos" or "Mammys" loyal to their masters or manic rapists preying on the white women. White women, on the other hand, were depicted as mourning lovers, modest mothers, or aggressive prostitutes. Although some historians have argued that these stereotypes ceased in the 1980s, I argue that they persist today. In this oral presentation, I analyze several Civil War films throughout the last 100 years. Starting with Birth of a Nation in 1915, I evaluate the racist and sexist references in the following motion pictures: Gone with the Wind (1939); Glory (1989); Ken Burns: Civil War (1990); War Flowers (2012). In addition, I cross referenced these films against each other, showing the consistent use of racist and sexist depictions past the 1980s. For example, the main female character, Sarabeth, in War Flowers (2012) directly pulls stereotypes of the mourning lovers from earlier movies like Birth of a Nation (1915). Due to the persistent use of offensive stereotypes in Civil War films, these racist and sexist depictions continue to influence attitudes toward these marginalized groups today.

Breaking Barriers: Bridging the Disconnect Between Content Areas

Lilly Inglut; **SUNY Buffalo State**
Mentor: Adrienne Costello

The separate content areas of education at Buffalo State College are just that: separate. They are similar to silos that are spread out across the campus. This disconnection will carry into the field and schools that we are placed in unless we start bridging the gap now. My research will hone in on why this disconnection exists and the ways in which we can innovatively bridge this

gap, using PDS cohorts as a means to collaborate for the betterment of our careers and the lives of our students. The work that PDS at Buffalo State College has made to date and the relationship I have established between PDS at Buffalo State College & John F. Kennedy Middle School in Cheektowaga, NY will serve to show the progress we have already made. How can we maintain autonomy in our content areas while collaborating with others? What does this mean for our students? How can this help us to better tend to the needs of our students in an ever-changing world? These questions, along with the idea of "compromise as collaboration" will be explored. This research directly aligns with the NAPDS strand that regards Innovations: Propelling the PDS field forward.

Unknowability and otherness in potential sexual partners in the LGBTQ+ community

Ernesto Mercado Irizarry, Kaitlyn M. Russell, Darrin Rogers; **SUNY Fredonia**
Mentor: Darrin Rogers

Traditional gender norms for cisgender heterosexual romantic/sexual relationships often include an assumption of fundamental psychological/behavioral differences between men and women. This is seen in well-studied concepts such as benevolent sexism, gender essentialism, and belief in adversarial (versus cooperative) romantic relationships. This assumption may lead to a belief that women are fundamentally unknowable to men. Such a belief in the fundamental unknowability of one's romantic/sexual target group (FURST) may be implicated in sexually aggressive attitudes and actions (see Polaschek and Ward, 2003).

FURST has so far been studied solely in a heterosexual context; it is unknown whether FURST is a coherent psychological concept in LGBTQ+ communities, or whether its properties change as a function of the interactions of sexual orientation, gender identity and expression, or related variables.

The current study will explore FURST through qualitative interviews with LGBTQ+ and non-LGBTQ+ young adults. Approximately 40 participants are projected to have completed interviews by the time data will be analyzed for this presentation, with an ultimate target sample size of approximately 100. Interviews will be audio-recorded, transcribed (removing any identifying data), and analyzed using successive codings following the principles of Grounded Theory. We will identify and report patterns and themes related to unknowability of romantic/sexual target groups, as well as associations with demographic factors (e.g., gender identity and expression, sexual orientation, etc.) in participants' responses. All research will be overseen by the institutional review board of the researchers' affiliated university.
Results will be discussed in light of ongoing research into factors associated with sexual aggression in sexual minority versus majority groups, and further understanding of romantic and sexual experiences of sexual minorities.

The Maximum Minimal Distance

Christine Izyk; **SUNY Brockport**
Mentor: Gabriel Prajitura

We will discuss the following general problem: how can we place n points on a surface such that the smallest distance between any two of them is as big as possible and what is the value of this maximal minimal distance. We will consider two surfaces, a sphere of radius 1 and a cube of side length 1. For the case of a small number of points we will find the exact value of the maximal minimal distance. For a bigger number of points we will offer some estimates. In each case we will indicate a construction for which either the exact maximum or the estimate are achieved.

Kinetic Characterization of Two Variant Enzymes of Campylobacter jejuni Agmatine Deiminase

Ashley Jackson; **SUNY Cortland**
Mentor: Katherine Hicks

Polyamines are essential metabolites found in all kingdoms of life. A pathway was recently discovered in the pathogen, Campylobacter jejuni that results in the production of the polyamine spermidine. This pathway includes enzymes with uncharacterized functions. Enzymes are biological catalysts, which are extremely important for biological function of all living organisms. If a mutation occurs where one amino acid is swapped for another near or within the active site, this can lead to decreased enzyme efficiency. The overarching goal of this work is to characterize the second enzyme in this pathway, agmatine deiminase (ADI). ADI catalyzes the conversion of agmatine to N-carbamoyl putrescine and is a potential drug target since this enzyme is not present in humans. We biochemically characterized ADI by performing a series of coupled, kinetic assays on the wild type enzyme and two variant enzymes, H199Q and C315S. Successful experiments were completed for the wild type enzyme and C315S variant. The kinetic parameters obtained for the C315S mutant, suggest that C315S is important for catalysis. More specifically, kinetic analysis of the C315S data infers that enzyme efficiency is thirty-five times larger than the wild-type enzyme. Further experiments will include measuring the kinetic parameters for other variant enzymes, including the H199Q variant.

Effects of competitive growth on survival and fitness of native Asclepias syriaca and invasive Cynanchum rossicum

Holly Jackson; **SUNY Brockport**
Mentor: Kathryn Amatangelo

Invasive species have become an increasingly pressing ecological problem in our area. The rising success of invasive species in out-competing native plants seriously threatens both biodiversity and ecosystem functionality. Thus far, little research has been done to examine the direct effects of density on the competition between local native and invasive herbaceous species. To accomplish this, a competitive factorial design of various species pairings and densities was applied using one native species, Asclepias syriaca (common milkweed), and one invasive species, Cynanchum rossicum (pale swallowwort). It was hypothesized that interspecific (between species) competition would be greater than the intraspecific (within species) competition, with an overall competitive dominance favoring the invasive species. Weekly measurements were collected on plant height (cm), largest leaf length and width (cm), number

of leaves, and phenology (flower or fruit). Preliminary analysis of competitive growth data indicated that individuals experiencing comparatively less competitive pressures tended to appear more physically fit than those experiencing comparatively greater competitive pressures. Competition between species appeared more intense than competition within species; however, the impact of pale swallowwort on common milkweed was not as great as predicted based on observations of natural populations. This may have resulted from captive growth restricting the swallowwort's ability to creep along the ground to find plants to twine on, and, to grow at high, monoculture-producing densities.

Classic Meiotic Mapping Meets Illumina Sequencing to Identify New Regulators of gurken Translation

Elias Jacobs, Alex Mandriota; **SUNY Fredonia**
Mentor: Scott Ferguson

Drosophila melanogaster oogenesis relies on the correct localization of grk mRNA and its spatially restricted translation . Within the oocyte, Grk specifies the dorsal/ventral patterning of the oocyte which persists through embryogenesis. The spindle-class genes are responsible for repairing double stranded breaks (DSB) in meiotic recombination. Mutations in these genes result in inefficient grk translation and ventralized eggs. To elucidate the mechanism by which spn-B mutations impact grk translation, the Schüpbach lab performed an EMS suppressor screen. We are using a combination of traditional meiotic mapping and Illumina sequencing to determine the location of a secondary mutation that is epistatic to spn-BBU and will result in the development of wild type eggs. From this screen a selection of six suppressors were outcrossed to generate recombinant lines. From recombinants that still contain the spn-BBU mutation, we are able to tell whether or not they suppressed by analyzing their eggshell phenotypes to determine if the epistatic mutation remains or not. A panel of 72 recombinants were sequenced at low coverage on the Illumina HiSeq 2500 platform to identify the precise haplotypes of these recombinant chromosomes and facilitate mapping of the novel suppressors.

The Effects of Chronic Methylphenidate on [3H] MK-801 Binding

Khadijatu Jalloh, John Hamilton; **University at Buffalo**
Mentor: Panayotis Thanos

Attention deficit hyperactivity disorder (ADHD) is a common neurodevelopmental disorder affecting approximately 11% of children in the US. Methylphenidate (MP; Ritalin) is a widely used medication to treat children with ADHD. However, the long-term effects of MP treatment during adolescence is poorly characterized in the literature. The aim of this study is to determine the effects of chronic exposure to MP on the NMDA glutamate receptor. To do this, we employed a previous established drinking paradigm that has been shown to deliver MP doses similar to those seen in patients treated for ADHD (Thanos et al. 2015). Briefly, Sprague-Dawley rats were divided into three treatment groups with voluntary access to either water, low dose (LD) MP, or high dose (HD) MP. 4 mg/kg MP (LD) and 30 mg/kg (HD) were used during the first hour of access (09:00-10:00) and 10mg/kg (LD) or 60mg/kg (HD) were used for

remaining seven hours (10:00-17:00). Immediately following a 3-month period of treatment, half of these rats were sacrificed and the remaining half went through an additional 4-week abstinence period before they were sacrificed. In vitro autoradiography was carried out with [3H] MK801 to examine NMDA receptor expression in the brain. Immediately following treatment, the HD MP group showed decreases in [3H] MK-801 binding compared to the water group in the Rhinal (39.5%), Piriform (30.4%), Auditory (34.6%), Visual (13.1%), Amygdala (34.1%) and Hippocampus (34.9%). In addition, differences between the LD and HD groups were found in various cortical and subcortical regions. These effects were short-lived, as no differences between treatment groups were seen following 4 weeks of abstinence. The results of the current study demonstrate the powerful, but reversible effects of long-term MP use on the glutamate system in the brain.

Hydraulically Actuated Myoelectric Exoskeletal Limbs

Joe Jaracz, Joseph Jaracz, Asad Esa, Othmane Brika, Connor Smith, Jason Jordan, Paul Babala, Manikandan Sundararajan; **University at Buffalo**
Mentor: Jason Armstrong

This project aims to design and develop exoskeletal limbs that can be utilized to accommodate the needs of people who have muscular abnormalities such as multiple sclerosis, tendinitis, and myositis. It could also assist astronauts, who commonly suffer from muscle atrophy due to weightlessness, as well assist able-bodied individuals that are looking to perform strenuous tasks. The goal is to register a user input through the use of electrical impedance myography, which can then be used to assist human motor functions through the use of hydraulic actuation.

Rồng: The Evolution of Vietnamese Dress

Scott Jarvis; **SUNY Buffalo State**
Mentor: Lynn M. Boorady

This study follows the progression of Vietnamese dress from the traditional days of ao dai to the current streetwear worn by Vietnamese women, and ways that this progression has influenced the lives of young Vietnamese women. Dress is one of the most important factors in determining not only our own individual preferences concerning style and fashion, but also in how we view ourselves in society. As Vietnam shows potential to become a leading apparel exporter, it is vital to understand how style has affected Vietnamese women. The researcher traveled to Vietnam to conduct this study, and interviewed three female participants at RMIT University in Ho Chi Minh City. The study concluded that dress has been highly impacted by exposure to the internet and to Western culture. Throughout the history of Vietnamese dress, clear influences by global events have been seen impacting traditional Vietnamese dress, along with the evolution to the more casual streetwear seen today in Ho Chi Minh City.

Registration of Large Digitized Serial Histology Stacks for 3D Anatomy Quantification: Approaches and Challenges

Starr Johnson; **University at Buffalo**

Mentor: Scott Doyle

This research investigates the problem of reconstructing 3D models of anatomical structure using 2D serial cross sections of histopathology. Native 3D microscopy (e.g. confocal, multi-photon) is expensive and high-resolution images are only possible at a limited specimen depth. As such, we aim to combine the resolution of 2D microscopy with the structure of 3D biology by registering stacks of serial histological sections to reconstruct the true architecture. We apply our methodology to the problem of modeling microvessels located between the vagina and bladder at the trigone region, to understand the architecture to assist in developing treatments for recurrent urinary tract infections (UTIs). Tissue samples of this trigone were harvested from a fresh cadaver, fixed and serially sectioned; stained with CD31 to visualize endothelial cells; and scanned at 20x optimal magnification. Overall, 32 serial sections were obtained and a region of interest containing a vessel structure was manually extracted for registration and using an elastic non-rigid transform method. Tissue structures including smooth muscle and endothelial cells were manually annotated, providing a true ground truth to validate the registration. The registered, aligned, and segmented objects were exported to a virtual 3D model for visualization. Local discontinuities on the modeled surface indicate possible errors in registration and reconstruction. Our work illustrates the need for registration pipelines which specifically address the challenges of registering serial slice stacks. These challenges include: (1) Multi-slice registration (stacks of 20+ slides); (2) Large image registration (500+ MB); and (3) Handling missing or corrupted data in the slice stack (image artifact, lost sections, etc.). Our future work will include increasing stack depth, ROI area, and slice separation to provide a robust solution for building 3D models for various anatomical structures at microscopic resolution.

Hierarchy and Freedom in Marianne Moore's "The Buffalo": An Interdisciplinary Analysis

Heeba Kariapper; **University at Buffalo**
Mentor: Cristanne Miller

When reading the work of modernist poet Marianne Moore, the reader becomes an explorer. A natural interdisciplinary enquirer, Moore connects ephemera and mythology, art and science, allusions and the "random"; understanding her poetry often entails multiple readings, discussion, and research. This paper examines her poem "The Buffalo" through an interdisciplinary lens, taking into account historical-cultural context, scientific findings, as well as digital tools and natural language processing (NLP) algorithms. "The Buffalo" appears, at first glance, to be a treatise on race or perhaps, the different manifestations of buffalo. However, subsequent readings inform the reader of the poem's complexity residing just below the surface. Ultimately "The Buffalo", through its symbolism and allusions to various types of hierarchies, provides commentary about freedom and identity. Although Moore does not necessarily equate all hierarchies to be inherently evil, she does laud those who do fight for their right to be "wild" and free.

In addition to providing perspective on Moore and "The Buffalo", the use of this "interdisciplinary lens" engages a conversation about the usefulness of algorithms and data

analysis in poetry explication. What are the limits of technology and code in the understanding of the arts? Does creativity and emotion overlap with logic and data in meaningful ways? This paper considers these questions on a small scale through a focus on sentiment analysis in the digital examination and discussion of "The Buffalo". Although Moore's poetic style proves too nuanced and variable for the digital tool to glean consistent, meaningful information, the technical analysis opens up commentary on the inherent human bias of code and the necessity of humanity in artistic interpretation.

Who Funds Worker Centers? : An Analysis of Their Funding Streams

Jonathan Kim; **SUNY Cornell**
Mentor: Kate Griffith

As labor union membership dwindles in the United States, the number of worker centers continues to grow. In 1985, there were just five worker centers. Today there are more than 200 such centers. Worker centers are often broadly defined as "community-based mediating institutions that organize, advocate, and provide direct support to low-wage workers." Given worker centers' focus on low-wage workers largely engaged in service sectors of our post-industrial economy and their relatively recent entrance into the field of United States labor relations, scholars and commentators still know very little about the nature of these emerging organizations.

This research leveraged publicly available information to learn more about the funding streams of worker centers. We researched worker centers' self-reported tax forms (Internal Revenue Service form 990), which categorized worker centers' revenue into 12 different categories. In order to further parse out foundation funding and union transactions to worker centers, we used the Foundation Directory Online and a U.S. Department of Labor database. The research team has accumulated 6 years (from 2007 to 2012) of data that show the revenue break down of more than 100 worker centers each year. Analyzing the data-set depicted a comprehensive picture of worker centers' funding structure and answered some critical questions that the existing case-study based studies could not answer. Who funds these organizations? To what extent are they dependent on labor unions or private charitable foundations? Do they receive government grants? Do they require member dues? Learning more about the funding streams of worker centers can provide us with information about the nature and sustainability of these new institutions in U.S. labor relations.

Re-Reading Roger Williams: Adventures in Documentary Editing

Liam Kingsley, Austin Raetz; **SUNY Potsdam**
Mentor: Thomas Baker

Seventeenth-century Puritan Bad boy Roger Williams is a favorite of modern scholars, who see in him the seeds of both the First Amendment and a more humane attitude towards Native American rights. In Massachusetts Bay, where the powers of the church and the powers of the colony were inextricably woven, Williams argued that the two should be distinct. Williams believed that neither Native land, nor Native souls were theirs for the taking. Two years ago, Wipf & Stock publishers asked Dr. Sheila McIntyre of SUNY Potsdam to edit, annotate, and

introduce Williams' writings. But Williams is hard to read, and after reading his publications, he is even harder to like.

To help make the collection more useful to undergraduates, honors students and history majors Austin Raetz and Liam Kingsley were brought on board the project. What better way to find out how students would use the collection than to involve them in its creation? Along with learning a lot about Williams and seventeenth-century history, Kingsley and Raetz are learning how documentary editing works. They are helping to edit two parts of the collection: Williams' spiritual guide for his wife (Experiments of Spiritual Life & Health, 1652) and a selection from his masterwork of ethnography, A Key into the Language of America, 1643. Their SURC poster will represent their work, and provide a student perspective on the ins-and-outs of documentary editing.

Microbial mercury methylation in Fayetteville Green Lake, NY

Anish Kirtane; **SUNY Environmental Science & Forestry**
Mentor: Hyatt Green

Anthropogenic deposition of mercury (Hg) in the environment increased over time. Most of this mercury is in its elemental form (Hg0), but the methylated form, methylmercury (MeHg) is a potent neurotoxin that readily bioaccumulates and is responsible for thousands of health advisories. In nature, the anaerobic activities of sulfate reducing bacteria (SRB) are the major source of MeHg. Fayetteville Green Lake (FGL), NY is a meromictic lake with high sulfate concentrations (12-16nM) and an anoxic zone below 18-20m of depth, which makes FGL an ideal study site for studying the mercury methylation process of SRB. Samples were collected at 3m depth intervals and filtered. DNA was extracted and analyzed with quantitative polymerase chain reaction (qPCR) using four previously published primer sets targeting mercury methylation genes (hgcAB) from Delta-proteobacteria, Firmicutes, Archaea, and all prokaryotes ("universal"). Using the universal assay we found the highest concentration of hgcAB genes at the chemocline. Interestingly, the same assay revealed detectable concentrations of hgcAB in the oxic zone of the lake which has not been observed in previous studies. The delta-proteobacteria clade specific hcgAB qPCR assay indicated detectable concentrations only in the anoxic zone where the SRB dominate. Firmicutes and Archaeal hgcAB genes were not detected throughout the water column. Further analysis of MeHg and total mercury concentration will shed light on methylmercury cycling and transformation in the system.

The maximum Laplacian Eigenvalue of an oriented Hypergraph

Ouail Kitouni; **SUNY Brockport**
Mentor: Nathan Reff

In Graph Theory, a hypergraph is defined as a graph that allows for higher dimensional edges which can be incident with 3 or more vertices. An oriented hypergraph encodes a certain direction, or orientation, for each vertex-edge incidence. This direction is described in the incidence matrix with either a 1 or a -1 if the vertex-edge incidence exists in the oriented hypergraph, or 0 otherwise. The Laplacian matrix, just like the incidence matrix, is a

representation of a graph in arrays of numbers. Studying the properties of these matrices can give valuable information about the graphs that they describe. This project dealt with a property of the Laplacian matrix, the Laplacian spectral radius, and generalized its bound by giving a better approximation for the maximum Eigenvalue of the matrix.

Alzheimer's Dementia

Mary Klimek; **SUNY Fredonia**
Mentor: McLoddy Kadyamusuma

Alzheimer's disease is the leading cause of dementia in the United States. Alzheimer's dementia involves the progressive neurodegeneration of the brain. This deterioration of the brain leads to cognitive and physical deficits as each cerebral lobe of the brain becomes affected. As Alzheimer's dementia progresses, this disease results in the atrophying of the hippocampus, a region of brain that is responsible for creating and recalling memories. In addition to memory, the other symptoms of this disease may include experiencing mood swings, loss of retrieval functioning, planning abilities and the ability to participate in everyday tasks. This paper explores how the gradual worsening of the deficits affects their day to day functioning and also those providing care to them as they become less and less able to take care of themselves. This paper also explores the current state of ways of treating this devastating disease and possible methods used to manage the comfort of the patient during the progression of the disease. Treatment methods vary from behavior management strategies, to doctor prescribed medications. This paper also explores the different professional caregivers who are also available for further support the client as they battle this disease.

The Cognitive Catalyst and Autobiographical Recall: The Role of Negative Cognitive Content and Rumination in Autobiographical Memory Deficits

Brandon Koscinski; **University at Buffalo**
Mentor: John Roberts

The cognitive catalyst model suggests that the presence of low self-esteem (a proxy for negative cognitive content) strengthens the association between rumination and depressive symptomology (Ciesla & Roberts, 2002; Ciesla & Roberts, 2007; Robinson & Alloy, 2003). Rumination and negative cognitive content have also been implicated in overgeneral autobiographical memory (Williams, 2007), which refers to difficulty retrieving memory for a single event that occurred on a single day. The present study tested the potential moderating effect of negative cognitive content on the association between rumination and autobiographical memory specificity. In addition to recall of specific memories, we examined the amount of detail within specific memories. We predict that self-esteem will moderate the relationship between rumination and: 1) depressive symptomatology; 2) memory specificity; and 3) memory detail, such that these relationships will be weaker at lower levels of trait self-esteem and stronger at higher levels of trait self-esteem. Our sample consisted of 348 undergraduate students (185 males, 163 females) from a Korean university. Participants completed a self-report battery before writing responses to an autobiographical cueing procedure (2 positive, 2 negative, 1 neutral). Responses were coded for memory specificity and

memory detail. The present study will provide data that will help determine whether or not the cognitive catalyst model generalizes to depression-related outcomes involving autobiographical memory specificity and detail.

Perceptions of Services for Intimate Partner Violence in the LGBTQ+Community

Taylor Kozuch, Brooke Park and Morganne Madonia; **SUNY Fredonia**
Mentor: Darrin Rogers

There are clear parallels between Intimate partner violence (IPV) rates in heterosexual and LGBTQ+ relationships. In both cultures abuse may take emotional, physical, verbal and mental forms, and can include behavior that may not be considered domestic violence by some people. In both cultures abusers frequently demonstrate ownership and entitlement. However, some dynamics of abuse in LGBTQ+ relationships are unique, such as abusers threatening to out their partners. Another important area of difference includes victims' experiences with support and IPV service organizations. Although legislation in the United States (Title VI of the Civil Rights Act) prohibits discrimination based on sex, hurdles remain for equal treatment of LGBTQ+ individuals. IPV victims who identify as LGBTQ+ may find few usable interventions and services available to them. Sears & Malloy (2011) found that 27% of LGBTQ IPV survivors attempted access to emergency shelters; of these, 27%, 44% were denied and 71% reported being denied based on their gender identity. There has been a relative lack of research addressing the accessibility and helpfulness of resources from LGBTQ+ individual perspectives. To investigate this we will conduct semistructured interviews with LGBTQ+ and non-LGBTQ+ young adult participants (40 estimated to be complete for this presentation; target N=100). Interviews will address participants' knowledge of victim support services, perceptions of effectiveness, and likelihood of utilizing services in the event of IPV. In addition to direct tabulation of participant responses, we will use qualitative analysis methods based on Grounded Theory to identify themes in LGBTQ+ narratives and in comparison interview narratives from non-LGBTQ+ individuals. Results will be discussed in light of IPV resource availability and prospects for creating victim services useful and appealing to LGBTQ+ victims.

Additional Modes of RR-Lyrae stars

Benjamin Kratz; **SUNY Oswego**
Mentor: Shashi Kanbur

NASA's K2 mission has provided unprecedented continuous data for photometric analysis of pulsating variables. Using this data, through Fourier analysis and frequency inspection, the additional modes of RR Lyrae stars have been found. RR Lyrae stars are old, low mass, Population II, periodic variable stars. These stars are named after a star (RR Lyrae) in the Lyra constellation. Their period is less than a day, usually half a day per cycle. Typically RR Lyraes follow radial mode pulsation meaning the stars pulsate outward uniformly. The additional modes of the stars fall into multiple categories relating to Period Doubling, First Overtone, Second overtone, and non-radial pulsation. The data collected by K2 was analyzed using Period04, a program that allows for the extraction of frequencies from a Fourier spectrum of light curve data. Approximately 350 stars were analyzed from K2 Campaigns 4, 5 and 6

Daily Diet App

Keilon La Barrie; SUNY Buffalo State
Mentor: Sarbani Banerjee

Everyday more people are learning that one of the keys to being healthy is not just what you doing during the workout; it is not actually what you eat throughout the course of the day. By watching calories and having a set meal plan to help meet particular goals can make a difference for someone looking to take fitness seriously. Sometimes it can be hard to find recipes of cost effective meals that meet ones particular goals. An user-friendly Daily Diet App would be created as part of the current research project. This App would help people to target their calories and figure out the meals that are designed to fit those particular calorie choices. When the users would open the Daily Diet App they could select the meal time, for example, breakfast, lunch, dinner or snack. After making the selection they would be interfacing a screen that would show a variety of calorie levels for them to select. Based on their selection on the number of calories, the users would have the option of picking meals that are designed to fit their number of calories. In this screen, based on their meal selection the user would be sent to a website with the recipe of how to make that particular meal.

The Daily Diet App program would be developed using Xcode 8.2.1, an Apple Developer with Swift 3.0, a programming language. This App would have several user-friendly features, such as easy screen navigation, view picker selections, as well as web views within the App. When fully developed the App would be published to the Apple store.

Pirate's Code: A Multimedia Tabletop Experience

Quinn Lachler, Waylon Wilson, Shane Murdock, Nate Noworyta; **University at Buffalo**
Mentor: David Pape

Pirate's Code is a project focused on using both digital and analog components in order to create an immersive multiplayer experience. Gameplay is centered on players competing to become captain of a pirate crew over the course of a 30-day voyage. This voyage takes place within two connected player environments: a 3D game board for direct player interactions and a digital interface facilitating an over world map which monitors voyage progress, player status, and a random event system. These two environments are designed to work off each other. The tabletop elements of the game board create a close quartered system between players that promotes interpersonal, face to face, communication as they navigate the game board and perform tasks. The development of the digital interface provides a multimedia experience using sound design and animation that would immerse the player into the game world similar to how a modern video game or film would. Thus, by combining an analog game board with an interactive digital interface, what would be a simple board game is capable of utilizing a diverse set of media components from different fields. Music composition, sound design, 2D animation, computer programming, 3D modeling, and graphic design all come together in this case to create a traditional tabletop experience with an immersive cinematic flare. The project is currently in a playable state, which allows four players to embark on a 30-day journey. Additional work is planned on both the digital and analog components to further enhance the player immersion including: 3D printed ship pieces, additional music, and varying soundscapes.

Extra game modes are also being programmed in order to expand gameplay options based on the number of players and a desired voyage length.

Synthesis of B-ring Modified Colchicine and Isocolchicine Analogs

Emily Lasher; **SUNY Fredonia**
Mentor: Mark E. Janik

The compound colchicine is a highly potent anticancer agent that derives its therapeutic benefit by binding to the protein tubulin. Colchicine consists of a three ringed system of which it is known that the A and C rings interact with the protein upon compound binding. An example that illustrates the importance of the C-ring is shown by the molecule isocolchicine, which has an altered C-ring as compared to colchicine and is virtually inactive in binding tubulin. Recently, the discovery of active isocolchicine analogs has prompted an interest in determining the role of the B-ring and it's substituent group in colchicine-tubulin binding. With that in mind, we have decided to synthesize a colchicine and isocolchicine analog that has been modified in the B-ring substituent group. To synthesize our analogs, we are using a procedure that relies on synthesizing a thioacylating reagent. The synthesis starts with a benzimidazolone source that is converted to the tioacylating reagent via three synthetic steps. Upon completion, the formation of the analogs will be possible using a synthetically modified version of colchicine.

Synonymous and nonsynonymous substitution ratios (dN/dS) associated with habitat transitions in the Gastropoda

Alyssa Lau; **SUNY Environmental Science & Forestry**
Mentor: Jesse Czekanski-Moir

COI (Cytochrome Oxidase I) is a commonly sequenced gene region that is used to investigate the evolutionary history and species boundaries of many eukaryotic lineages. Despite the fact that COI is one of the most frequently sequenced gene regions, we still do not fully understand the extent to which its evolution is driven by natural selection in different habitat types. We will be using marine and terrestrial gastropods as a model system for this study. There are over 20,000 species of gastropods in each habitat, but their transition from marine to terrestrial habitats has only occurred 10-20 times. This is a larger number of transitions than in any other metazoan class, so the Gastropoda is an ideal taxon for investigating selective pressures associated with this major habitat transition. We use the synonymous and nonsynonymous (dN/dS) substitution ratio of the COI gene as an indicator for directional selection in marine and terrestrial gastropods. We hypothesize that the dN/dS ratio is higher when comparing closely-related marine and terrestrial lineages of gastropods due to physiological challenges associated with this major habitat transition. COI sequences were obtained from GenBank and aligned and analyzed in MEGA (Molecular Evolutionary Genetics Analysis). We constructed several 3-4 taxon phylogenies that included only marine taxa, terrestrial taxa, or a combination of both taxa that are closely related to one another. The dN/dS ratios were also calculated using MEGA. We demonstrate the potential for using COI as a tool for understanding molecular evolution in juxtaposition with macroevolution. This approach can further our understanding of factors that affect adaptation and diversification in many metazoan lineages.

Fall Prevention on Inpatient Psychiatric Units

Jessica Layton; **SUNY Upstate Medical**
Mentor: Roberta Rolland

Background: Falls contributed to 30-40% of patient safety events in the United States and attributed to morbidity, mortality, length of stay, and overall costs. Falls on inpatient psychiatric units occur more frequently than other units containing the same age group. The rate of occurrence is estimated 13.1 to 25 per 1,000 psychiatric inpatient days compared to 3 to 5 per 1,000 general inpatient days. Injuries occur in about 30% of falls with severe injuries associated with 4-6% of all patient falls.
Purpose: The purpose of this Quality Improvement project was to explore best practice for fall prevention with psychiatric patients. The goal is to develop a fall prevention protocol for an inpatient psychiatric unit.
Clinical Question: What interventions are most effective in preventing falls among psychiatric patients?
Method: 2016 Fall Reports for the project unit were reviewed. A TRIZ analysis was conducted with staff. A review of literature involved SagePub, PubMed, CINAHL, and Ebscohost with keywords fall, prevention, psychiatric, and patients and inclusion criteria written in English, published within six years, and peer reviewed. Exclusion criteria were lower levels of evidence and not pertaining to the population of interest. Eight articles were reviewed
Results: The Fall Reports and TRIZ analysis revealed top concerns including improperly fitting hospital attire, wet floors, lack of ambulation assistive devices, toys left out, and lack of chair and bed alarms. Literature supports fall prevention practices including properly fitting hospital clothing, nonskid mats and footwear, physical therapy evaluations, medication review, signage, cordless alarms, and toileting schedules.
Implications for Practice: Fall prevention requires a multidisciplinary approach. Collaborative efforts with Nursing, Physical Therapy, Pharmacy, and Medicine are underway to develop a fall prevention protocol for one inpatient psychiatric unit. Continued monitoring and routine monitoring is essential to promote a safe environment for inpatient psychiatric patients.

Facilitating Access to Information Collected Using Facial Recognition Software

Ataklti Legesse; **SUNY Onondaga**
Mentor: Vicentica Valdes

The Collegiate Science and Technology Entry Program (CSTEP) at Onondaga Community College provides student support services such as counseling, academic coaching and tutoring. To optimally allocate resources, CSTEP tracks the students and the services that they use. To improve the tracking of students, CSTEP started investigating the use of facial recognition software in MATLAB.
The algorithm developed to track student use of support services included capturing student data (their image) upon entering the office, resizing the image for processing and the processing (or feature extraction and classification) to identify the student. Once the student was identified, the student was also queried for the type of service they were using on this visit. The data was documented and prepared for use. The data included student ID, service used,

and a timestamp. Students that were not identified were referred to a staff member, but the image capture of the student was completed. The data was saved into a text file generated by MATLAB and then accessed through an Excel spreadsheet to facilitate statistical analysis, sorting, filtering, charting and presenting of the data.
Limitations to the data collection included the processing of students not in the face gallery database of CSTEP students. In accessing the data, it was found that non-CSTEP student were sometimes matched with an existing student leading us to take another look at the classification system being used (possibly suggesting the use of a different feature extraction function). Future work will focus on capturing an exit timestamp for a student as well as allowing students to use their voice to provide the type of service needed at their visit.

Synthesis and Characterization of Plasmonic Cu2-xS Nanocrystals

Michelle Leip; **SUNY Geneseo**
Mentor: Rabeka Alam

Plasmonic metal nanoparticles have attracted attention in research for energy, environmental and biomedical applications. The properties of Cu2-xS nanoparticles are dependent on their size, composition, and shape. Most notably, plasmonic metal nanoparticles exhibit a phenomenon known as localized surface plasmon resonance (LSPR). The effect of size and composition on the properties of Cu2-xS particles was studied. Cu2-xS nanoparticles of varying sizes were synthesized using high temperature organometallic reactions. The particles were characterized using UV-vis spectroscopy, transmission electron microscopy (TEM), and X-ray powder diffraction (XRD). We are currently investigating charge transfer capabilities between Cu2-xS and other nanomaterials to charge the Cu2-xS with visible light energy.

Old Faces, New Perspectives: The Role of Studio Art in a Liberal Arts Education

Maya Lucyshyn; **SUNY Geneseo**
Mentor: Lynette Bosch-Borroughs

Among liberal arts colleges, why are studio arts classes and majors so underfunded and under-appreciated? When budget cuts harm SUNY colleges such as Geneseo, why are arts programs among the first to go? I explore this phenomenon, as well as the now-hidden artistic talent of my college campus, through a project that is part research, part visual exhibition. The exhibition, "Old Faces: New Perspectives," is curated using artwork that students created in their free time, instead of in a structured artistic environment. More than half of featured artists were women, and Native American, Asian, Hispanic, LGBTQ+, and Jewish students were represented in the gallery space. The themes exhibited in the show—belonging, identity, cultural divisions—reflect the formal classwork that liberal art students accept as a “given” of their education. A liberal arts education cannot be considered truly well rounded without a studio art component, because this medium has a cathartic and communicative quality that cannot be mimicked in any other classroom. In my presentation, I will explore the history and reasoning behind the devaluing of studio arts in a liberal arts education. I will also explore its benefits in educating about different cultures and perspectives in an approachable way, as well as its usefulness in the mental health and personal growth of students. Finally, I will draw

examples from the exhibit I curated, "Old Faces: New Perspectives," and analyze its worth to its artists and attendees, and particularly the value of its diverse representation when compared to the traditional art museum.

Hilary Clinton's image over her time in the presidential spotlight

Charlotte Luft; **SUNY Brockport**
Mentor: Marsha Ducey

The U.S. presidential election between Hillary Clinton and Donald Trump, as has been profusely stated in the media, is unlike any election previous. Though Clinton previously ran for the presidential office in 2008, this research paper argues that she has changed her technique for the delegacy against the other Democratic candidates and her Republican competition for the 2016 presidential election. Footage of the 2016 debates, research articles written about her political techniques both as first lady and as the 2008 Democratic Candidate and newspaper articles written after the 2016 election will be examined to seek evidence of this change. Clinton has been accused of portraying a masculine image to the public. The research articles written about Clinton's time as first lady and 2008 Democratic Candidate will examine her view on policy and the image she portrayed through her stances. This research paper will take her previous attitudes on policy as depicted in some of these articles and compare them to her stances in the 2016 presidential election. Through the comparison this paper will deduce how Clinton's image has changed as she has advanced through presidential elections. This paper will open questions on how changes to her image may have helped her advance to her current position as 2016 presidential candidate.

Diatom Fossil Records at Lower Cassadaga Lake, NY

Simona Lukasik; **SUNY Fredonia**
Mentor: Courtney Wigdahl-Perry

Diatoms are a major group of algae that have a silica cell wall, which can be preserved within sediments at the bottom of lakes. As diatoms are sensitive to changes in their surrounding environment, exploring diatom fossil records allows researchers to study the past ecological history of lakes. In order to determine the suitability for a more involved study, we collected a 37 cm core from Lower Cassadaga Lake, located in northern Chautauqua County (New York). Sediments were sectioned every 1 cm in the field, and processed in the lab into slides for analysis of diatom remains under a light microscope. The slides revealed that this lake basin has a good diatom preservation record with particular species of interest, including Fragilaria crotonensis, Aulacoseira spp., and Cyclotella spp. These species may be useful in understanding past patterns of nutrient concentrations and/or the depth of the upper mixed layer in the lake. Based on these data, Cassadaga Lake was determined to be a good site for more involved paleolimnology study in the future, with the potential to inform management decisions by local stakeholders.

Sparking the Stock Market: Big Data Analysis for S&P 500 Index with SparkR

Meng Lin Ma; **SUNY Buffalo State**

Mentor: Sarbani Banerjee

"Big Data" is one of the hottest terminologies of recent days. It is a term for large scale data sets with three common characteristics—large volume, huge variety and high velocity, often called 3Vs that define Big Data. These characteristics give rise to a problem of how to store, implement and analyze Big Data.
The purpose of this research project is to do a data analysis on the daily data of S&P 500 Index using SparkR on the RStudio. It will develop suitable time series model based on over thousand daily data of the S&P 500 Index which is stored in the Spark cluster within Amazon Elastic Compute Cloud server (EC2) and eventually derive a best fitting model.
Stock index has become a significant tool for the investors as well as for financial managers to describe market performance, and to compare the return on specific investments. S&P 500 index is an American stock market index based on the 500 large companies which have common stocks listed on the NYSE or NASDAQ since 1950s.
As one of the open source cluster computing framework, Apache Spark not only provides high-level application programming interfaces in Java, Python, Scala and R, but also allows other environment to access the Spark clusters. For instance, SparkR is an R statistical package that allows front-end Graphic User Interface (GUI) to use Apache Spark to work on the large datasets. In addition, RStudio will be able to import large datasets from Spark clusters.

On the Plausibility of Hedonism

Jacob MacDavid; **SUNY Potsdam**
Mentor: David Curry

I argue that hedonism, the view that pleasure alone is intrinsically good and pain alone is intrinsically bad, is a plausible theory. By plausible, I mean that it can overcome standard objections and it posits an attractively small amount of value commitments while accounting for everything we find valuable. The paper begins with a brief history of the definition of pleasure from Mill to Feldman. Ultimately, I use a qualified version of Feldman's account of pleasure. Next, I consider objections to the claim that pleasure is always good. These concerns answered, I address a second wave of objections that attempt to show we need more than pleasure to account for value. To answer these objections, I argue that hedonism is broad enough that, when viewed as both an axiological and ethical theory, it can account for common-sensical value attributions that may seem removed from pleasure.

Synthesis of 1-Methyl-7-Nitroisatoic Anhydride and Analysis of gurken mRNA by Selective 2'-Hydroxyl Acylation Analyzed by Primer Extension Chemistry

Megan MacIntyre, Jacquelyn Law; **SUNY Fredonia**
Mentor: Matthew Fountain

We are analyzing the gurken mRNA from Drosophila melanogaster through Selective 2'-Hydroxyl Acylation Analyzed by Primer Extension (SHAPE) chemistry to evaluate secondary structure of an Internal Ribosomal Entry Site (IRES). RNA is linearized and folded, before being introduced to one of three electrophillic reagents. The reagents (1-methyl-7-nitroisatoic

anhydride (1M7), N-methylisatoic anhydride (NMIA), and 1-methyl-6-nitroisatoic anhydride (1M6)) detect local nucleotide flexibility by reacting with 2'- hydroxyl groups. At conformationally flexible positions, the RNA is reactive, but at regions where nucleotide base pairing has occurred, the 2' hydroxyl region is unreactive. Reverse transcription with a fluorescently labeled primer produces populations of cDNA fragments at the points where the reagents are adducted. Capillary electrophoresis is used to measure local flexibility by reading terminated cDNA fragment populations, and the data is used to determine the secondary structure through QuSHAPE and RNA structure software.
We will describe the the synthesis and the spectroscopic characterization of 1M7 which we used to distinguish complex secondary structures in the RNA. In addition, the relative reactivity differences from our 1M7, NMIA and 1M6 will be described with a detailed secondary structure of the gurken mRNA IRES and its role in cap independent translation.

Investigation of insect species for bat-insect acoustic interactions research

Sara Madison, Kelsey Lowery; **SUNY Fredonia**
Mentor: Karry Kazial

We are interested in research involving the interaction between bats and their insect prey. Insects were subject to the selection pressure of bats as a new predator and many insects have been found to have ultrasonic ears that respond to bat sonar. Ears are found in multiple locations on the bodies of insects and are thought to have evolved multiple times. We have investigated the rearing, care, and use of green lacewings (Chrysoperla rufilabris) and Chinese mantids (Tenodera sinensis) for bat-insect acoustic interactions research. These insects groups are known to contain species that possess ultrasonic ears. We will report on the rearing and care of these insects and compare the time, equipment, and unique care needs of each. Importantly, we will also discuss the contexts in which we looked for a behavioral response of these insects to bat sonar playbacks broadcast from ultrasonic speakers.

FATTY ACID SIGNATURES OF PREDATORY FISH FROM LAKE MICHIGAN

Christopher Maier; **SUNY Brockport**
Mentor: Jacques Rinchard

Understanding energy flow pathways in Lake Michigan food web is prerequisite to making wise stocking and management decisions. The declines in abundance of plankton and pelagic forage fish appear to have reduced the lake's overall carrying capacity, but it is unlikely that all fish species are equally affected. The goal of this project was identify current trophic pathways using fatty acid signatures (FAS). This approach is based on the concept that fatty acids are conservatively transferred from prey to predator and therefore infer diet in accordance to the principle you are what you eat. In this study, we focused on three salmonid species, lake trout (n = 192), Chinook salmon (n = 264), and rainbow trout (n = 144), which were collected by federal, state and tribal agencies throughout the lake. Upon capture, each fish was assigned to one of the four quadrats of the lake: southwest, southeast, northwest and northeast. Belly flaps were sampled and analyzed for lipid and fatty acid composition. Our preliminary results indicated that lipid content was higher in lake trout than in Chinook salmon and rainbow trout

(30.7% vs. 14.0% and 13.4%). Ongoing statistical analysis will reveal potential inter- and intra-species (spatial) FAS variations and provide a better understanding of the prey-predator interactions in Lake Michigan as well as the ability of these salmonid species to utilize alternative energy resources.

Paternal Psychopathology and Parenting Attitudes From Infancy to School Age

Jacqueline Marie; **University at Buffalo**
Mentor: Rina Eiden

The purpose of the present study is to investigate the role of paternal alcohol problems and comorbid psychopathology in predicting parenting attitudes in early childhood. Fathers are important for child development and research suggests that positive paternal parenting attitudes are related to optimal child development. Substance abuse and comorbid mental health problems may be associated with an increase in negative parenting attitudes, including increases in fathers' aggravation with their children and decreases in warmth from infancy to kindergarten, underscoring the importance of investigating this relationship. As fathers become more involved in the rearing of their children, it is increasingly important to investigate possible factors that can lead to negative parenting attitudes. This study uses data from a concluded longitudinal study to examine the role of fathers' alcohol problems and comorbid depression in predicting changes in paternal warmth and aggravation between ages 12 months to kindergarten age. At five different time points in early childhood, paternal warmth and aggravation will be assessed in both alcoholic and nonalcoholic fathers. The data will be analyzed using repeated measures ANOVA with the main effects of alcohol problems, depression, and time, and the interaction in between these variables being examined. The hypothesis for this study is that there will be increases in paternal aggravation and decreases in warmth from the infant to the toddler period, and decreases in aggravation and increases in warmth from thereafter for the sample as a whole. Fathers' alcohol problems and depression will be associated with higher paternal aggravation and lower warmth toward their children from 12 months to kindergarten age compared to the control group. Also, fathers with both alcohol problems and depression will be less likely to increase in warmth and decrease in aggravation from toddler to early school age than fathers who do not have alcohol problems and depression.

The Shape of an IRES: Using SHAPE Chemistry to Map the Secondary Structure of the gurken mRNA 5' UTR from Drosophila melanogaster

Allison H Martin, Cory Emborski; **SUNY Fredonia**
Mentor: Matthew Fountain

Internal ribosomal entry sites (IRESs) are cis-acting sequences located in the 5'UTR of some mRNAs that allow cap-independent translation initiation. IRESs are characterized by the formation of complex secondary structural features in the 5'UTR upstream of the start codon. IRESs are the means by which viral invaders hijack host translation machinery, and also provide an alternative translation pathway for critical eukaryotic proteins. An IRES has been proposed in the Drosophila melanogaster gurken mRNA that allows production of this critical protein to

continue under nutrient deprivation conditions, when cap-dependent initiation is inhibited. Gurken is an epidermal growth factor receptor ligand that initiates a signal transduction pathway culminating in the establishment of dorsal/ventral polarity in developing Drosophila oocytes. The mechanism and secondary structure of eukaryotic IRESs however remain poorly understood.

We are using differential SHAPE (Selective 2'-Hydroxyl Acylation Analyzed by Primer Extension) chemistry to map the secondary structure of the gurken IRES and are working toward refining the structure to publication quality. SHAPE chemistry utilizes compounds that are reactive to sterically unhindered 2'-OH groups on the single stranded regions of the mRNA. Multiple reagents (NMIA, 1M6, 1M7) with different levels of sensitivity and reaction times are used to ascertain strong vs weak and fast vs slow base pairing interactions in the mRNA. To help elucidate the mechanism and the function of the gurken IRES secondary structures we have also compared it to better understood viral IRESs. So far, our secondary structure of the gurken IRES is most similar to Type-2 viral IRESs, especially the Hepatitis C viral IRES. Sequence gazing has revealed several regions upstream of the gurken start codon that bear extensive complementarity to the Drosophila 18S rRNA, raising the possibility that, like some Type-2 IRESs, the open reading frame is guided into the mRNA exit channel through base pairing.

The isoform-specific deletion of a bicarbonate-transporting membrane protein in mice

Alassane Mballo; **University at Buffalo**
Mentor: Mark Parker

Humans with proximal renal tubular acidosis (pRTA), an autosomal recessive disease linked to loss of the sodium bicarbonate transporter NBCe1, exhibit low blood pH and brittle teeth. Correction of acidosis by alkali therapy is the only treatment for these individuals.

NBCe1 has two isoforms: NBCe1-A (expressed in kidneys) and NBCe1-B (expressed in tooth enamel producing cells). NBCe1-A regulates blood pH and its loss causes whole body acidosis. It is not known whether the brittle teeth in pRTA are an indirect result of the acidosis caused by NBCe1-A loss from the kidney or a direct result of NBCe1-B loss from the enamel cells.

We generated a novel strain of NBCe1-B knockout (KO) mouse. We hypothesize that these mice will have brittle teeth even without acidosis. This project aims to confirm the selective loss of NBCe1-B vs NBCe1-A in these mice, and the pathophysiological importance of NBCe1-B.

Blood pH of KO mice was assessed by arterial blood gas analysis and their teeth was assessed by microscopy. Kidney lysates from KO and wild-type mice were separated by electrophoresis on polyacrylamide gels. The presence of NBCe1-A was probed using an anti-NBCe1 antibody and the abundance of the signal, normalized to the abundance of actin, was assessed by densitometry. [The NBCe1-antibody was confirmed to be specific to NBCe1 over other NBC variants by evaluating western blot of overexpressed NBC proteins in Xenopus oocytes].

The results showed that, compared to wild-type mice, KO mice have [1] normal blood pH, [2] unusually chalky-white and worn down teeth, and [3] a normal abundance of NBCe1-A in their kidneys.

Thus, the cause of brittle teeth in pRTA is most likely to be related to defects in enamel secreting cells and unrelated to acidosis and will not be corrected by alkali therapy.

Mid-drive E-Bike

Liam McMahon, John Buyea; **SUNY Alfred State**
Mentor: Reza Rashidi

The objective of this project is to modify a bicycle such that it is capable of both pedal-assisted and fully electric locomotion. Currently, the market for electric assist or E-Bikes is growing immensely in Europe and Asia. There are a few manufacturers in the U.S., but their designs are not cost effective. Current kits range from $300 minimum for hub motor kits and $700 for mid-drive kits once batteries are included. A hub motor operates by rotating the wheel directly. A hub motor attaches to either the front wheel, rear wheel, or both. A mid-drive system places the motor by or on the pedal axle and uses the gearing of the bike to provide a mechanical advantage. This allows for more efficient battery usage and gives the rider speed options. One of the goals of this project is to reduce the cost of the kit to about half of the current market price by optimizing the design and fabrication process. We will be designing a mid-drive e-bike kit that uses 36 Volt, 450 watt motor with three 12 volt, 10 amp hour batteries. We are aiming to give the bike a fully electric speed of 25 mph and range of approximately 30 miles. We will use Microsoft Excel to perform chain calculations and SOLIDWORKS to design the mounting system for the motor and the batteries, as well as a modified pedal axle. We will use a CNC vertical mill, CNC lathe and 3D printer to fabricate parts.

"Sports Cuties" Sell: The Impact Diet- and Fitness-Oriented Advertising Has on Body Dissatisfaction and Anxiety Development Among Women

Riagan McMahon; **SUNY Geneseo**
Mentor: Atsushi Tajima

This study explores physical and mental ramifications mediated through female images within Shape Magazine, one of America's leading fitness magazines. Literature has suggested that women are heavily affected by unrealistic body shapes in the media. Both the increase of body dissatisfaction and anxiety-like symptoms, as a result, could be explained through the lens of social comparison theory. This is due to internal pressures by women to compare themselves to the bodies featured across the media. Concretely, the study explores those structural concerns through 1) a textual analysis of images appearing on covers of and within Shape Magazine and 2) a survey questioning how young females perceive those images. While Shape proposes an aspirational lifestyle through its celebrity models, the findings suggests that women paradoxically develop a negative perception about their bodies and mental health as they are exposed to what Shape represents.

Perturbing KIF9 expression levels leads to disruptions in normal cell cycle progression

Arielys Mendoza; **SUNY Fredonia**
Mentor: Nicholas Quintyne

Many cellular processes require motors: proteins that deliver cargo along the cytoskeleton. The three classes of motor are myosin, dynein and kinesin. My research focuses on the largely uncharacterized kinesin, KIF9. My goal is to understand how KIF9 and its binding partner GEM

contribute to cells transitioning into mitosis, and their role in successful completion of cell division. I transfected COS-7 cells to both overexpress and knock down KIF9 expression levels. I observed a statistically significant decrease in mitotic frequency for both overexpression (2.6%) and knockdown (2.1%) when compared to control (4%). Cell synchronization experiments to determine the peak of mitotic index after release using a thymidine block, showed that knockdown cells generally entered mitosis more rapidly than control cells. Additionally, flow cytometry was used to identify the number of cells in different stages of cell cycle for all three conditions. When compared to controls, the treated cells for overexpression and knockdown had a reduced number of cells in G1 phase, a greater number of cells in S phase, and a similar number of cells in G2/M phase, indicating once again that disruption of KIF9 alters cell cycle progression. Further flow cytometry experiments were performed to discriminate the number of cells in G2 and M. My data indicated that more than twice as many cells were present in G2 in knockdowns and overexpression when compared to control, suggesting that the delay was before the G2/M checkpoint. These data support my mitotic frequency findings. Overall, I have seen large-scale cell cycle aberrations when KIF9 protein expression levels are altered. Currently, I am examining if the same effects are seen in response to modulating GEM expression levels.

Response Priming and Conflict Processing in Police Officers with PTSD Symptomatology: An Event-Related Potential Study

Melissa Meynadasy; **University at Buffalo**
Mentor: David W. Shucard

Division of Cognitive and Behavioral Neurosciences, Department of Neurology, Jacob's School of Medicine and Biomedical Sciences
University at Buffalo, State University of New York

The current study, an extension of Covey, Shucard, Violanti, Lee, & Shucard (2013), investigated electrophysiological differences in response priming and conflict processing between police officers with PTSD symptomatology and non-police controls with no prior trauma exposure. Fourteen police officers with PTSD symptomatology and 11 controls performed a Go/NoGo Continuous Performance Task (CPT) while their electroencephalogram's (EEGs) were recorded. During this task, letters were presented on a computer screen one at a time. Participants were instructed to respond by pressing a button to the letter "X" if it immediately followed the letter "A" (A-prime trials, Go trials).If any letter other than "X" immediately followed the "A," participants were to withhold their response (NoGo trials). All other letters presented were considered nontargets, and participants were not to respond. Nontarget trials included infrequent presentations of the letter "X" without the preceding A-prime (X-only trials). The X-only trials, given the context of the task, produce demands on conflict monitoring processes. Event-Related Potentials (ERPs) were extracted from the EEG for A-prime and X-only trial types. These trial types do not require an overt response, however they do induce preparation to make a subsequent response (response priming) and conflict monitoring, respectively. Police officers showed significantly higher ERP P3 component amplitudes compared to controls during A-prime trials, reflective of the hyperarousal or hypervigilance seen in PTSD symptomatology and an increased saliency toward priming stimuli. P3 amplitude was also significantly higher in

police compared to controls during the X-only trials, suggestive of hypervigilance in police officers compared to controls. In addition, police officers showed an attenuated ERP N2 component compared to controls during the X-only trial type. The N2 ERP component is related to conflict monitoring and executive control and is of particular interest. The findings provide insight into brain function associated with response priming and conflict monitoring in police officers that may be related to training and or trauma exposure.

College Students' Opinions and Perceptions about the Health and Criminal Implications of the Legalization of Cannabis

Eric Mikols; **SUNY Brockport**
Mentor: Ingrid McGuffog

There is significant controversy regarding the philosophy and implementation of drug policies in the United States. Debate over how to enforce drug laws, treat addiction and reduce the harm of illicit substances has been contested for decades. Previous research has shown public opinion to be a significant player in the establishment and reformation of policy. This study explores opinions about cannabis decriminalization and legalization as well as perceptions of the harms and risks that cannabis (and other drugs) poses. We surveyed college aged young people, as the daily use of cannabis is the highest among this group and thus the legalization of marijuana has important potential implications for this age group. The objective of our research is to identify the opinions of this age group and regards their views on the liberalization of drug policy and the knowledge of federal drug related laws. Our aim is to gain insight into the potential acceptability and efficacy of various policy options for this age group. We presented interim results from an online survey administered via Qualtrics, at the American Society of Criminology Annual Meeting, in November 2016. At SURC we aim to build upon those results and present further analysis of our data.

Phosphorylation of eukaryotic translation initiation factor 4E.

Charlotte Miller; **University at Buffalo**
Mentor: Sarah E. Walker

Eukaryotic translation initiation factor 4E (eIF4E) performs a critical role in translating RNA to make proteins, and misregulation of eIF4E leads to cancer and other human diseases. As part of the eIF4F complex, eIF4E binds the 7-methylguanosine cap on the 5' end of eukaryotic mRNAs to direct ribosome binding to the 5' cap, a rate-limiting step in protein synthesis. Phosphorylation of amino acids found within proteins such as eIF4E can activate or deactivate their functions; leading to myriad consequences. Several phosphorylation sites have been identified in eIF4E in humans as well as in the budding yeast Saccharomyces cerevisiae, but it is unclear how these phosphorylation events affect the activity of the protein. To evaluate how phosphorylation of eIF4E affects translation, we are using CRISPR-Cas9 coupled with homology-directed repair to engineer precise point mutations of phosphorylation sites in the budding yeast genome. Use of CRISPR-Cas9 for site-directed mutagenesis requires three components: a Cas9 enzyme that creates a double-stranded break in the genomic DNA, a synthetically designed guide RNA that targets Cas9 to the site of interest, and a double-stranded DNA

containing the mutation of interest and silent mutations of the gRNA site that select for cells that undergo homology-directed repair. Our goal is to use strains generated with this strategy to learn how phosphodeficient (i.e. Serine to Alanine) and phosphomimetic (i.e. Serine to Aspartate) mutations of eIF4E affect both translation and cellular fitness.

The Global Diffusion of Slum Tourism and the Issues it Raises

Nicholas Minett; **SUNY Geneseo**
Mentor: Darrell Norris

Slum tourism is a growing reality. It began at least in the nineteenth century, when London's rich would literally "slum it," and still thrives today all over the world. At least thirty major cities now offer slum tours to rich westerners who want to see "how the other side lives." The argument rages on both sides of slum tourism, with many claiming that slum tours are simply human zoos while others argue against that notion and look at the positive side of these tours. Either way, slum tourism has been on a steady rise. I will focus on how the slums sustain themselves, how the tours operate, and the rich culture that each slum contains within itself. While looking at the slums themselves, what they have to offer during tours, and some of the other intricacies of the business, this paper will also include logistics and first-hand perspectives from tour employees/business owners and different individuals who have participated in slum tours. My paper will also focus on giving outsiders who are foreign to the term 'Slum Tourism' a hard look at the reality of what life in these squatter settlements is. I will strive to capture the emotion behind some of the people living in these areas as well as those who work the tours and help the local population however they can. My goal is to raise awareness about what Slum Tourism is and bring attention to this subject and these ignored impoverished areas.

Optimal Image File Formats for Student Identification Using MATLAB Feature Extractions

Natalia Montilla; **SUNY Onondaga**
Mentor: Vicentica Valdes

Collegiate Science and Technology Entry Program (CSTEP) students at Onondaga Community College are automating tracking student use of CSTEP support services which provides data to better allocate resources. A CSTEP student observed that students enjoyed being photographed and decided to investigate using facial recognition software in MATLAB to automate tracking the use of support services.

In automating the tracking of the use of support services, two areas that relied on image processing efficiency were identified: (1) the extraction process of facial features used to identify students and (2) the extraction process in real-time to process a student using services right now. The image file formats were identified as a limiting factor to image processing efficiency. The most efficient image file format was defined as that format that minimized the time to generate the extracted features vector and the matrix size of the extracted features. A set of typical image file formats (TIFF, JPG, PNG, GIF and BMP) were identified along with key extraction processes available in MATLAB (SURF, BRISK and HOG). A test database was created using twenty students and images for each type of format were generated. Feature extraction times were determined, using the default size for the extracted feature matrices. The most

efficient extractions occurred with GIF formats for HOG and SURF extractions and with PNG formats for BRISK extractions. Continued work focuses on increasing the size of the test database and investigating the combined effect of the image type and extraction process on the accuracy of the student identification.

Using Professional Development School Partnerships in Secondary Social Studies Education to Promote Diversity

Daniel Moreno; **SUNY Buffalo State**
Mentor: Jill Gradwell

Valerie E. Middleton explains that a Professional Development School (PDS) partnership is "designed to provide... preservice teacher preparation, exemplary education for all students, inquiry into teaching and learning practices, and professional development for practicing professionals" (2007, p. 232). While much PDS research focuses on elementary education, inter-teacher relationships, and educational techniques, often secondary social studies education as a content area is overlooked. Specifically, there is a shortage of research done through PDS about how to implement secondary social studies curriculum change in PDS school networks. Vontz et. al. state in their article, "Building Bridges in Social Studies Education: Professional Development School Partnerships" that "the benefits of PDS partnerships may be greater in social studies education than in any other field" (2007, p. 254). Based on my review of the extant literature, in this student poster session I will argue that not enough emphasis is placed on minority studies in current social studies curriculum. I will also offer implications for utilizing PDS partnerships to remedy the ever growing gap of minority studies in Social Studies curriculum, such as presenting information through PDS on curriculum changes to the National Council for the Social Studies, interschool curriculum renewal (opportunities for inquiry and social action projects), and finally, including the use of interdisciplinary school structures.

Dear Antigone: Female Artists, Trauma, and Mental Illness

Olivia Morris; **SUNY Geneseo**
Mentor: Alla Myzelev

My thesis explores how creative depictions of trauma, physical illnesses, and mental illnesses by female artists have evolved over the course of the 19th and 20th centuries. Through a biographical lens, my thesis incorporates contemporary trauma theory and feminist discourse to evaluate how each artist communicates and promotes an understanding of their intense troubles. The artists in question are Camille Claudel, Romaine Brooks, Georgie O'Keeffe, and Frida Kahlo. Each of these women carried a particular array of burdens related to abandonment, betrayal, infertility or the loss of a child, and death. I have picked eight particular works, two for each artist, that embody their recorded struggles. The ultimate goal of my thesis is to fully examine how visual art can function as a testimony of trauma, therefore reconciling the artist with her tragedy.

Experimental Investigation of Strain-Hardening Fiber-Reinforced Concrete with Improved Tensile Properties

Anandharam Mourougassamy; **University at Buffalo**
Mentor: Ravi Ranade

Fiber-reinforced concretes (FRC) show improved behavior compared to conventional concrete. Strain-Hardening Cementitious Composites (SHCC) are a unique class of FRC in which the constituents and their proportions are designed using micromechanics and fracture mechanics principles to provide strain-hardening behavior under direct tension. The objectives of this research are to investigate the mechanical behavior of an SHCC made using polyvinyl alcohol (PVA) fibers and to compare its behavior with that of conventional concrete. Fly ash was used as a partial cement replacement in this study to improve the mechanical behavior in addition to reducing the carbon footprint of the resultant SHCC. Experiments were carried out to determine the compressive and tensile strengths of the two materials by performing uniaxial compressive strength tests on cylindrical specimens and flexural tests on beam specimens as per relevant ASTM standards. From the test results, it can be concluded that while SHCC has compressive strength similar to concrete, the modulus of rupture of SHCC (a measure of tensile strength) is about three times greater than that of concrete.

The Role of p150Glued in Microtubule Binding

Breanna Myers; **SUNY Fredonia**
Mentor: Nicholas Quintyne

Dynactin is a multiprotein complex that is involved with many cytoskeletal related functions in the cell; often in conjunction with the microtubule motor dynein. Organizing microtubules during interphase, known as microtubule anchoring, is one such function of dynactin. Furthermore, it is known that the p150Glued subunit of dynactin is critical to this process. Previous studies have also demonstrated that p150Glued can bind to microtubules via two different binding domains, CAP-Gly and basic. These two binding domains bind to microtubules with different affinities: CAP-Gly binds to microtubules tightly while the basic domain has a very weak affinity for the microtubule. Additionally, it has been shown that both domains can bind to the microtubule simultaneously in vitro, although it is not known if the same is true in vivo. We are interested in how p150Glued binds to microtubules as part of the anchoring complex; our working hypothesis is that CAP-Gly is completely responsible for microtubule anchoring or CAP-Gly and the basic domains are working in tandem and are responsible for microtubule anchoring. To examine this process, I have used shRNA to knockdown the endogenous p150Glued in COS-7 cells. The efficiency of knockdown was analyzed using immunofluorescence and SDS-PAGE/Western Blot. Furthermore, the effects of knocking down p150Glued expression levels on microtubule organization were quantified. We observed that after 96 hours of knockdown, microtubule organization decreased from 3.4% in controls to 68.2% in treated cells. These data confirm the importance of functional p150Glued in cells to properly anchor microtubules. Currently, I am in the process of generating deletion mutants of p150Glued, which lack either or both microtubule-binding domain or other regions of interest

in the protein. These constructs will be added back into the knockdown cells so that we can better understand the contributions of the individual domains to microtubule anchoring.

Singing Production and Musical Perception: A Closer Look

Nicholas Nolan; **University at Buffalo**
Mentor: Peter Pfordresher

A common mode of music making is singing, and the simplest form of singing is the vocal imitation of pitches. Despite the ubiquity of this behavior, many people fail to match imitated pitches most of the time. Because singing is a complex behavior, involving many processes, it is not clear how much perceptual or sensorimotor processes contribute to singing accuracy. We address the relative contributions of various factors using three leading online tests of musical processing: A measure of imitative singing accuracy from the Seattle Singing Accuracy Protocol (SSAP), a test of melody perception based on the Montreal Battery of the Evaluation of Amusia (MBEA), and a simple pitch discrimination task. A group of 100 college-age students were randomly sampled from students taking Introduction to Psychology at the University at Buffalo, The State University of New York, the only constraints being the lack of any hearing deficits or vocal motor disorder. The results show that there is a significant positive correlation between the overall scores of both the SSAP and the MBEA, with weaker correlations between each test and simple pitch discrimination. A series of multiple regression analyses further suggested that MBEA scores are related to both singing accuracy and pitch discrimination, whereas the latter two measures were unrelated to each other. These results suggest that pitch processing in a musical context may draw on both basic perceptual processes as well as sensorimotor processes involved in singing.

Automating Metallicity Calculations of RR Lyrae Stars Using Phase Parameters With Python

Justin Ortega; **SUNY Oswego**
Mentor: Shashi Kanbur

In the journal article titled “Metal Abundances, Radial Velocities, and Other Physical Characteristics for the RR Lyrae Stars in The Kepler Field” (Nemec, J. M. 2013), a group of researchers analyzed a set of 41 RR Lyrae stars provided by NASA’s Kepler space telescope. Thirty-seven of the RR Lyrae stars were identified as fundamental-mode pulsators (RRab) with sixteen displaying the Blazhko effect. The remaining four were identified as multiperiodic RRc pulsators. Using these RR Lyrae stars the researchers derived a new Period- 훿_31^푡-[Fe/H]. The formulas produced by these researchers could be used to determine metallicity of RRab and RRc type RR Lyrae stars. Calculating these metallicities by hand can prove to be tedious and time consuming, thus automating these calculations utilizing the Python programming language provides a simple and quick way of performing these calculations.

Soaring Stars' Impact on Behavioral and Emotional Skills

Taylor Palmer; **SUNY Geneseo**
Mentor: Annmarie Urso

The Behavioral and Emotional Rating Scale (BERS-2) was used to assess the status of behavioral and emotional skill strengths of students attending the Soaring Stars Program at SUNY Geneseo ("the Program"). The rating forms (n=58) were analyzed and compared statistically for correlation among parent and teacher ratings, as well as the correlation of ratings for children that are considered at-risk for developing emotional, social, or behavioral disorders. This data is used to determine the strengths of each child as measured by both parent and teacher ratings taken at two points in time – pre-Program in May and post-Program in August. This information identified the effectiveness of the Program in supporting and improving the behavior and emotional growth of the children.

The Housing Bubble's Effect on Macro-level Shifts In Mortgage Lending Patterns

Maksim Papenkov; **SUNY Albany**
Mentor: Lewis Segal

The Home Mortgage Disclosure Act (HMDA) was passed by Congress in 1975 to provide a public archive of mortgage data, for the purpose of monitoring lending patterns by financial institutions. Significant research has been published with the use of HMDA data, identifying such patterns on a micro-level, examining disparities between communities in a single city, but fewer research has been published identifying larger changes on a macro-scale, particularly over multiple decades. Here, I perform a "big data" analysis for a "Middle Class Family" sub-population, defined as mortgages for owner-occupied home purchases, by families with incomes between 80% and 120% of their state's median income level (utilizing U.S. Census data). I analyze shifts in lending patterns across both race and sex, for three periods: pre-housing bubble (1995), peak-housing bubble (2005), and post-housing bubble (2015), using multivariate bubble-plot and boxplot graphs to visualize compositional differences in lending between the demographic populations. Further, I use time series graphs to observe gradual shifts in approval rates and income-to-loan ratios, using data between 1995-2015. By considering both the decade preceding the housing bubble, and also the decade following its bust, I attempt to identify changes in lending patterns on a systemic scale, particularly across race and sex on a national level.

Sound Level Reduction - Serta Simmons. LLC Jamestown

Jinwook Park; **SUNY Fredonia**
Mentor: Lisa Walters

Serta Simmons is a well-known mattress manufacturing company, everything built from scratch in each respective branch of manufacturing plants. Serta Simmons. LLC Jamestown branch came to SUNY Fredonia's Business Department to ask help on lowering noise level in their manufacturing site to provide safer working environment for their employees. My team was assigned to focus on reducing the decibel level (dB) in their Framing and Nail down sections. A decibel (dB) is a unit used to measure the intensity of sound. Sound is all around us and can be measured to inform and protect us. The following is the Maximum Recommended Noise Dose Exposure Levels: 91 dBs- 2 hours of exposure, 115 dBs- 28 seconds, 121 dBs- 7 seconds, 140- no exposure recommended. The team applied DMAIC process to investigate the matter. After

completing the DMAIC process, we found that the initial diagnosis of the cause of the problem did not ring true. After visiting the plant, the team identified that the cause of the noise within the factory was not coming from the nail and staple guns themselves, but from the contact between the materials they were nailing together and the metal table they are nailed together on. Through our collected Data using the sound recording device, Digital Sound Level Meter, we found out that the focused area had decibel (dB) range between 106 to 125. Making it extremely hazardous not only to the stationed employees, but also to the surrounding employees. Our final recommendations were made with these data in mind.

Searching for the Stage: Authenticity in Modern Fado Tourism

Amanda Paruta; **SUNY Buffalo State**
Mentor: Tiffany Nicely

Modern-day fado tourism is the intersection of political policy, globalization, and the socio-psychological concept of staged authenticity. Fado, which translates to "fate," is at the heart of Portugal's tourism industry and has been codified as Portugal's emblematic musical genre. Fado emerged in Lisbon's most impoverished neighborhoods in the early 20th century. In its primordial state, fado was the anthem of the destitute, later transcending socio-economic boundaries to become the music of the city. Tumultuous changes in government leadership—a military dictatorship (1926-1932) that imposed heavy censorship laws on fado, and the Estado Novo (1933-1974), a fascist regime that employed fado as its unofficial propaganda—left fado in a liminal state between music of the people and propaganda. Throughout its reign, the Estado Novo shaped Portuguese culture to suit its "peasant, but pleasant" ideal. The Estado Novo's imagined Portuguese community was somber, religious, and plain. These ideals were disseminated throughout the country and became a way of life, seeping into fado presentations-- particularly those directed at tourists--freezing the genre's development until its revival in the late 1990's. Tourist exhibitions, however, remain encased in the Estado Novo's shroud of ideals and censorship. My research explores the influence of the Portuguese dictatorship on the presentation of fado to tourists and how the concept of staged authenticity perpetuates its effects.

Adding the South Asian Student Association as a Featured Student Organization to the Center for Multicultural Affairs

Mackenzie Peake, Puja Das and Hannah Shea; **SUNY Fredonia**
Mentor: Natalie Gerber

This collaboratively researched and written 20-page formal proposal, completed in the Fall 2016 semester as part of the ENGL 375: Writing for the Professions course, sought the incorporation of the South Asian Student Association (SASA) into the Center for Multicultural Affairs (CMA). This Center currently houses six student groups, none of which are Asian. Unlike other Asian student groups, SASA represents eight countries. Student populations from these countries are growing on campus. The proposal drew on two resources in arguing for the increased visibility that CMA membership would bring to Asian students on our campus. The first being the national literature regarding enrollment trends in higher education. The

literature demonstrates significant expected increase in Asian representation in the coming years. The second resource was on campus and SUNY-wide data. This data shows significant opportunities to better engage this demographic, increasing low enrollment figures, and retaining current population. The proposal was approved by Dr. Cedric Howard, the Vice President of Student Affairs, for implementation in the following years, pending institutional changes affecting CMA. By taking this step towards greater representation of diverse Asian student populations, Fredonia is positioning itself as a potential leader in the SUNY system through an emphasis on recognizing separate cultures and pointing out the major discrepancies of reporting minority student populations between schools.

Discovering Parallels Between Euclidean Constructions and Origami Constructions

Michelle Persaud; **SUNY Fredonia**
Mentor: Julia Wilson

What can we construct using origami? This is similar to the question "What can we construct using a straight edge and compass?" Euclid made the first attempt to axiomatize compass and straight edge constructions approximately 2500 years ago in his series of works, The Elements. 19th Century mathematicians used algebra to provide a framework for determining what is and is not constructible. Recently, mathematicians have used a similar axiomatic and algebraic approach to determine what is foldable using origami. The goal of this presentation is to demonstrate how origami constructions can be axiomatized, and to determine what restrictions someone would face when creating an origami construction.

How well can you hear me now? – A Virtual Reality project

Micheal Peters; **SUNY Buffalo State**
Mentor: Sarbani Banerjee

As Virtual Reality becomes more prevalent as a medium, its capabilities as an art form have received further exploration and development. When creating a Virtual Reality (VR) experience, two main parts of creating an immersive VR experience are the visuals, and the audio. This project will explore the audio side of the experience. The goal of this project is to develop procedurally adjusted audio within a virtual environment. This project will create a small virtual environment for a Windows 10 computer with an Oculus Rift DK1 attached to it. Using Unity 5 development engine and Microsoft Visual Studio C# programming language, the project will attempt to blend both ray-casting and pathing methods to determine the quality changes that need to be introduced to the sound, and distance traveled from source to listener. Using that data the volume and the equalization of the sound will be adjusted by changing settings in Unity's mixer feature. To test this the viewer will be able to directly trigger different audio sources regardless of the viewer's location in relation to that source. The viewer should hear a difference in the quality of the audio depending on their location even though the sound emitter itself is constantly playing the same audio file.

Dating Anne Boleyn's Songbook: The Creation of MS 1070

Erin Petti; **SUNY Fredonia**

Mentor: James Davis

The Royal College of Music in London is home to a manuscript of Renaissance music - MS 1070 - that would have received very little attention but for a simple inscription found inside: “Mistress Anne Bolleyne, nowe thus”. With a connection to such an alluring queen, it is surprising that little scholarship exists pertaining to MS 1070. Many questions remain surrounding this manuscript, the most important of which is when and where it was copied. Previous studies propose two very different dates and places: Lisa Urkevitch argued that creation occurred between 1501 and 1521 in France, while Edward Lowinsky argued for the 1530s in England. By looking at MS 1070 in the context of Anne Boleyn's life and music practices of the 16th century, I argue that it was created in the 1510s, with copying and assembly taking place in both France and England. My findings take into account the time frame implied by the use of the title “Mistress” (as opposed to “Your Majesty” or “Lady”) in the inscription, the size and materials used in the manuscript, inconsistencies in illumination and textual underlay, the differences in copying techniques on the Continent and in England, and what appear to be a new binding and other repairs to the manuscript. There are many additional mysteries surrounding this manuscript, but through clarifying when and where MS 1070 was created, it becomes infinitely easier to solve everything else.

Relocation of Federally endangered Rayed bean mussel in Allegheny River

Zachary Piper; **SUNY Oneonta**
Mentor: Paul Lord

In June 2016, we relocated 503 freshwater pearly mussels listed as endangered by U.S. Fish and Wildlife Service or as species of greatest conservation need by the New York State Department of Conservation from a proposed bridge maintenance site in the Allegheny River near Carrolton, NY. SCUBA divers and others excavated twelve species of pearly mussels, including the federally endangered Rayed bean mussel, then tagged and replanted them in suitable habitat upstream of the bridge site. We completed a follow-up survey in August 2016 to evaluate the success of the move of the short term. We found 189 of the tagged mussels and 123 previously untagged Rayed beans. Losses of moved mussels were minimal. Pearly mussel populations have declined throughout New York, necessitating focused conservation measures to prevent the losses of pearly mussel populations.

The Importance of Maintaining Patient Safety

Callie Powell; **SUNY Morrisville**
Mentor: Susan K Trueworthy

The purpose of this research project and presentation was to highlight the enormous need for preventative measures in healthcare related fields. The highlighted concern within this project was preventing pressure ulcers in various settings. Pressure ulcer development is a significantly growing problem found among patients in any setting, including at home. Even with constant advancements in prevention and treatment products, many hospitalized patients still experience pressure ulcer formation. Once this occurs hospitalized patients morbidity and

mortality rates increase drastically. Quality and Safety Education for Nurses (QSEN), is one organization that is at the forefront of developing new strategical interventions to guide nurses in their preventative measures. QSEN was developed in order to pursue new strategies to build and develop effective teaching approaches to assure that future graduate nurses develop competencies in patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics. Organizations like QSEN, along with dedicated healthcare workers must work together in order to maintain patient safety and promote an atmosphere of overall wellness for each and every patient.

Methamphetamine Mediated Mitochrondrial Dysfunction and Microglial Apoptosis

Elizabeth Quaye; **University at Buffalo**
Mentor: Supriya Mahajan

Meth induced damage of the nerve terminals of dopamine-producing neuronal cells triggers activation of apoptotic mechanisms resulting in the complete disintegration and death of neurons, astroglia and microglia. This results in neurotoxicity and neurodegeneration causing significant neuropsychological complications. The exact molecular mechanisms of Meth-induced neurotoxicity remain unclear. Meth mediated apoptosis is accompanied by nuclear damage and differential expression of pro- and antiapoptotic proteins. In the current study, we will examine an array of pro- and antiapoptotic biomarkers that are activated as a consequence of Meth treatment. This will help us identify the specific mechanisms that underlies Meth induced apoptosis. We hypothesized that increasing concentrations of Meth will cause microglial apoptosis which induces mitochondrial dysfunction leading to neurodegeneration. Our goal was to evaluate if Meth treatment induced the activation of the mitochondrion-dependent intrinsic pathway. Gene expression of pro- and antiapoptotic genes were quantitated with QPCR using RNA extracted from cultured microglial cell line (HTHU). Our results indicated that Meth treatment resulted in a significant increase in the gene expression levels of apoptotic proteins like APAF-1, BAX and BCL-2. Analysis of Western Blot data showed a significant modulation of the expression level of the antiapoptotic protein BCL-2 with varying Meth concentrations. Using immunofluorescence analysis we examined the expression of mitochondrial proteins, Cytochrome C, COX 4 and MCL-1, all of which were significantly activated on Meth treatment indicating the activation of the mitochondrion-dependent (intrinsic) apoptotic pathway. We conclude that Meth causes microglial apoptosis via the intrinsic pathway contributing to neurotoxicity and subsequent neurodegeneration.

Multipolar Cell Division Prevented through the Coalescence of Supernumerary Centrosomes

Maria Quintero; **SUNY Fredonia**
Mentor: Nicholas Quintyne

As cancer develops, the rates of multipolar cell division and chromosome instability increase due to supernumerary centrosomes. Cells have overcome multipolar cell division by discarding, inactivating, or clustering extra centrosomes. In cancer cells, coalescence of centrosomes has been observed as the primary mechanism to prevent multipolarity. When centrosomes cluster together to form two functioning spindle poles, we have observed that the centrosomes

preferentially cluster, such that one pole has a single centrosome while the other pole clusters the remaining centrosomes.When this mechanism is in place, cell division will result in at least one daughter being both genetically stable and possessing a single centrosome.
The goal of this project is to determine the pattern of centrosomal clustering. We propose centrosomal clustering is related to the age of the centrosomes. Each cell contains a mother centriole and a daughter centriole. Our hypothesis is that the mother centriole is critical to this process; it may gather all additional centrosomes except one, or alternatively it may prevent others from clustering with it. To address this, we have examined the expression patterns of many centrosome-associated proteins so that we can uniquely identify the centrosome populations: We are able to use the proteins cenexin to identify mother centrioles and centrobin to identify daughter centrioles. Using both cancerous and noncancerous cell lines, we have developed conditions in which we can induce clustering of supernumerary centrosomes. With these tools in place, we are currently testing our hypothesis.

Serta DMAIC Project: Improving OEE Within the Quilting Department

Amanda Rader; **SUNY Fredonia**
Mentor: Lisa Walters

The goal of this Six Sigma project was to increase efficiency of the quilting machines at Serta Simmons from their current efficiency rate of 25-30% to 50%. After extensive data collection, which included measurement of machine downtime and secondary research, we found that the main reasons for downtime were tic change, roll change, pattern change and employee breaks. These are all important parts of the process for the quilting machines, and after analyzing the data acquired, we determined the solution that best fits with the current production standards of Serta.
Based on our findings, we concluded that it would be best to stagger the breaks through non-delay scheduling of the employees who work these machines. This solution decreases downtime of the four quilting machines, meaning the machines have less time that they are not producing. The data collected from the four machines details that 20-25% of machine downtime was during employee breaks. If breaks were staggered and machines did not have to be shut down, the overall downtime would be decreased. This decrease of downtime could cover the increase in efficiency to reach the goal of 50% efficiency. We believe that non-delay scheduling is the best solution because changing the way the roll, tic and pattern changes occur would be too invasive to the current process. After further questioning employees, we believe that those processes are handled efficiently at this time. This leaves employee break times as the next major form of downtime. If the breaks are staggered, then all machines can be left running for longer periods of time. This would eliminate the need to shut down and restart the machines, which contributes a substantial amount of the break-based downtime.

Effect of the Circadian Rhythm on Phosphoramide Mustard-induced Toxicity in the Urinary System

Paula Rebancos, Shannon Crehan; **SUNY Oneonta**
Mentor: Kristen Roosa

Patients diagnosed with cancer often undergo therapy with chemotherapeutic drugs, many of which are damaging to non-target tissues such as those of the urinary system. The time of day at which an individual is exposed to these compounds may influence toxicity because the levels of detoxifying enzymes vary throughout the 24-hour day. The effects of the circadian rhythm on the sensitivity to drugs toxic to the bladder and kidneys have yet to be studied. Our research focuses on how the time of day an animal is exposed influences the sensitivity of the urinary system to the chemotherapeutic drug, cyclophosphamide (CP). Female mice were exposed to a 12 hour light:dark cycle and were given a single intraperitoneal injection of CP at 8AM and 8PM. Control animals received a single injection of vehicle at 8AM. Currently, we are using histological sections to compare the degree of CP-induced damage to the bladder and kidneys when mice are treated at night versus during the day. Key markers of CP-induced damage include fibrosis and tissue death in the bladder and cell death and structural damage within the kidney. Any correlation between time of exposure and the severity of damage to the urinary system will provide information valuable to a chronotherapy approach to cancer treatment.

Nanoparticles for Immune Modulation

Sarah Reeves; **University at Buffalo**
Mentor: Bruce Davidson

Influenza A virus infects 5-20% of the US population, resulting in over 200,000 hospitalizations and close to 40,000 deaths annually. Typical methods to combat the influenza virus include preventative techniques such as vaccines. Much of influenza's pathophysiology results from an over-exuberant immune response. It has been demonstrated that volatile anesthetics, such as isoflurane, are effective in the suppression of the immune system. We hypothesize that a nanomedicine of Intralipid® nanoparticles loaded with isofluorane can be used to modulate the response of the immune system and effectively aid those infected with the influenza virus. Unfortunately, this nanomedicine formulation induces narcosis. To prevent this side effect, a layer of positively charged chitosan is electrostatically bound to the negatively charged Intralipid® nanoparticles. This coating allows the isofluorane to be delivered to macrophages in the target organ (lymphoid tissue in the spleen) and controls its localized release. Through dynamic light scattering (DLS)measurements, the size of the particle and the surface charge are measured to confirm the presence of the chitosan coating. Current testing shows the successful attachment of chitosan to the nanoparticles with aggregation of nanoparticles. A technique using syringe filters has been implemented to remove the large aggregates.

Determining the Persistence of Sperm DNA on Articles of Clothing and the Effects of Drying Time after Exposure to Detergent through Machine Washing

Brittany Richards; **SUNY Alfred State**
Mentor: Ashley Shaloo

One in five women will be sexually assaulted in their lives and only 63% of those cases will be reported. [1] Statistics like these lead to the need for stronger evidence and scientific processes to aid such under-represented victims. DNA evidence is one of the most important factors in identifying the perpetrator in sexual assault cases and can determine key characteristics of the

perpetrator like eye, skin, and hair color. For those that do not go to the hospital or police immediately after the incident there may still be hope to find DNA on any clothing they were wearing when it happened. As of now, little is known regarding the persistence of semen evidence on articles of clothing that have been laundered after the incident. If victims that choose not to seek help, launder their clothing after the assault, there is no current scientific data that provides how much evidence can be collected. This study investigates the effect that the length of time the evidence dries prior to washing has on the persistence of semen. To test this, white cotton women's underwear will be exposed to a semen sample, allowed to dry for varying amounts of time, washed, and then examined for the presence of semen using both presumptive and confirmatory assays. Any viable semen will be analyzed for DNA and the amount that is present will be statistically analyzed.

[1] Black, M. C., Basile, K. C., Breiding, M. J., Smith, S .G., Walters, M. L., Merrick, M. T., Stevens, M. R. (2011). The National Intimate Partner and Sexual Violence Survey: 2010 summary report. Retrieved from the Centers for Disease Control and Prevention, National Center for Injury Prevention and Control

Investigating the effects of NICU drugs on neonatal mouse brain using ImageJ to analyze drug-induced neuroapoptosis

Ian Richardson, Zachary Eklum; **SUNY Fredonia**
Mentor: Catherine Creeley

Premature infants hospitalized in the NICU are administered several classes of sedatives and analgesics that, if given in combination or for a prolonged period of time, may adversely affect neurodevelopment. We used a neonatal mouse model to investigate the histopathological effects of fentanyl (F), midazolam (M), and caffeine (C) on the developing brain. The postnatal development days (PND) 1 - 7 in the mouse roughly correlates to the third trimester development of the human infant, so we used a neonatal mouse model, in which groups of neonatal mice were treated with F, M, C, or FM, FC, MC, or FMC on PND 5 or 7. To investigate whether these agents cause drug-induced neuroapoptosis, sections of brain tissue were stained to reveal the apoptotic cell death marker Caspase-C. The sections were then imaged using a microscope (50X), and computerized tiling software. ImageJ software was then used to "count" or quantify caspase C presence in the PAG. A cell-counter plugin with predetermined cell diameters and pixel size was used to determine cell death counts for each treatment group. It was hypothesized that developing mice exposed to the NICU drugs would have higher rates of cell death in their PAG than those in the control groups. After comparing caffeine (C) groups, midazolam and caffeine (MC) groups, fentanyl and midazolam (FM) groups, midazolam and caffeine (MC) groups, and control groups (S), results suggested that mice exposed to fentanyl, midazolam, and caffeine had higher rates of cell death in their PAG than those in the control groups. The mice in treatment groups express higher caspase levels, indicative that the NICU medications induce apoptosis in the PAG. When comparing PND 5 to PND 7, it was discovered that mice in their later stages of development have higher rates of cell death in their PAG compared to younger mice in each of the groups, but we may need to consider the natural processes of apoptosis through development in congruence with treatment exposure apoptosis

responsibility. These results are important to further our understanding of drug exposure during critical and sensitive periods of brain development in the premature/neonatal infant. Specifically, the PAG is directly involved in pain modulation and analgesia, symptoms that are designated targets of fentanyl and midazolam.

Determining Periods of Variable Stars from the OGLE-IV Catalog

Dylan Richmond; **SUNY Oswego**
Mentor: Dr. Shashi Kanbur

The OGLE telescope is located in Las Campanas Observatory in Chile. It was originally created to discover and learn more about dark matter. Now in its fourth campaign, OGLE-IV collects luminosity data from radial pulsating stars such as Cepheids and RR Lyraes. In astronomy, these types of stars are used as "standard candles" to determine far distances in the universe more precisely. In this investigation, period detection methods such as AOV, Period04 and Conditional Entropy are used on OGLE-IV luminosity data to determine the oscillatory period of these variable stars. OGLE has calculated the periods of most these stars, however on occasion the three period detection methods disagree with the OGLE published period. In this event, we investigate the possible reasons as to why there may be disagreement.

An Asteroseismic Analysis of the RGB Bump

Kenneth Roffo; **SUNY Oswego**
Mentor: Shashi Kanbur

Asteroseismology is the study of oscillations in the interior of stars. These oscillations cause certain frequencies of light to be emitted by a star, which are observed with our telescopes. Red giants display interesting behavior in what is known as the red giant branch (RGB) bump. Normally, red giants increase in mass and luminosity as they decrease in temperature, but for a relatively short period during the branch, some red giants reverse this behavior. In this study the asteroseismic parameters for stellar models of varying mass during the RGB bump are compared with the goal of determining a way to determine what stage of the bump a star is in from frequency observations.

Periodic Points of Tent Maps

Marleah Roseman; **SUNY Fredonia**
Mentor: Joseph Straight

For integers m and n with $0<m<n$ and m and n relatively prime, we consider the function on [0,n] whose graph consists of the segments from (0,0) to (m,n) and (m,n) to (n,0). We consider the problem of finding periodic points of this function.

Mapping the rDNA Gene of Chamaelirium luteum's Genome

Benjamin Rouse; **SUNY Schenectady**
Mentor: Keylon L. Cheeseman, Lorena Harris

Medicinal herbs have always held an interest in the Americas. This interest is passed down through the now (mostly) lost knowledge of the Native Americans. One plant in particular Chamaelirium luteum (L).Gray, commonly known as False Unicorn Root or helonias, has traditionally been used as a stimulating tonic for the uterus and ovaries. It is one of the most well-known herbs for preventing a miscarriage, as it is a revitalizing agent in cases of dyspepsia and weakness in the reproductive organs. Despite this knowledge of the practical use of the plant, little is known about the herb and its DNA makeup. The purpose of this study is to characterize the rDNA loci of the genome of this endangered plant that is native to the Eastern United States. The 18S ribosomal RNA is part of the ribosomal RNA (SSU) basic components of all eukaryotic cells, it is one of the subunits that constitute the ribosomal functional core, which its expose to similar selective forces in all living beings. This study will shed some light in the evolutionary history and relationship among group of organisms related to this plant that was used by our ancestors, which would be better understood upon characterization and mapping of the rDNA gene loci of Chamaelirium luteum's. In addition, this creates awareness to an already overharvested herb. Furthermore, because this is an under researched herb, this research would open up other possibilities of extrapolating its action within the medical community.

Exploring Labor Market Trends in the US Retail Sector

Destin Royer; **SUNY Cornell**
Mentor: Hassan Enayati

Technology has, and will continue to, revolutionize the relationship between workers and the tasks they perform. Technological advancement, however, affects different parts of the economy in different ways. Exploring some of these differences is the main contribution of this paper. Originally conceived as an investigation into the effects of eCommerce on the market for retail laborers, this paper has metamorphosed into an investigation of the differences between labor market indicators in the entire US-economy and those in the only the retail sector. The findings being presented demonstrate substantial, and from the viewpoint of labor, promising, differences between the wage and employment growth trends of the whole US-economy and the retail-only sector. The results of this paper are only the first step in understanding how technology is changing different labor markets in different ways, but it clearly demonstrates the need to research this question on a sector by sector basis.

Understanding Soil Phosphorus tests

Colton Sanders, Justin Depue , Kim Buddington; **SUNY Morrisville**
Mentor: Gilbert Jenkins

In Central New York, producers have reported a disconnect between soil test phosphorus results and field pasture production. Low soil test phosphorus results are not reflecting the sustained production observed in pastures. The objective of this research was to help members of the local farming community better understand their soil test phosphorus results, and identify a potential source of soil test P error. In an effort to address these concerns, the question "does sampling method influence soil test results" was evaluated. A small scale

research project was designed and an outreach educational meeting planned for the winter of 2017 to communicate results to the farming community. Four pastures at one farm where there had been a history of very low soil phosphorus but high productivity we selected for inclusion in this study. Six different soil sampling methods first using a trowel, then using a soil sampling probe and collecting soil from 0-15cm moving throughout the whole field, 0-15cm cores all taken in one place, 0-6cm moving throughout the whole field, 0-6cm cores all taken in one place, and finally random core collection without regard to depth. Soils were dried and ground and extractable phosphorus was analyzed three ways: water soluble, Modified Morgan, and Mehlich-3 extractable phosphorus. Data showed a consistent pattern between soil collection method and soil test results which caused changes in recommendations for soil phosphorus management. Success in the current project is defined as effectively addressing the local farming community's concern through quick turn-around of useful data. Results of the outreach effort will be presented.

The Financial Motivations of Cause Marketing Campaigns

Christopher Santana, Kincaid, Meaghan and Lopez, Christian; **SUNY Oneonta**
Mentor: Chien-Wei Lin

This project investigates the financial motivations of U.S. public firms' cause marketing (CM) campaigns. Specifically, we document 250 public firms' CM campaigns in 2015 and compare them with the industry benchmark to identify the key financial antecedents (e.g., sales, cash flow, and advertisement expense) of CM. We hypothesize that i) a firm's lower sales level would increase its likelihood of using CM to promote or restore its sales; ii) the condition of a firm's cash flow would affect its CM decision, positively or negatively; and iii) a firm's CM might be a substitute to or a complement of its advertisements.

When does a person become an adult?

Samantha Scalise; **SUNY Fredonia**
Mentor: Joseph McFall

With the emergence of the Emerging Adulthood stage of development the achievement of adult status has become increasingly more complex. Traditional markers, such as marriage and finishing school, now fail to capture the true essence of what it takes to be considered an adult in developed countries alone. This study examines people's perception of the criteria for adulthood using Arnett's Markers of Adulthood scale. Original data from the study is compared with two previously published studies, one with an American sample (ages 13-55, M = 27.1) and one with an Australian sample (ages 16-30, M = 19.2), to see if age or country of origin is a better predictor of which criteria will be endorsed as necessary for adult status. We also examine whether it is a person's behavior or in what manner a person is treated that determines whether someone is perceived as being an adult. This study also investigates whether personal responsibility is in anyway related to which criteria for adulthood are considered important as well as self-perception of adult status. To further examine emerging adulthood this study also examines the relationship between age and identity consistency. It is expected that the results will show the following: 1) if the age of the participants, expected to

be between 18 and 30, has a larger effect on which criteria is endorsed then the results will be closer to those of the Australian sample. If country of origin has the larger effect, then the results will be closer to those of the previous American sample, 2) the criteria considered important by the participants will mostly be the individualistic and cognitive criteria as was found in previous research, 3) personal responsibility will be predictive of perceiving oneself as an adult, and 4) identity consistency with be positively correlated with age.

Mathematical Group Theory and Triadic Harmony

Rachel Schank; **SUNY Fredonia**
Mentor: Julia Wilson

Mathematical Group Theory allows us to talk about the cyclic structure of musical harmony by performing group actions on musical chords, which we limit to the major and minor triads. We will discuss two different group actions on the set of triads. In the end, when we embed them both in a larger group, we see how they are related.

Eastern Blacklegged Tick Density Through Autumn in Port Crane, NY

Christopher Schmidt; **SUNY Broome**
Mentor: Tracy R. Curtis

The eastern blacklegged (deer) tick, Ixodes scapularis, is the primary vector for the transmission of the bacteria that causes Lyme disease (Borrelia burgdorferi) in humans. This study, conducted from October - November 2016, aimed to examine the density of deer ticks (Ixodes scapularis) at different points throughout the autumn season. Ticks were collected with a cloth drag over measured ten meter (10 m) segments along walking trails in Chenango Valley State Park (Port Crane, NY). The first meter directly adjacent to the trail was dragged, as well as the second meter and third meter (when terrain permitted). The number of ticks, the point on the trail at which they were collected, and at which meter away from the trail they were collected from was recorded. The data was entered into Minitab as a fitted line regression, which was used to calculate the correlation coefficient (r-value) and the coefficient of determination (r-squared). The study did not find a correlation between either the date and the tick density or the average temperature and tick density. While there was no correlation demonstrated, the life cycle of the deer tick is well understood and is most likely the driving force behind fluctuations in tick density. The information gained in this study contributes to our understanding of when humans are at greatest risk of exposure to Lyme disease.

Sir William Johnson: The Bridge Between Both Worlds

Melissa Schroeder; **SUNY Fredonia**
Mentor: John Staples

Sir William Johnson was the bedrock of relations between the Six Iroquoian Nations and the colonists in the Mohawk Valley of New York. Through research of Sir William Johnson's home, political, business and military life it was evident that there was a deeply personal connection

between Johnson and the Mohawk Natives. Johnson built his homes up and down the Mohawk river and no matter where he moved his lawn was strewn with Native Americans asking for help, trading and enjoying a conversation with Johnson. While this did not bother Johnson and his family all too much it did receive negative attention from other British visitors and colonists. Johnson's understanding of business and trade is what got him on the road to success at a very young age. Johnson built a trading post with the simple intentions of keeping trading with the Native Americans honest and wholesome, no Native American would walk away with less than what he was looking to buy or trade. Johnson's approach to trade with Native Americans was a stark contrast to other colonists making the first stepping stones to him being the bridge between Native Americans and the Colonists. With his constant interaction and his sly ability to climb ladders, it was not long after Johnson was able to get on to the board of Indian Affairs and then make his way up to Commissioner of Indian Affairs. From the very day Johnson stepped foot on American soil he had intentions to do something great, and after years of hard work and perseverance, he died as the Commissioner of Indian Affairs and many other prestigious titles.

Devising Design Solutions for North Collins, NY Public Parks

Ian Schwarzenberg; **University at Buffalo**
Mentor: Harry Warren

Many public parks across the United States are in need of improvement due to numerous factors such as lack of funding. Two such parks in the small town of North Collins, NY, Marion J. Fricano Park and New Oregon Park, are in need of improvement. North Collins is located roughly an hours' drive south of Buffalo, NY. These parks will need to be improved in such a way that all North Collins residents can benefit from the improvements, regardless of their age, socioeconomic background, interests and abilities. Two-person teams studied how to best improve the parks. To start, Shoshone Park in Buffalo, NY was studied as a precedent in order to analyze its strengths and weaknesses, and how those lessons can be applied to improving the North Collins parks. The North Collins parks were then analyzed through field visits, data gathering and mapping to gain an understanding of the spatial organization of the parks, the quality of currently existing facilities, the use of land surrounding the parks and each park's environmental profile. A list of potential improvements to the parks was then created based on the input of residents during a town hall meeting. The residents' suggestions and data gathered about the parks were then taken into account to devise alternative design solutions for each park. The proposals for both parks included renovated baseball fields, new athletic facilities, new nature trails, new playgrounds, new community pavilions and new dog runs. Three dimensional models of these proposals were then created and presented to a panel of North Collins residents who emphatically supported the proposals. At the conclusion of the study, a report booklet of options was presented to North Collins.

Investigation of the Absorption Spectra of Gaseous Bromine and Iodine, and the Effect of Temperature

Mame Oumou Seck; **SUNY Fredonia**
Mentor: Michael S. Milligan

Absorption spectra of bromine and iodine vapor in the visible region of the electromagnetic spectrum were produced to assess the effect of temperature on ground electronic and excited electronic vibrational energy levels. Instrumental parameters, such as scan speed and slit width were optimized to generate the fine spectral features required to assess these quantum mechanical phenomena. As temperature was increased, we detected an expected elevation of vibrational energy levels in both compounds due to increased kinetic energy. Our goal is to map the energies of the the first excited electronic vibrational energy levels for both bromine and iodine.

The Professor Paradox: Comparative Case Studies in Malinke Drumming Pedagogy

Cory Shelton; **SUNY Fredonia**
Mentor: Tiffany Nicely

This presentation analyzes pedagogical methods employed in teaching traditional Malinke drumming at (a) collegiate level performance-oriented Western-style institutions and (b) community workshop environments with revolving attendance. Using ethnographic data collected via interviews and observations from a few SUNY schools and community workshops, this presentation explores different instructors' approaches in relation to their institutional contexts. Drawing from theories of impositions of Western art music on traditional repertoires (Hill 2009, Nettl 1983), often used in Western-style institutions, the case studies correlate these impositions, where present, with institutional goals. Although expunging ethnocentrism is a goal of many institutions, practices still often leave a structural ethnocentric trace in professorships and the composition of courses and workshops. Many institutions still find value in Western-influenced instructors teaching traditional non-Western forms. The point is not to argue the validity of these claims but to use them in the analysis of pedagogical methods and the outcomes of these methods in varying settings. Despite these different approaches in both goal-setting and style, in the end, all of the students grow and gain proficiency in traditional Malinke drumming.

Raspberry Pi Based Smart Home Security

Abu Bakkar Shohag; **SUNY Buffalo State**
Mentor: Sarbani Banerjee

Raspberry Pi Zero is a super-ultra-low-cost self-sufficient computer. It is one third the size of a regular credit card. Raspberry Pi (RPi) comes with endless possibilities with little bit of programming. In the present age, Internet of things (IOT) has entered a golden era of rapid development. In this project, a system is being developed to connect any door with the internet, so that owner gets notified of any visitor, stranger or guest in their door.

This smart doorbell system will allow visitors to leave a voice message for the owner of the house if they are not at home. The message then gets transcribed into text and sent to the owner's phone as a text message. A copy of the recording can be set up to be uploaded to the Google Drive as well. Underneath the hardware, powerful Linux (Distribution: Raspbian, Kernel Version: 4.4) and Python (Version: 3.4) scripting will be used alongside with Google's

SpeechRecognition API (3.6.0). Guest will interact with the system by using the doorbell button, microphone and speaker. RPi will use a door sensor to monitor if the door has opened or not.

Upon pressing the doorbell for a certain number of times, if no one opens the door, an audio message will be played to the guest. This will inform the guest that no one is at home and if they want to leave a message to the owner's phone they can press the button to start recording.

Δ DANCE LIKE Δ

Sarah Simon; **SUNY Geneseo**
Mentor: Thomas MacPherson

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It was Ansel Adams (1902-1984), the famous landscape photographer, who said, "Don't take a photo, make one."
There's not as much room for Adams's film methods today; so much of photography is now spontaneous, as visionaries briefly uncap their lens or unthinkingly raising their iPhone. Reconciling film with digital methods, the DANCE LIKE photo project embraces both sides of Adams's statement: making and taking -- planning and spontaneity. During a session, students arrive at the studio, play a song of their choice, and dance. While they dance, I take photos. Here, I make the controlled studio environment, in an abandoned room of an iconic academic building – to then take the moments planning can't.
So, yes, I "take" photos. But this would not be possible if the dancer did not dance, if I did not hope that people would dance – if lovely human curiosities and bodies were not made for the momentary taking.
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(Re)Visualizing AIDS: A rhetorical analysis of AIDS and the reclamation of gay identity in PSA posters from 1985 to 1995

Paige Sirwatka; **SUNY Jamestown**
Mentor: Simone Mullinax

Using texts from the largest collection of AIDS-related posters housed within the University of Rochester's River Campus Library collection, this paper analyzes the visual representation of AIDS as it applies to marginalized communities. The posters, in combination with the more expansive cultural context from 1985 to 1995, framed the political and ideological conversations surrounding AIDS as populations across the globe grappled with the emergence, prevalence, and treatment of the disease. AIDS was first introduced to the Western world by media reporters as a gay disease, thus closely linking the disease with homosexuality – a practice seen as immoral, deviant, and threatening to the dominant cultural narrative. As the cultural rhetoric perpetuated these wide-sweeping characterizations, activist groups generated counter-rhetoric in an attempt to shift the identification of the gay community as neither an objectified disease nor purely sexual group, but rather, as a political force deserving of visibility in the national culture. Using Susan Sontag's critical theoretical work, "AIDS and Its Metaphors," I first examine how the cultural rhetoric attempted to simultaneously mark the

gay community while maintaining its invisibility as an objectified, marginalized group. Then, utilizing Kenneth Burke's method of cluster criticism, I analyze how the discursive and non-discursive elements of specific AIDS posters have served as tools by local and oppositional groups to reframe the narrative surrounding the gay community. Finally, I expand my research to include modern messages that shape the rhetoric defining the disease and contemporary perceptions of targeted groups, as well as current attempts to reframe and address the persistence of AIDS.

1882 Days of Dutch Despair

Chloe Smith; **SUNY Albany**
Mentor: H Peter Krosby

Hitler's army crossed the border into the Netherlands on May 10th, 1940 and for the ensuing 1,822 days the Dutch people suffered at the hands of the Nazis. The Dutch suffered so greatly that by the end of the Second World War only 27% of the Jewish population remained alive, making the Netherlands the European nation with the highest Jewish death rate. An initial plan of cooperation while the government was in exile was thought to spare the Dutch people from massive despair and destruction. Appeasing the Nazis should have halted Hitler from implementing harsh aspects of his totalitarian regime, but cooperation wasn't enough to satiate his desire to eradicate his expanding empire of the Jewish problem. The peace-seeking Dutch were forced to round up and deport thousands upon thousands of Jews, sending them to death camps across Europe in order to meet their ever-growing quotas. Resistance grew and along with it so did the terror inflicted upon the Dutch throughout the occupation by the Nazis. The Allied troops liberated the Netherlands on May 5th, 1945. 1,822 days after German soldiers marched across the border, the Dutch were finally able to reassemble their nation from the pieces left in the wake of the German occupation.

Hydrogen Fuel Cell Water Balance

Jeffrey Smith; **SUNY Alfred State**
Mentor: Jon Owejan

Polymer electrolyte membrane fuel cells (PEMFCs) offer the potential for high efficiency energy conversion with only water and heat as significant products of the electrochemical reaction. This product water and reactant gas humidity are critical for membrane conductivity but any excess leads to condensation and contributes to performance loss by restricting oxygen transport in the cathode. Developers are seeking an optimized diffusion structure that limits back diffusion through the membrane to the typically dry anode hydrogen stream, thus reducing external humidification requirements. As a passive means of controlling this water balance, asymmetric diffusion layers in the anode and cathode flow distributors were investigated. Water leaving the anode and cathode was captured using separate desiccant systems under a variety of operating conditions that represent power demand during a typical automotive drive cycle. Net water flux and performance for 4 configurations of diffusion resistance will be reported.

Keywords:

PEMFCs, Experimental Methods, Energy, Electrochemistry, Fuel Cells

Impact of physical activity and sugar sweetened beverage consumption on arterial stiffness

Randi Snopkowski; **SUNY Brockport**
Mentor: Brooke Starkoff

Purpose: Previous research has indicated that physical inactivity (PI) is linked to higher levels of arterial stiffness. Similarly, a significant link between sugar-sweetened beverages (SSB) and poor cardiovascular health has been identified. The majority of previous research relating to arterial stiffness has involved studying older populations. However, little to no research has studied the college aged population. The purpose of this study is to examine the impact of PI and SSB consumption on arterial stiffness in college students. Methods: One hundred college students (18-30yrs) will be recruited to voluntarily participate in this study. Participants will complete an International Physical Activity Questionnaire- short form (IPAQ-S), wear an accelerometer for 10 days, and participate in an SSB consumption interview. Arterial stiffness will be measured by pulse wave analysis, and pulse wave velocity using the Sphygmocor Xcel non-invasive system. Results: We expect that subjects accumulating greater amounts of PI will demonstrate greater arterial stiffness. Likewise, we expect subjects with higher SSB consumption will demonstrate greater arterial stiffness. Conclusion: We expect subjects that have low levels of PI but consume higher amounts of SSB to exhibit greater arterial stiffness. In other words, subjects with higher SSB consumption will have greater arterial stiffness independent of their physical activity level.

Analyzing the Roles of the Vang and Derailed/Ryk Receptors in the Guidance of Projection Neuron Dendrites in Drosophila melanogaster

Jennifer Snyder; **SUNY Brockport**
Mentor: Huey Hing

The proper targeting of neuronal dendrites is crucial for neural circuit assembly and plasticity. Dysfunction in dendritic regulation is associated with congenital and neurodegenerative diseases. Little however, is known about how the development of dendritic processes are regulated. Our long-term goal is to elucidate the molecular and cellular mechanisms of dendritic guidance using the fly olfactory system as a model. We previously reported that the noncanonical Wnt5 protein acts as a repulsive signal for the migration of the Projection Neuron (PN) dendrites. We also reported that the dendrites express the Derailed (Drl) receptor, which antagonizes the effect of Wnt5. Developmental studies showed that the period of dendritic migration coincides with the arrival of their presynaptic partners, the olfactory (ORN) axons. We have now discovered that the ORN axons express a transmembrane protein, Vang, which is necessary for Wnt5 repulsion of the dendrites, suggesting that Wnt5 coordinately regulates the pre- and postsynaptic partners (the glomeruli). To elucidate the mechanisms by which Vang regulates the Wnt5 signaling pathway, I am examining the interaction between the Vang and Drl genes. I have recovered a recombinant chromosome carrying both the Drl2 and Vang6 mutations. I have also constructed Drl2 Vang6 mutant lines, in which 9 separate glomeruli are labeled, which will allow me to characterize the glomerular pattern in the double mutant. To

characterize the glomerular pattern in the Drl single mutant, I am using the Crispr-Cas9 gene editing technology to knock out the Drl gene on the Mz19-Gal4 background. The Mz19-Gal4 driver labels three PN dendrites (DA1, VA1d, DC3) which will allow me to track their migration in the Drl mutant background. Comparison of the glomerular pattern of the Drl Vang double mutant with those of the Vang and Drl single mutants will shed light on the function of Vang in the Wnt5 signaling pathway.

Applications of GIS in Ohio Archaeology

Sydney Snyder; **SUNY Geneseo**
Mentor: Paul Pacheco

The purpose of this project is to study the application of Geographic Information Systems (GIS) to solve problems in Ohio Hopewell archaeology. An extensive bibliography of recent GIS applications in archaeology was created in order to examine how GIS had been used to successfully understand archaeological problems. From this bibliography I decided to use nearest neighbor and hotspot analysis as well as predictive modelling. The creation of two data sets helped explore these applications at different scales. A 50 acre distribution of surface artifacts was used to determine the applicability of nearest neighbor and other statistical analyses. A cluster of Ohio Hopewell sites from the Little Walnut Creek drainage was used to determine the applicability of predictive modelling to find likely habitation site location from environmental parameters. As a result, GIS proved to be a useful tool for both nearest neighbor analysis and predictive modelling, but fell short when trying to do a hotspot analysis and in creating contour maps.

Design Optimization of 3D Printed Patient Specific Coronary Phantoms for Physiologically Accurate Flow Simulations

Kelsey Sommer, Lauren Shepard; **University at Buffalo**
Mentor: Ciprian Ionita

3D printing has been used to create complex arterial phantoms to advance device testing and physiological condition evaluation. Stereolithographic (STL) files of patient-specific cardiovascular anatomy are acquired to build cardiac vasculature through advanced mesh-manipulation techniques. Management of distal branches in the arterial tree is important to make such phantoms practicable.

We investigated methods to manage the distal arterial flow resistance and pressure thus creating physiologically and geometrically accurate phantoms that can be used for simulations of image-guided interventional procedures with new devices. Coronary CT Angiography (CTA) images during a single heartbeat were acquired with a 320x0.5mm detector row scanner (Toshiba Aquilion ONE). These coronary CTA images were used to create 4 patient-specific cardiovascular models with various grades of stenosis: severe, <75% (n=1); moderate, 50-70% (n=1); and mild, <50% (n=2). DICOM volumetric images were segmented using a 3D workstation (Vitrea, Vital Images); the output was used to generate STL files (using AutoDesk Meshmixer), and further processed to create 3D printable geometries for flow experiments. Multi-material

printed models (Stratasys Connex3) were connected to a programmable pulsatile pump, and the pressure was measured proximal and distal to the stenosis using pressure transducers. Compliance chambers were used before and after the model to modulate the pressure wave. A flow sensor was used to ensure flow rates within physiological reported values.

For the coronary phantom we obtained physiologically relevant waves which oscillated between 80 and 120 mmHg and a flow rate of ~125 ml/min, within the literature reported values. The pressure wave was similar with those acquired in human patients. Thus we demonstrated that 3D printed phantoms can be used not only to reproduce the correct patient anatomy for device testing in image-guided interventions, but also for physiological simulations. This has great potential to advance treatment assessment and diagnosis.

"4arm Strong" as a Self Therapy Device

Richard Spinella; **SUNY Fredonia**
Mentor: Todd Backes

4arm Strong is a new product that has made claims of increasing grip strength, grip endurance, and wrist flexibility by creating traction on forearm muscles towards the elbow, while the user stretches in the opposite direction. The product attempts to create a temporary new origin of the forearm muscles, further up the arm towards the hand. This creates a stretch that cannot be achieved independently. Using our lab equipment, we were able to test these claims with subjects and obtain data throughout a semester long research project. If these claims are found to be true, this product could be revolutionary across a wide range of fields, from motor-sports, rock climbing, and weightlifting, to rehab and occupational therapy.

Augmenting Smart Phones into Functional Tools for Home-Based Rehabilitation

Matthew Stafford; **University at Buffalo**
Mentor: Wenyao Xu

Stroke is a highly detrimental disease; it requires months of physical therapy to recover and a lifetime of exercise to prevent a reoccurrence of its degenerative muscular and neurological effects. Stroke Rehabilitation begins at the hospital with inpatient care. Patients are put through rigorous daily exercises to overcome paralysis and motor functions lost by the stroke. After the patient is stable, they begin outpatient care. Outpatient care typically occurs in nursing facilities or rehabilitation centers. To help the stroke survivor become independent, part of their rehab consists of learning at-home exercises. The problem, however, is stroke patients have a very low compliance rate to their exercises prescribed. Common reasons for low compliance are a belief that the workouts have negligible results or they are boring.
The standard rehabilitation tool given to stroke patients is resistance bands or resistance putty. Workouts consist of stretching bands or squeezing putty while using a variety of techniques. It is our belief that exercises can be more meaningful and enjoyable through a technological approach. We present a Smart Rehabilitation System that consists of a 3D printed exercise tool and a Smartphone. By inserting the Smartphone into the 3D printed exercise tool, workout features such as ‘smoothness of movement’ can be extracted using the Smartphones

accelerometer and gyroscopic sensors. The system also provides acoustic and visual feedback while patients perform an exercise. In addition, the system displays historical data, showing a patient's progress. By presenting patient progress in a transparent manner and providing interactive feedback during workouts, increased compliance from Stroke patients is the projected outcome.

Inventory of the Vascular Flora of the Bentonite Clay Site in Cassadaga, NY.

Adrianna Stennett, Gabe Puccio, Amber Topor; **SUNY Fredonia**
Mentor: Jonathan Titus

Bentonite clay (also known as Dunkirk Shale) is a soil type known for its ability to absorb large amounts of moisture. It can therefore expand and contract quite substantially. This leads to geological features, such as crevasses, and events, such as landslides, due to the inherent instability of the clay heavy soil. This instability also affects the plants that can grow upon it. Trees and larger shrubs have difficulty in coping with such stresses to their roots, therefore the vegetation is dominated by herbaceous species. Thus far, 140 plant species of plants have been identified within 5 habitat types in a ~2 km2 area along Route 60 near Cassadaga, NY. Sixty-four of those species were found to be non-native with 7 of those qualifying as invasive. The two most prevalent families found were Asteraceae with 22 species and Poaceae with 18 species. Both of which also contributed the largest number of non-native species as well. A few unusual or uncommon species such as Juniperus communis and Pycnanthemum virginianum have been found which originally hinted at the unusual soil type. The purpose of this inventory is to understand what native species are adapted to bentonite clay soils and what non-natives species can invade these sites.

Local 2300: A Case Study on Post-Manufacturing Unionization

Chad Stephenson; **SUNY Cornell**
Mentor: Cheryl Beredo

This project explores the tumultuous union organizing campaign of UAW Local 2300 during the early 1980s. It examines simultaneous organizing efforts among service, clerical, and technical workers, exploring the reasons that service workers succeeded in gaining union representation while clerical and technical workers voted to reject the union. The research explores workers' motivations to unionize, from unfair management practices to severe prejudice, as well as the resistance they faced through captive audience meetings, firing threats, and anonymous threats of violence. The story is told through one-on-one interviews with workers, faculty, and administrators, as well as pro- and anti-union literature distributed by the union campaign and Cornell administration. Ultimately strong leadership, worker solidarity, and clear goals led the service workers to embrace unionization, while university administration efforts and negative union stereotypes led clerical and technical workers to reject the union. As traditional union strongholds in manufacturing and other blue collar jobs continue to shrink, service and white collar jobs have increasingly become the dominant employment paradigms in the US. For unions to survive, they must adapt and succeed in organizing both service and professional workers. This project presents a dual narrative of successfully organizing precariously employed

service workers, as well as a study of the continued difficulties faced by unions in courting white collar workers.

Identifying Reproducible Methods for Microalgae Biodiesel Production

Colleen Steward; **SUNY Geneseo**
Mentor: Barnabas Gikonyo

Reliance on dwindling reserves of fossil fuels poses a major threat to future economic and energy security, worldwide. Current research efforts are exploring ways to make plant-based biofuels environmentally, socially, and economically sustainable. Fast-growing, photosynthetic microalgae are a promising biofuel feedstock because they require less arable land and are more efficient at converting sunlight into chemical energy than terrestrial plants. Moreover, microalgae are capable of yielding high percentages of the fatty acids and essentials oils that can be converted chemically to diesel fuel. Despite these advantages, many biological and economic constraints limit the commercialization of microalgae fuels. One solution is to improve the efficiency of chemical processes, including lipid extraction and transesterification. Our work aims to identify reproducible methods for producing biodiesel from dried microalgae. Non-polar lipids were extracted from dried Chlorella using a 2:1 chloroform-methanol solvent at 15.0% + 3.0% (n=3) of total algae mass. Infrared Spectroscopy (IR) analysis detected the presence of alkenes (~3010 cm-1), alkanes (2850-2950 cm-1), and a ketone (~1710 cm-1). These functional groups suggest successful isolation of triacylglycerol with saturated and unsaturated fatty acid tails. Dried lipids were reacted with methanol and an acid (HCl) catalyst in a transesterification reaction. Although no discernable layer separation occurred, IR analysis of a hood-evaporated product detected alkenes, alkanes, an ester (1740 cm-1), and an alcohol (3270 cm-1). These functional groups suggest the presence of fatty acid methyl esters and residual methanol contamination. Future work will attempt to induce better separation of the desired methyl ester product and to perform the transesterification in situ.

Growing Industrial Hemp for Edible Greens

Jeff Stewart, Chris Domanski; **SUNY Morrisville**
Mentor: Jennifer Gilbert Jenkins

Industrial hemp has been used for centuries in the textile, manufacturing and engineering fields. Hemp as a food crop has been limited to products focused on seed components. The research conducted in these experiments was focused on the leaf of the plant as a consumable. Research questions included evaluation of the optimum media type, seeding rates, conditions for germination and subsequent growth, time to harvest and method for harvesting. Growth media evaluated included a peat based soilless mix of two different thicknesses. Seeding rates varied from 5 to 20 seeds per square inch. And optimum harvest time was tested as 1 to two weeks of growth. Growth conditions in ambient light, fluorescent light and LED lights were also compared. Results of the first three months of trials as well as considerations relating to the product moving forward will be presented.

Significance of the Nuclear Gene RAD54 in Mitochondrial Genome Stability of Saccharomyces cerevisiae

Melissa Stoj; **SUNY Brockport**
Mentor: Rey Sia

Mitochondria are essential organelles in eukaryotic cells that synthesize the energy-providing molecule, ATP, through the process of oxidative phosphorylation. As explained by the endosymbiotic theory, mitochondria contain mitochondrial DNA (mtDNA), distinct from nuclear DNA (nDNA). When mitochondrial function is impaired and mtDNA stability is compromised, detrimental neuromuscular and neurodegenerative disorders such as Mitochondrial Encephalomyopathy, Lactic acidosis and Stroke-like episodes (MELAS) and Leber's Hereditary Optic Neuropathy (LHON) have the potential to occur. The purpose of this study was to determine the role of the nuclear gene RAD54 in maintaining mtDNA stability in the budding yeast, Saccharomyces cerevisiae.
Although the role of Rad54p in maintaining nDNA stability is understood, it's impact on mtDNA stability is relatively unknown. RAD54 is a member of the RAD52 epistasis group and codes for a protein vital to the initial steps of homologous recombination and double-stranded break (DSB) repair. Given that members of the RAD52 epistasis group have been shown to contribute to homologous recombination and DSB repair in mtDNA of S. cerevisiae, we hypothesized that loss-of-function RAD54 would decrease the rate at which homologous recombination in mtDNA occurred (Stein, Kalifa & Sia, 2015). A phenotypic respiration loss assay was performed in a rad54? strain to determine the frequency of spontaneous mutations in the mtDNA that blocked the oxidative phosphorylation process. The mutant strain demonstrated a 1.56-fold decrease in spontaneous respiration loss when compared to wild type (p-value = 0.0574). Previous research shows that the nature of these spontaneous mutations is due to large deletions in the mtDNA. To investigate the role of Rad54p in preventing these deletions from occurring, a direct repeat-mediated deletion (DRMD) assay was performed. The DRMD assay demonstrated a significant 3.23-fold increase in nDNA in homologous recombination events (p-value = 0.0158) and a statistically insignificant 1.08-fold increase in mtDNA homologous recombination events (p-value = 0.8741) between rad54? and wild type strains. Given the present findings of this study, it appears the nuclear gene RAD54 does not play a role in maintaining mtDNA stability in these assays.

Effects of Companion Planting on Growth and Flavor Profiles of Beets and Lemon Basil Microgreens

McKenzie Swart; **SUNY Onondaga**
Mentor: Justin Fiene

Microgreens are an increasingly popular choice for chefs due to the large range of colors and flavors. Microgreens are harvested two to four weeks after sowing, typically while they are between the cotyledon and first true foliage stages. Some microgreen varieties are sown together, referred to as companion planting (CP), which can be beneficial in several ways. For example, CP can reduce competition when each species has different resource requirements. Lemon basil (Ocimum basilicum) is extremely aromatic and when paired with a companion such

as beets (Beta vulgaris) could alter the flavor profile of the beets. In this study, we investigated whether CP changes the growth and flavor of lemon basil and beets microgreens. The microgreens were cultivated in the greenhouse under three separate conditions: 1) basil alone, 2) beets alone, and 3) basil and beets together (n=5 per treatment). After two weeks the total yield per container, individual seedling weight, and seedling establishment were measured by 12 students enrolled in Ecology Laboratory. Flavor profiles of the microgreens were surveyed (ranked 1-5 least-most desirable) by 15 students enrolled in Basic Food Prep Laboratory. Results showed that the lemon basil benefitted from higher seedling establishment (211%) when CP with beets, resulting in a greater yield of basil microgreens. However, CP reduced the desirability of the flavor profiles for both species. These results show that companion planting can indeed affect flavor profiles, albeit in a negative way, of the varieties selected for the study. These results may be useful to microgreen growers who can decide whether market conditions will tolerate reduced flavor in exchange for a higher yield. Further experimentation is needed to identify species combinations with both enhanced growth and desirable flavor.

Effect of eWOM on the Valence of Consumers' Product Reviews

Kayla Szczepanski; **SUNY Brockport**
Mentor: Joon Seo

In a marketplace reliant upon the Internet and electronic word of mouth communication, online reviews play an increasingly vital role in the consumer experience. 20 to 50% of all consumer purchasing decisions are driven by word of mouth, generating more than twice the sales of paid advertising (Bughin et al. 2010). Existing research examines why people talk and what they talk about. Yet, little is known about the role other people's reviews play when consumers post reviews. This paper examines the impact of others' reviews on how consumers rate their own experience in both qualitative narratives and numerical ratings (e.g., star scale). Using experimental research, the researcher investigates two factors that may affect the online review process: 1) the valence (positivity and negativity) of other consumers' reviews and 2) the timing of exposure to such reviews. First, the study examines whether reading positive (negative) reviews written by others result in more positive (negative) reviews. Research participants are given a product which they evaluate before they write their own review. Participants then receive overly positive, negative, or neutral reviews written by others before they write a review. Relative positivity of the product reviews is analyzed and compared across the three groups to test the extent to which the valence of others' reviews influences participants' reviews. Second, the researcher tests whether reading others' reviews before or after participants receive a product will make any differences in their reviews. It is hypothesized that reading others' reviews before, rather than after, participants try and evaluate a product has a more effect on their reviews based upon the phenomenon of confirmation bias.
The current research provides useful implications for both marketing scholars and practitioners in terms of how to encourage consumers to write online reviews as well as how to design online review platforms.

Implementation of Huffman Coding Tree Using Linked Lists

Tuna Temiz; **SUNY Fredonia**
Mentor: Ziya Arnavut

In computer science, a Huffman code is a particular type of optimal prefix code that is commonly used for lossless data compression. The Huffman coding algorithm was developed by David A. Huffman in 1952.
The output from Huffman's algorithm can be viewed as a variable-length code table for encoding a source symbol. The algorithm derives this table from the estimated probability, or frequency of occurrence for each possible value of the source symbol. As in other entropy encoding methods, more common symbols are generally represented using fewer bits than less common symbols.
In this project, we use linked lists data structure in the implementation of the Huffman Coding tree. In order to do this, the list is sorted by frequency and two lowest elements are separated into leaves, creating a parent node with a frequency that is the sum of the two lower element's frequency. Next, the two elements are removed from the list and the parent node formed is inserted into the appropriate location in the sorted link list. This loop is repeated until there is only one element left in the list. This element is then becomes the root of the binary Huffman Tree. To generate a Huffman code, we traverse the tree, outputting a 0 for every left-hand branch and a 1 for every right-hand branch and storing the code words in a table. Later, for each character seen in the file, we output the corresponding binary code from the table. Thus the encoding is done. To decode, we first construct the tree from the information saved in the header of the compressed file; we read the bits from the input stream and traverse the tree according to input stream, moving to the left or to the right until we reached to the leave that corresponds to the character. When a leaf is reached, the character is printed.

Training for Campus Clubs on Applied Learning

Patrick Toscano; **SUNY Fredonia**
Mentor: Susan McNamara

Campus clubs and their advisers are an important part of providing students with a well rounded college experience. In this presentation we will be exploring different avenues of improving the impact and involvement of these clubs by offering training and guidelines in order to improve the student experience.

Who Matters? The Perceived Motivational Climates Created by Coaches, Peers, and Team Captains and the Effect on Trait Self-Confidence and Enjoyment in High School & College Athletics

Bryan Urquhart; **SUNY Brockport**
Mentor: Stephen Gonzalez

Sport is a source of overall well-being in young individuals with regard to health, learning to cooperate, and having fun among other areas. However, the degree to which young athletes

are motivated to perform varies greatly based on a number of factors. This study focused on the influence that significant others in the athletes' lives (coaches, peers and team captains) had on their motivation levels while in sport. Specifically, the motivational climate's impact on enjoyment and self-confidence when participating in sport were measured. Ninety-five high school and college athletes, ages 13-22, from Western New York in the United States completed measures to determine how their enjoyment and self-confidence are influenced by the motivational climate created by the aforementioned significant others. Two separate regression equations, utilizing the various climates as predictors, were run to predict enjoyment and self-confidence. Enjoyment of sport was the only significant regression equation [F(6, 83)= 3.924, p= .002; R2= .221], with Team Captain Mastery Climate as the significant predictor [b(83)= .43, p=.04]. It appears from this regression that team captains valuing effort and mastery of skills is the biggest predictor of sport enjoyment (22.1% of enjoyment). Future research should be directed at the team captain approach to see if these results can be replicated. These results suggest that team captains, a group that has received little to no attention in the past, can have a significant impact on the sport experience and potentially participation and retention rates in sports.

NMR structure of the rCAG repeat associated with Huntington's disease

Damian VanEtten; **SUNY Fredonia**
Mentor: Matthew A Fountain

Huntington's disease is an incurable inherited autosomal-dominant neurodegenerative disorder that usually manifests after the age of thirty. Huntington's disease is caused by expanded CAG trinucleotide repeats in the huntingtin gene. Understanding the detailed structure of the CAG triple repeat can help in the development of drugs that prevent or slow the progression of this disease.
We used NMR spectroscopy to determine the three dimensional structure of a (CAG)2 triple repeat model to understand the structural features of the CAG repeat containing an A=A non-Watson-Crick base pair. We collected and analyzed NMR spectra from 500 MHz and 700 MHz Bruker Avance NMR spectrometers and obtained structural restraints using the program SPARKY. These structural restraints were then used in AMBER 14 to generate plausible structures that fit the NMR data. The overall details of the structure indicate that the two CAG repeats adopt similar three dimensional structures with hydrogen bonded GC base pairs on each side of the AA mismatch. The details of the structure determination process and of the CAG repeat structure will be presented.

Let's Jam!

Andrea Velasquez, Brandon DiTieri, Alexia Lekos, Sam Wersinger, and Amelia Marotta; **SUNY Fredonia**
Mentor: David Rudge

The Improv Collective is a group that strives to create a space where people are safe to express themselves musically, with and for other people. We hope to spread the idea that anyone can

make music. No member needs to be a music major or have formal training to enjoy participating in making music. Come join us, grab an instrument and feel free to feel freely!

The effects of fatigue on risk taking behavior and work performance during simulated occupational tasks

Justin Vitale, Amir Baghdadi, Shaher Yar Jahangir; **University at Buffalo**
Mentor: Lora Cavuoto

Worker fatigue remains a significant concern in many industries, including transportation, healthcare, and manufacturing. Sleep-related fatigue has previously been associated with changes in reaction time, risk-taking behavior, and work performance. These changes can have consequences for worker safety. It is unclear whether similar outcomes result from physical fatigue. The goal of this study is to evaluate the relationships between ratings of sleep quality, risk taking behavior, reaction time, and heart rate variability during three simulated manufacturing tasks, manual materials handling, supply pick-up and insertion, and parts assembly, performed for three hours continuously. These measures were collected at the start and end of the experiment, and the changes in performance in these measures were compared to the participants' perceived fatigue and exertion ratings. In addition, video data was analyzed to assess changes in task performance after the emergence of fatigue. This data provides an assessment of the effects of physical fatigue on work performance and risk taking behavior as observable metrics in a manufacturing environment.

Effective and Efficient Visual Stimuli Design for Quantitative Autism Screening: an Exploratory Study

Tri Vu, Hoan Tran; **University at Buffalo**
Mentor: Wenyao Xu

Autism spectrum disorder (ASD) is one of the most common childhood developmental disorders. Early detection and intervention for ASD are critical for increasing child success. In the past decade, utilizing the abnormal eye gaze characteristics of children with autism in regard to certain visual stimuli is emerging as a screening approach due to its cost-efficiency and promising accuracy. However, the effect of visual stimulus on children with ASD has not been considered as a diagnostic consideration in the past. In this paper, we first create a visual stimuli database based on an extensive literature review, then we examine the impact of picture stimuli and exposure time on the quantitative accuracy of screenings for ASD. This is done by extracting gaze distribution in a 2D space and comparing children with ASD to typical peers using the 1st Wasserstein distance. A group of 32 participants with ASD and typical development (TD) were recruited for the study. The f-score accuracy results demonstrate the impact of implementing visual stimulus on screening for ASD. Our study demonstrates that the parsing of "social scene" stimulus with 5-second exposure time has the best performance at 98.24%.

The Effect of Task Significance on Newcomer Attitudes and Behavior

Megan Waite; **SUNY Brockport**
Mentor: Laurel McNall

The current study attempts to measure the effect of task significance, the perception that employee actions contribute to the lives of other people, on new employees (i.e., teacher's aides in a non-profit organization that works with children with complex disabilities) with the hope to discover if perceived task significance is associated with important job-related outcome variables (e.g., job satisfaction, burnout, job stress, turnover) over time. With the use of the Job Characteristics Model (JCM), a model that uses key job characteristics to increase motivation in the workplace, in this case task significance increasing perceived meaningfulness of the job, we hope that perceived meaningfulness leads to increased job satisfaction and decreased burnout, job stress, and turnover. We randomly assigned participants into one of three conditions during new employee orientation – task significance: employees watched parents describe the impact of employees' work with their children, organizational services: employees watched parents describe the services the organization offers, and control (no video). The two video conditions were used to attempt to show participants how their job impacts the individuals they work with. Data collection is underway, and initial challenges along with initial results are reported.

Self-Handicapping as a Drinking Motive

Leah Waldman; **SUNY Buffalo State**
Mentor: Michael MacLean

There are currently four main drinking motives which are recognized: social, conformity, enhancement, and coping motivations. However, this does not necessarily capture the full range of reasons that an individual may drink; particularly young adults who are currently attending college and facing an enormous amount of pressure to succeed academically. This study examines an additional motive which may be used by this particular group; self-handicapping by drinking in order to reduce personal responsibility for their actions.. This study analyzed a measure of self-handicapping as a drinking motive in order to determine whether it was a valid and worthwhile motive to be examined in the future, and evaluated whether individuals in this age group with certain traits are more predisposed to use this motive. Secondary data analysis was conducted using data from a previous study conducted at Buffalo State College. We examined the internal reliability, convergent validity, and concurrent validity of a newly developed measure of self-handicapping as a drinking motive in order to assess whether it is an accurate and predictive measure. Self-handicapping is clearly a drinking motive which should be considered for future research as it was found to be a valid, internally reliable scale, which tends to predict alcohol related problems beyond that accounted for by traditional drinking motives. We also found several traits which are negatively correlated to self-handicapping, but not self-handicapping as a drinking motive. This furthers our knowledge on the type of individuals who tend to chronically engage in self-handicapping, as well as suggests key differences between that group and those who engage in self-handicapping as a drinking motive.

Adams, Brontë, Child and Stowe: Separate Spheres and Female Literary History

Yue Wang; **SUNY Fredonia**
Mentor: Emily VanDette

This paper examines four prominent women writers and their role in literary history. Their writings represent tropes in female literary history in the eighteenth and nineteenth century, when female authors started to push the boundaries between the private sphere, where women are traditionally expected to do chores and educate children, and the public sphere, where men work to support the family. By publishing, women writers occupy the public sphere, whereas they usually focus on issues in the private domain such as motherhood, marriage, household, and family institution that reinforce conventional gender codes.
Abigail Adams inserts her ambition to fight for women's voice in public by discussing political issues in correspondence with her husband President John Adams; nevertheless, she brings up the idea of Republican Motherhood, arguing that women can serve the household better and cultivate a more responsible generation of male citizens if given more access to education and resources. Charlotte Brontë's heroine Jane Eyre married Rochester eventually, but they made marriage a conversation rather than a contract and allowed choice and autonomy. Lydia Maria Child's American Frugal Housewife includes tips of housekeeping and managing time for wives, by which she negotiates topics of democracy and capitalism; Child then published a call for abolition of slavery in 1833 and was severely scandalized because of her active engagement in the men-dominated political realm. Harriet Beecher Stowe's Uncle Tom's Cabin demonstrates a clear anti-slavery message by depicting family separation and suffering mothers. This project also explored women's political engagement in the Revolution Era, the marriage code in Victorian England, and the cultural climate of benevolence as the historical context of eighteenth and nineteenth century American society.

Limnology and Phytoplankton Community Structure of Bear Lake (Chautauqua County, NY)

Jennifer Wasielewski; **SUNY Fredonia**
Mentor: Courtney Wigdahl-Perry

Limnology and Phytoplankton Community Structure of Bear Lake (Chautauqua County, NY)
Jennifer Wasielewski1*, Courtney Wigdahl-Perry1, Jeffrey Diers1
1. State University of New York at Fredonia, Fredonia, NY 14063
*Presenting author
Bear Lake (Chautauqua County, New York) is a popular fishing destination in western New York. However, very little has been documented about lake chemistry, water quality, or plankton communities. In this research project, the basic limnology of Bear Lake was studied in order to establish a baseline for water quality and algae species present. Data were collected in June, July, and August at two different sites, including secchi depth and Hydrolab profiles (dissolved oxygen, pH, temperature, and conductivity). Water was collected from these sites for additional laboratory analyses for chlorophyll and algae community structure (three depths at one site and two depths at the second). Water clarity declined from June to August, with secchi depth changing from 3.35 meters to 1.1 meters. The dominant phytoplankton in June

and August included chrysophytes (Dinobryon), cyanobacteria (Anabaena), diatoms (Tabellaria), cyanobacteria (Pseudanabaena), cryptophyta (Rhodamonas), and chlorophyta (Ankistrodesmus). These data on lake water quality and biota will be used to develop a watershed management plan.

Frustration and Reactivity of Sulfur-boron FLPs

Brianne Weichbrodt; **SUNY Fredonia**
Mentor: Allan Cardenas

Frustrated Lewis Pairs (FLPs) are a pair of Lewis acid and base with enough steric bulk which "frustrates" the molecules and prevents them from forming a stable adduct. The preservation of the Lewis acidity and basicity of these molecules in solution allows FLPs to capture and activate small molecules such as H2, CO2, N2O, NO and small organic molecules. In this study, we will introduce a new set of FLPs, which is a sulfur-boron pair. The research also aims to study the reactivity of the sulfur-boron FLPs toward small molecules such as NO and N2O.

"This is Not the America I Live In"

Leron Wellington, Nia Ferguson, De'sean Cruz; **SUNY Fredonia**
Mentor: Nestor Bravo Goldsmith

My performance piece, I created with my two peers in a class I took last semester called Devising Theatre. The point of the class was to learn how to create theatre without a script, instead through improvisatory movements. Our assignment was to create a piece using subjects that we each selected prior to being paired together. I chose time, De'sean chose social issues and Nia chose violence/war. So from sharing ideas and editing, we created our piece. The main message of the piece is how social problems are almost equivalent to war and how it is repetitive. Throughout the piece, the actors show a series of movements and stage combat practices while audio of words and a constant metronome overlap. The purpose of the piece is to spark a conversation about violence and how human it actually really is. Myself and the actors were very proud of the final product. We believed in the message and how it was presented, using limited resources.

Mierle Laderman Ukeles: Trashing the Maintenance System

Georgia Westbrook; **SUNY Binghamton**
Mentor: Kevin Hatch

This paper investigates the ways in which artist Mierle Laderman Ukeles uses her invented concept of “maintenance art” to explore women’s place in society, urban class structures, and the role of mothers in these same spheres. Ukeles is best known for her role as the artist-in-residence with the New York City Department of Sanitation—a role that she envisioned and proposed. My paper draws connections between her art practice, ideas of visibility and invisibility, and the societal effects of marginalizing essential services, such as sanitation. Ukeles was inspired to develop her maintenance art approach, which involved both working with the Sanitation Department and working as part of the maintenance system in arts institutions, by

the birth of her daughter in 1969 and the emergence of her new identity as a mother. This paper argues that Ukeles successfully made visible the invisible work of maintenance, and that her inspiration for such action was intimately connected to her experience of marginalization as a mother in the art world and in society at large. Through her art practice, Ukeles has succeeded in forcing her audience to examine necessary systems of maintenance and the problematic impulse to make such systems invisible.

Effects of lithium on behavior and reproduction in the adult female mouse

Patricia Whetsone, Robert K Cooper, Lillian J Dixon, Matthew R Bussmann , Brianna Stavola, Kara G Hall, Ian J Richardson , Zachary T Eklum , Kelli M Michel; **SUNY Fredonia**
Mentor: Catherine Creeley

Lithium is a commonly used drug as treatment for bipolar disorder, however, the cognitive and behavioral consequences in the pregnant female - for both mother and fetus - are not well understood. Previous research indicates that lithium intake can inhibit normal neuronal apoptotic function within the developing rodent brain, which may result in pervasive adverse neurodevelopmental and behavioral effects in offspring exposed to lithium in utero. Female Swiss-Webster mice were fed either 3% Lithium (Li) chow or a control chow from the same brand (Teklad). The Li-treated and control females were paired nightly (12h) with breeder male mice every day for 8 weeks. This breeding protocol resulted in no pregnancies in the Li group, and one litter in the control group. Following parturition, we investigated the effects of the Li exposure in the adult female Li-treated vs. control mice. We tested motor coordination and fatigue resistance using a Rotarod system, cognitive performance using a Morris Water Maze apparatus, and social behavior using a social choice apparatus. Maternal reproductive behaviors were noted and observed. It was hypothesized that lithium chow intake would result in poor motor coordination, cognitive impairment, and abnormal social behavior. Results show that lithium intake did not negatively affect motor function, cognitive performance, or social behavior in the exposed females, but it is possible that lithium intake may have caused infertility. Future research should focus on the effects of Li on reproductive factors in female mice. A lower Li-chow dose may be needed to develop a successful model of gestational exposure to lithium.

Replication of A bad taste in the mouth: Gustatory disgust influences moral judgment

Colleen White, CJ Burris, Allysa Gullo, Alexis Bozza; **SUNY Fredonia**
Mentor: Joseph McFall

Moral judgement is an action that most individuals perform on an everyday basis. Previous research has argued that emotions serve as the basis for moral development and moral judgement (Blair, 1995; Turiel & Killen, 2010; Haidt, 2001; Prinz, 2007). The link between moral judgement and physical disgust was supported by the research conducted by Huebner, Dwyer, & Hauser (2009). We are involved in a replication study that previously investigated gustatory disgust and its influence on moral judgment (Eskine, Kacinik, & Prinz, 2011). Based on this previous study, we wish to determine if mood and dietary preference also play a role in making moral judgments. It is important to know the influence of gustatory disgust on moral

judgments. Having research on the connection between gustation and moral judgment may be beneficial to many situations, such as a jury in a courtroom eating certain foods before deliberating a verdict (Eskine, Kacinik, & Prinz, 2011).

Synthesis, Characterization and Crystal Structure of an Overlooked Aggregate of 1-methyl-4-[2-(4-hydroxyphenyl)ethenyl]pyridinium iodide.

Calvin Wong; **SUNY Fredonia**
Mentor: Allan J Cardenas

The interest in pyridinium salts has increased in the past few decades because of polarizabilities. In this study, 1-methyl-4-[2-(4-hydroxyphenyl)ethenyl]pyridinium iodide (protonated form, 1H) and 1-methyl-4-[2-(4-oxocyclohexadienylidene)ethylidene]-1,4-dihydropyridine (deprotonated form, 1) was synthesized and characterized. These compounds are solvochromatic dye and changes color depending on solvent's polarity, pH and counterions. In the solid state, however, the color changes is hypothesized due to the different crystal packing or aggregation. This study will present a crystal structure that has a novel aggregation pattern of compounds 1H and 1.

Beauty by Design: The Socioeconomic Implications of Facial Features in America

Ashley Wright; **SUNY Monroe**
Mentor: Scott Rudd

Beauty by Design: The Socioeconomic Implications of Facial Features in America
In this examination of the relationship between socioeconomic class and facial features, I will discuss three main topics. First, I will use research from academic journals to show that certain facial features are linked with perceived attractiveness and discuss what benefits those with these facial features receive. Second, I will show that those with characteristically “white” features are linked with the perception of higher socioeconomic class. I will then examine ethnic plastic surgery trends to demonstrate that they point to a minimization and sometimes complete erasure of ethnically defining features, further showing the positive correlation between Caucasian facial features and perceived socioeconomic class. Lastly, I will discuss the implications of plastic surgery and the increasing emphasis and benefits of relative attractiveness. I will show that the growing popularity of plastic surgery and ethnic plastic surgery trends set a precedent for genetic modification of offspring. If the technology becomes available to customize ones’ offspring’s features and offer them a better chance academically and occupationally, many parents will want to give their child that head start. There is little doubt that these procedures will be costly, and the lack of equality in accessibility will inevitably create a class divide between rich and poor, beautiful by design and beautiful by chance.

Effect of Type II Diabetes on Renal Megalin, Cubilin, and Catabolic Lysozyme Expression in the Zucker Diabetic Fatty (ZDF) Rat Model

Benjamin Yee; **University at Buffalo**
Mentor: Marilyn Morris

Effect of Type II Diabetes on Renal Megalin, Cubilin, and Catabolic Lysozyme Expression in the Zucker Diabetic Fatty (ZDF) Rat Model

Benjamin Yee, Mark Bryniarski, MS and Marilyn E. Morris, PhD

High amounts of protein in the urine, specifically albumin (albuminuria), is a marker of diabetic kidney disease. The megalin/cubilin complex is the primary endocytic pathway in the proximal tubules and is responsible for reabsorbing albumin. We tested the hypothesis that both megalin/cubilin expression and catabolic function in the tubules are altered by diabetes, and that this contributes to the presence of diabetic albuminuria. RT-PCR was performed on kidneys ($n \geq 3$) from lean control, type 2 diabetic ZDF, and pioglitazone-treated (PG) ZDF rats, with disease progression occurring with increasing age. We found an average increase in megalin mRNA of 161% and 138% in diabetic and PG-treated kidneys, respectively, compared to controls at 12 weeks. At 19 and 29 weeks, megalin mRNA in diabetic kidneys decreased to 41% and 13% of control, while PG treatment maintained megalin expression at 143% of controls at 19 weeks. Cubilin mRNA increased in diabetic and PG kidneys (132% and 263% of control) at 12 weeks, while decreasing in diabetics (39% and 19% of control) at 19 and 29 weeks. No observable change in the neonatal Fc receptor (albumin recycling) protein, or the nephropathy-driving cytokine TGF-β1, were detected at any age. When the mRNA values for catabolism enzymes, cathepsins b, d, and l were analyzed, statistically significant increases ($p < 0.05$) were observed in diabetic kidneys for cathepsin b at 12 weeks and cathepsin d at 19 weeks when compared to controls. PG-treated animals exhibited a 209% increase in cathepsin b mRNA at 12 weeks and a 164% increase in cathepsin d at 19 weeks. In 29-week diabetic kidneys, all three cathepsin genes exhibited a relative decline when compared to 12 and 19 weeks. These results suggest that the decreases in megalin/cubilin proteins and catabolic lysozymes may contribute to impaired tubular function and albuminuria in diabetes.

Funding provided by the Center for Protein Therapeutics, University at Buffalo

UB Talker

Megan Yoerg, Jennifer Barker, Devon Rennoldson; **University at Buffalo**
Mentor: Kris Schindler

As an interdisciplinary group of nursing, cognitive science, computer engineering, and electrical engineering students, we are working to provide augmentative and alternative communication devices personally tailored to the needs of individuals who are paralyzed and do not have the ability to communicate verbally or through body language. Specifically we are focusing our efforts on individuals with Amyotrophic Lateral Sclerosis (ALS). ALS presents a unique challenge in that the disease is progressive, meaning that an affected individual starts with the ability to communicate normally and ultimately ends up paralyzed and unable to speak. We have been able to follow the progression of the disease and are able to adapt the alternative communication technology to any individual's needs at any stage of the disease, meaning that our technology has become more complex with time, based on the individual's ability to move, speak, and communicate. In the past we have used buttons and motion-sensing switches. Currently we are using an eye tracking system to make selections on a tablet, with great success. In the future we hope to take the technology further and use a Brain-Computer Interface (BCI), which would use an individual's brainwaves to make selections on a

computerized device as opposed to having to rely on visual inputs. The goal of our project is to provide technology that is easily adaptable to an individual's communication needs while remaining as unobtrusive and user-friendly as possible.

Mass Media Campaign to Promote Handwashing

Edward Yoest, Maria Bajwa, Myriah Bodie , Kayla Boorom, Marisa Cicak, Donette Hutchison, Laura Kraus, Michael Mackey, Erin Page, Rebecca Polosky, Stephanie Rose, Matthew Slilaty, Austin Strauss, Jacob Yoest, and Erik Young; **SUNY Broome**
Mentor: Kimberly B. McLain

Although college students report practicing hand hygiene, studies have found the majority do not. Surgeoner, et al. (2009) found while 83% of college students report washing hands, only 17.4% practice it. White, et al. (2005) found students exposed to hand hygiene campaigns practiced it more frequently and experienced less illnesses than students not exposed. Television and print advertising can be influential on ideas, values, and behaviors. "...when long-term mass communication campaigns are designed and executed according to sound principles, they can play a meaningful role in changing behavior, either directly or by helping bring about environmental change at the institutional, community or policy level" (DeJong, 2002).

We propose an increase in hand hygiene knowledge and practice following campus-wide media campaigns. It is proposed that current media campaigns, including print ads, songs, and videos, such as those produced by the Centers for Disease Control (CDC) are outdated and not relevant to a college-age population.

A campus-wide survey assessing participants' knowledge, practice, beliefs about, and observations of others' hand hygiene habits and knowledge was conducted. Following a campus educational event, focus groups were conducted to obtain qualitative data about the impact of student produced print ads in comparison to those in use by the CDC. Data indicates students found videos that are "entertaining" and "funny" were most relevant. Students also suggested a different song and video from that used by the CDC should be "updated" and be more "entertaining", "funny", "relatable", and "to the point". This data is currently being used to refine media campaigns. A song using student developed lyrics to educate about the importance of hand hygiene based on music of a popular and relevant artist has been produced. A video to demonstrate effective hand hygiene based on feedback from print ads focus group data is currently in production.

Exploring Social Instability in the United States

Katherine Zaslavsky; **SUNY Geneseo**
Mentor: Michael Restivo

It has become commonplace for political and social commentators to point to social instability in the U.S. and other Western democracies as one key factor behind the rise of populist movements, particularly on the right side of the political spectrum. However, what is meant by 'instability' often remains vague or undefined. This research project aims to explore individuals' perceptions of social instability in the United States over the past several decades. In order to

do so, an analysis is conducted on data from the General Social Survey (GSS) from the years 1994, 2004, and 2014. The concept of social instability developed here draws from several prominent sociological theorists, including Durkheim's notion of anomie and Mead's concept of the generalized other. As a consequence of neoliberal globalization, some individuals are more prone to the experiences of normlessness or alienation, brought about by macro-structural transformations in society that threaten their economic stability or shift societal values while the individuals' values remain static. These experiences of anomie are related to a loss of social role, which arises when individuals are unable to integrate the changing views of society into a cohesive worldview to explain their own positions in society relative to those of other individuals and relative to macro-structural factors. By analyzing trends over time on items from the GSS that indicate perceptions of economic stability (e.g., job security, comparative economic standing), generalized trust in major institutions (e.g., government, press, religion), and perceptions of social capital, the empirical analysis presented herein is used to assess the utility of this conceptualization of social instability.

Project WaterFED

Jacob Zelko, Joe Davis, Andy Diffenderfer, Casey Hale, Patrick Pruden; **SUNY Corning**
Mentor: William Jarvis

Our project is named Project WaterFED, which stands for Water Filtration and Economic Development. Throughout the world, the amount of discarded plastic in communities whose inhabitants have difficulty obtaining drinking water is unacceptable. On top of that, research done by the Center for Disease Control, approximately 10 percent of the global population - 783 million people - do not have access to safe drinking water. The majority of these people reside in extremely impoverished regions of the world where there is little they can do to improve their quality of life because of economic circumstances. Our solution is to develop a care package which can be sent to communities throughout the world.

Our idea for the package is that it includes instructions on how to make plastic recycling machines would be provided. These machines are inspired by Dave Hakkens's work with the Precious Plastic initiative. We are developing our machines further by making them sustainable through solar, wind, and other alternative energy sources. Included in the kit would be molds to create parts for a water filter that we have designed; these parts would be made from locally discarded plastics. The kit comes with composite materials that would remove heavy metals and bacteria from water - these composites are organic based and things that we have developed in the labs at Corning Community College.

After the parts are made, the filter can then be assembled along with the composites and used in the communities where they were made by the locals. The kit would also offer instructions on how to make additional molds to create more products that could then be sold by local entrepreneurs. Through continued effort, we believe our solution is feasible after talking with Hakkens, discussing our solution with multiple humanitarian workers, and professionals involved in scientific and business endeavors.

Post-Traumatic Stress Disorder Status as a Predictor of Overgeneralized Memory

James Zemer; **University at Buffalo**
Mentor: Jennifer P. Read

Post-traumatic stress disorder (PTSD) has been associated with memory deficits, such as overgeneralized autobiographical memory (OGM). OGM, the tendency to recall broad, non-specific memories, has been linked to worse therapeutic outcomes for those with PTSD. Two prominent theories have been proposed to explain the PTSD-OGM relationship. The Affect Regulation Hypothesis posits that OGM develops in response to a traumatic event. In contrast, the Functional Avoidance Model suggests that OGM emerges following the development of PTSD, and that trauma exposure alone is insufficient to explain memory overgeneralization. Although both theories have received support, there has been a lack of proper comparison groups in research studies, which makes it difficult to favor one theory over another. Additionally, aspects of the traumatic experience, such as alcohol use at the time of the trauma or time since trauma, have yet to be assessed. The current study seeks to assess autobiographical memory in a sample of college students (N= 87) with and without trauma exposure and PTSD. With the inclusion of a non-trauma-exposed group, we can further understand whether OGM develops in response to trauma or PTSD. Additionally, the effect of other factors, including alcohol use, time since trauma, and PTSD symptom severity on autobiographical memory will be examined in exploratory analyses. PTSD was assessed with the Clinician-Administered PTSD Scale interview. Based on this interview, participants were categorized into three groups: trauma exposure with PTSD, trauma exposure without PTSD, and no trauma. OGM was assessed using the Autobiographical Memory Task. I hypothesize that participants with PTSD will retrieve significantly fewer specific memories than those with trauma exposure only or those without trauma exposure. These results will be used to provide some resolution for theoretical arguments and inform clinicians to better tailor therapeutic inventions for those with OGM.

Ophelia's Legacy

Katherine Zito; **SUNY Geneseo**
Mentor: Melanie Blood

As one of William Shakespeare's most iconic characters, Ophelia—Hamlet's spurned lover who goes mad and drowns herself—has become an important cultural representation of female madness. I synthesize findings about instances of Ophelia's representation—including portrayals of the character in adaptations of Hamlet, depictions of the character in other media including visual art, and allusions to the character and her associated imagery in original works—and what those representations communicate about historically contingent understandings of women and "madness". Biologically feminine "hysteria" of the womb (in contrast with the masculine "melancholy" that Hamlet himself represents) would have been the contemporary understanding of Ophelia's distress. While modern psychiatry's understanding of mental illness in women has developed beyond hysteria, Jessica Heppler argues that misogynistic ideas about women's behavior are still represented in psychiatry, and suggests moving towards a more sociologically grounded understanding of women's emotional

distress. While essentialist notions of women's emotional instability originating from their wombs have been discredited by biology and psychiatry, feminists argue that supposedly gender-neutral diagnoses such as Borderline Personality Disorder pathologize women's reactions to their social conditions. These shifting understandings of female madness are reflected in portrayals of Ophelia (including her portrayal in different adaptations of Hamlet as well as allusions to the character in other original works, including Lars Von Trier's Melancholia). My research is part of the ongoing conversation between psychology and sociology regarding the origin and pathology of women's emotional distress. By exploring this conversation through the character of Ophelia and her cultural portrayal by artists who communicate varying ideas about women's emotional distress, I show how Shakespeare's texts have provided artists with a lexicon of imagery to communicate ideas about topics like gender and mental illness in a myriad of ways that respond to changing cultural attitudes. This exemplifies the dynamic quality of Shakespeare's works and their ongoing relevance

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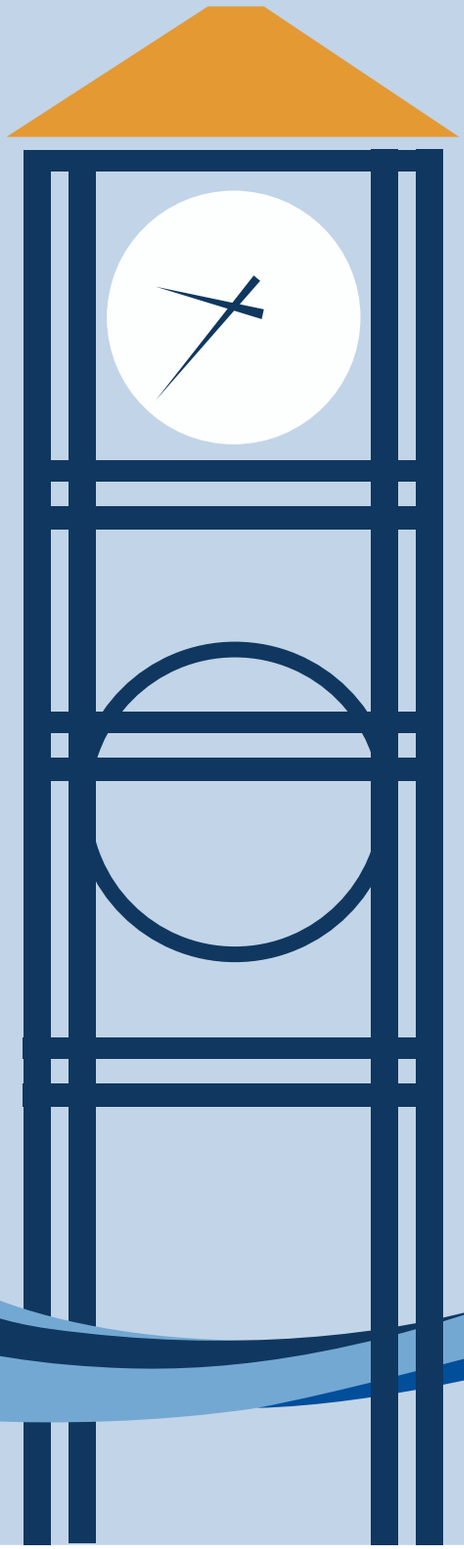

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