

Southern Connecticut State University



Undergraduate Research & Creativity Conference

Saturday, May 1, 2021

A letter from the Undergraduate Research and Creativity Conference Planning Committee:

*The most beautiful thing we can experience is the mysterious.
It is the source of all true art and science.*
– Albert Einstein

While science and art are said to activate opposite sides of the human brain, they ultimately share a key purpose in the human condition: to enlighten. Scholars from all disciplines within the arts, education, humanities, sciences, social sciences, and business set out to quantify the intangible, shine a light of understanding upon the unknown, and harness the mystery seeping deep into the corners of our very existence. Though these disciplines have varying degrees of creativity and logic, they all rely on observation, interpretation, and documentation in one form or another to share this enlightenment. We appreciate them all, hoping to gain knowledge, understanding, and appreciation of the world around us.

Scholarship and creativity act as the glue that binds humanity together, collecting us in the shared purpose of enlightenment. It is with respect to this purpose that we set out to gather and celebrate the scholarship and creativity of the students at Southern Connecticut State University. It is our honor as members of the organizing committee to welcome you to the 5th Annual Undergraduate Research and Creativity Conference, hosted by Southern Connecticut State University. This conference is a celebration of scholarship and creativity in all forms, as well as a showcase for the leading minds of today's undergraduate community. As an educational institution, Southern seeks to promote interdisciplinary academic careers and both logic and creativity are key components in individual, economic, and societal success. The posters, oral presentations, art installments, and other various exhibitions highlighted in this conference demonstrate the diverse scope of subjects engaged by students from many disciplines as well as illustrating the parallels between them. The Research and Creativity Conference is a celebration of our journey to enlightenment. It aims to not only encourage continued work by the undergraduate community, but also to awaken individual curiosity and purpose. So it is with great pleasure that we present the scholarship and creative activity featured this year, and invite you to join in what promises to be an unparalleled demonstration of undergraduate accomplishment.

The Annual Undergraduate Research and Creativity Conference is proudly sponsored by:

The SCSU Foundation
The Office of the Provost/Vice President of Academic Affairs
Division of Research and Innovation/Office of STEM Innovation and Leadership
Research and Scholarship Advisory Committee

Conference Committee

Listed in alphabetical order:

Kelly Bordner	Caitlin McLaughlin
Christine Broadbridge	Sean Reilly
Jeremy Chandler	Amy Taylor
Sandip Dutta	C. Michele Thompson
Samantha Hepworth	Bogdan Zamfir
Elliott Horch	Victoria Zigmont



Annual Undergraduate Research and Creativity Conference

Saturday, May 3, 2021 | 9:00 a.m. – 1:00 p.m.

Southern Connecticut State University

8:30 - 9:00 a.m. Welcome to HopIn

9:00 – 9:15 a.m. Opening Remarks

Robert Prezant, Ph.D. | *Provost & Vice President of Academic Affairs, Southern Connecticut State University*

Michele Thompson, Ph.D. | *Prof. of Southeast Asian History & Chair of the Research and Scholarship Advisory Committee*

Samantha Hepworth | *Grants and Events Coordinator, SCSU Office of STEM Innovation and Leadership*

9:15 – 10:00 a.m. Student Workshops
 Articulating the Value of your Research Experience in Professional Interviews.
 Integrating Your Research Experience into Your Professional Portfolio and Brand.
 Value Proposition-Identifying Value in Research and Innovation

9:15 – 10:00 a.m. Faculty Workshops
 Ten Things Everybody Should Know About Sponsored Research.
 Mentoring Undergraduate Research: Best Practices and Lessons Learned for Optimized Impact.

10:00 – 11:29 a.m.	Oral Session 1 Room 1 -- Various Disciplines -- Minahil Neumann McKee Travia	Oral Session 1 Room 2 -- Social Media: Dangers & Benefits Panel -- DiNino Marcano Him Smith Zangari Lin DeFilippo	Oral Session 1 Room 3 -- English Experiential Learning Panel -- Getts Goulbourne Mercado Araujo	Art Installation -- Senacak Seward Lewis King George Casa Carlaftes Barragan Moore Roy McBride Warren	Poster Session 1 Room 1 -- Paston	Poster Session 1 Room 2 -- Rourke	Poster Session 1 Room 3 -- Sweeney
					Poster Session 2 Room 1 -- Taylor	Poster Session 2 Room 2 -- King	Poster Session 2 Room 3 -- Liebler
					Poster Session 3 Room 1 -- Macesker	Poster Session 3 Room 2 -- Latte	Poster Session 3 Room 3 -- Electron Microscopy Demo
					Poster Session 4 Room 1 -- Brown	Poster Session 4 Room 2 -- Kmetz	-- Scanley
					Poster Session 5 Room 1 -- Plair	Poster Session 5 Room 2 -- Lituma-Solis	Poster Session 5 Room 3 -- Aceto
11:30 – 1:00 p.m.	Oral Session 2 Room 1 -- Various Disciplines -- Ziaks Oladapo Neal Gaffney	Oral Session 2 Room 2 -- Making Comics; Exploring Identity -- The Power of Words: Essays of Literary Interpretation -- Barajas Robinson MacDonald Chamberlain Mercado Getts	Oral Session 2 Room 3 -- English Teaching Internship Panel -- Misercola Fox Martin Kross		Poster Session 6 Room 1 -- Prusak	Poster Session 6 Room 2 -- Viniczay	Poster Session 6 Room 3 -- Krechko
					Poster Session 7 Room 1 -- Giuliano	Poster Session 7 Room 2 -- Chabot	Poster Session 7 Room 3 -- Ellison
					Poster Session 8 Room 1 -- Rolls	Poster Session 8 Room 2 -- Kailey	Poster Session 8 Room 3 -- Ramos
					Poster Session 9 Room 1 -- Simmonds	Poster Session 9 Room 2 -- DeCiucis	Poster Session 9 Room 3 -- Dias

9:15 – 10:00 a.m. | Student Workshops

SW1 Articulating the Value of your Research Experience in Professional Interviews.

Emily Velidow, Career and Professional Development

Research experiences are valuable professional experiences to companies, organizations, and employers. This session will showcase how to highlight and leverage different components of your research experience within a professional interview for jobs, internships, and graduate school.

SW2 Integrating Your Research Experience into Your Professional Portfolio and Brand.

Kelvin Rutledge, Director of Career and Professional Development

As students conclude a research experience, there is often the question of “*what should I do next?*” This session will highlight how students can integrate components of their research experience into more prominent aspects of their professional portfolio and brand.

SW3 Value Proposition-Identifying Value in Research and Innovation

Samantha Hepworth, Grants and Events Coordinator, SCSU Office of STEM Innovation and Leadership

Having trouble talking about your project or idea without getting off topic? Can you communicate your research in layman’s terms?

This workshop is designed to introduce students to the concept of the value proposition as well as discuss tools for effective communication of research concepts to stakeholders outside of their specialization.

9:15 – 10:00 a.m. | Faculty Workshops

FW1 Ten Things Everybody Should Know About Sponsored Research.

Moderator: *Julianne Fowler, Associate Director for Pre-Award Services*

This one-hour session will provide you with an overview of where to find external research funding, what it can be used to accomplish, and how to learn more about the ways your university can help.

FW2 Mentoring Undergraduate Research: Best Practices and Lessons Learned for Optimized Impact.

Moderator: *Christine Broadbridge – Research & Innovation*

Undergraduate Research is a high impact practice that increases student retention, engagement, and learning. Join this session that includes discussions with a panel of southern faculty that will speak about their experiences in mentoring undergraduates in research. Topics will include: student recruitment, best practices, lessons learned, as well as experiences specific to southern that maximize, not only student outcomes, but also research productivity. Panel will discuss their experiences, but will then welcome an open sharing of ideas/lessons learned.

Panel Members:

Michele Thompson -- History

Charles Baraw -- English

James Kearns -- Chemistry

Jeremy Chandler -- Art

O1.1.1 *Observing the effects of polarity, functional group, and regiochemistry on the synthesis of β -ketoesters, key intermediates of quorum sensing inhibitors*

Author(s): Syeda Minahil Gilani & Candy S. Hwang

Mentor: Candy S. Hwang, Ph.D.

Department: Chemistry

Abstract: Antibiotic resistance, a global threat, is a dynamic problem that is increasing because of genetic adaptations of microbes developing resistance to the most developed antibiotics by changes in gene expression and increases in strain diversifications. A method that could potentially utilized as an alternative of the antibiotics is the use of “nonantibiotic” synthetic molecules that interfere with quorum sensing (QS). The use of acetophenone and its analogues for the syntheses of β -ketoesters and β -ketoamides remains a promising synthetic route to inhibit QS in various strands of Gram- negative bacteria. In this study, a library of acetophenones derivatives was tested for its reactivity in β -ketoester reactions to optimize overall yields. The functional group and regiochemistry of the β -ketoester library were analyzed to determine the impact on retention time, yield, lambda max, and UV-Vis properties during purification using a Biotage Isolera Automated Flash Chromatography System. The data obtained were compared to the properties calculated computationally for the library of acetophenone derivatives in order to further analyze the effects of polarity and regiochemistry on product yields, as well as trends associated with effect of polarity on retention time, dipole moment compared to UV-Vis properties, and molecular weight comparison to the retention time. Results from this study will provide predictive trends to enhance scale-up reactions in the production of final QS inhibitor analogues which will be required for biological testing conditions.

O1.1.2 *A Numerical Study of Mie Scattering and Light Propagation Through Scattering Media Using Monte Carlo Simulations*

Author(s): Joseph Neumann

Mentor: Prof. Binlin Wu, PhD

Department: Physics

Abstract: The goal of this project is to use various computational and mathematical models to simulate the ways light can scatter through certain types of media. Computation is enabled through high-performance computing provided by the CAREERS program. We will compute heatmaps of the light distribution over time, and a general heatmap of where light particles have been throughout an entire scatter. This has several applications for imaging technology and biophysics research.

O1.1.3 *College Student Fear of Missing Out and Maladaptive Behaviors: Predictive Analysis using Machine Learning*

Author(s): Paul McKee, Christopher Budnick & Kenneth Walters

Mentor: Imad Antonios, Ph.D.

Department: Computer Science

Abstract: The fear of missing out (FoMO) refers to chronic apprehension experienced when one believes they are missing fun/rewarding experiences reported by their peers. This presentation covers Part 2 of a larger project examining the relationship between college student fear of missing out (FoMO) and maladaptive behaviors. Previous work (Part 1; McKee, Budnick, Walters, & Antonios, in prep) used a cross-sectional study to examine whether college student FoMO predicts maladaptive/illegal behaviors. Participants (N = 472) completed hard copy questionnaire packets assessing trait FoMO levels, and questions pertaining to unethical and illegal behavior while in college. The results from hierarchical regression modeling showed that higher FoMO predicted higher levels of academic misconduct, alcohol use, drug use, and illegal behavior. Part 2 looked to quantify the predictive power of FoMO and demographic variables used previously through the convergent approach of machine learning. Using various techniques such as Recursive Feature Elimination (RFE) and models such as logistic regression, random forest, and Support Vector Machine (SVM), we were able to showcase the predictive power of implementing machine learning. For example, RFE with random forest modeling was able to predict membership across three classes of drug use profiles with 78% accuracy (compared with random prediction accuracy of 33.3%), using just 2 of the original 4 predictor variables. This study demonstrates how machine learning can provide additional insights that would not be possible through statistical modeling approaches typically employed in psychology research. Research in the social sciences stands to gain from regularly utilizing machine learning.

O1.1.4 *A Study Examining High School Health Education, Cybersex Prevention and Cybersex Propensity*

Author(s): Joaquina Travia

Mentor: Katherine W. Marsland, Ph.D

Department: Psychology

Abstract: The purpose of this study is to examine the extent to which health education in high school regarding cybersex reduces the risk of cybersex engagement among young adults. This study further focuses on whether college students were aware of the risks of participating in cybersex and the effectiveness of their health education program. The proposed study uses the definition of comprehensive sex education as seen in Yaeger (2018) and Sexual Information and Education Council of the United States (SIECUS) (Goldfarb & Lieberman, 2020) to examine the effect of high school health education comprehensiveness on cybersex propensity and risk perception when compared to traditional programs.

O1.2.1 *Unifying Humans*

Author(s): Jocelyn DiNino

Mentor: Shelley Stoehr-McCarthy, MFA

Department: English

Abstract: Douglas Rushkoff is a documentarian who discusses the negative effects of technology. My paper "Unifying Humans" discusses how technology is separating the human race rather than uniting them, as it was intended to do so. In the paper I utilize Rushkoff's novel "Team Human" to support my examples of how society has started to idolize machinery so much that humanity is seen as inferior.

O1.2.2 *Seeking Community On vs. Off-Screen*

Author(s): Hannah Marcano

Mentor: Shelley Stoehr-McCarthy, MFA

Department: English

Abstract: This essay discusses how phones and other devices that have access to online communities inhibit their users when a balance between time on and off-screen is not established. The essay explores and puts into context research that helped me come to this conclusion, such as an interview of my partner from a former English project, Sherry Turkle's "Identity Crisis," and Dainius' article, "Removed: Photographer Removes Phones From His Photos To Show How Addicted We've Become." An example of what a healthy balance between community in real life and online is given, as well as examples of what an unhealthy balance looks like, and why that lifestyle is harmful to those practicing those habits.

O1.2.3 *Effects of Technology on Human Connection*

Author(s): Laura Him

Mentor: Shelley Stoehr-McCarthy, MFA

Department: English

Abstract: Douglas Rushkoff is a documentarian who discusses the negative effects of technology. My paper, "Effects of Technology on Human Connection," talks about how digital media contributes to the destruction of human connection.

O1.2.4 *Persona No More*

Author(s): Jessica Smith

Mentor: Shelley Stoehr-McCarthy, MFA

Department: English

Abstract: Sherry Turkle, a founding director of the MIT Initiative on Technology and Self, discusses how people use the internet and social media to escape from the real world. My paper, "Persona No More," is about how different life could be if people, specifically social media users, normalized real world occurrences, both good and bad, instead of projecting false narratives of lavish lifestyles in order to receive praise and acceptance.

O1.2.5 *Misinformation Super Highway*

Author(s): Annie Zangari

Mentor: Shelley Stoehr-McCarthy, MFA

Department: English

Abstract: Douglas Rushkoff is a documentarian who discusses the negative effects of technology in society. My paper, "Misinformation Super Highway" is about how the ability to communicate at lightning speeds has opened the flood gates for misinformation to spread like wildfire, and has caused a generation of young people to suffer identity crises before ever uncovering who they truly are.

O1.2.6 *Social Media/Technology and Its Ability to Alter the Perception of Users*

Author(s): Liang Lin

Mentor: Shelley Stoehr-McCarthy, MFA

Department: English

Abstract: Social media and technology can be effective tools when used for the right purposes and the right reasons. But as the years go by and as they begin to evolve, they have started to take a turn for the worse. I explore how social media has prevented humans from connecting meaningfully and how society as a whole has begun to lack sincerity because of the consequences.

O1.2.7 *Reversing the effects of technology is not impossible**

Author(s): Andrea DeFilippo

Mentor: Shelley Stoehr-McCarthy, MFA

Department: English

Abstract: Douglas Rushkoff is a documentarian who discusses how the negative effects of technology. My paper, "Reversing the effects of technology is not impossible", is about how even though technology is meant to manipulate the brain, you are able to reverse the manipulation of technology before it's too late. Just like the people in my essay did.

*This project involves issues of social justice

O1.3.1 *English Experiential Learning Internship*

Author(s): Liz Getts

Mentor: Professor Charles Baraw

Department: English

Abstract: My talk will be on the joint panel regarding English Department opportunities, such as internships and other activities. In the fall 2021 semester, we focused on social media outreach programs, developing events for English Department students and faculty, and maintaining the creation of weekly newsletters that informed English students of upcoming events.

O1.3.2 *English Department Experiential Learning*

Author(s): Kimberley Goulbourne

Mentor: Professor Charles Baraw

Department: English

Abstract: As an English department intern, I organized a 6-week Instagram live series. This idea sprung from the lack of participation from students when web conferences were offered. I decided to meet the students where they were--social media. The panel, "Women in the Workforce" which started in the month of March featured women because of women's history month. It is a great way for students to chat with Alumni and get their questions answered. The series will conclude on April 28, 2020.

O1.3.3 *English Experiential Learning Internship*

Author(s): Elizabeth Mercado

Mentor: Professor Charles Baraw

Department: English

Abstract: My talk is part of our joint panel on the opportunities and activities we participated in during our English department internship. In the fall of 2021, I focused on social media outreach, running both the English Department's Twitter and Instagram page. I was also responsible for reaching out to students via weekly newsletter.

O1.3.4 *Interactive Newsletters Foster Department Culture*

Author(s): Valeria Araujo

Mentor: Professor Charles Baraw

Department: English

Abstract: For the Spring Semester I wanted to create a newsletter that was not only colorful and appealing, but informative and flexible. Each week I would focus on different topics that were relevant during the time, while also giving students the opportunity to learn about different aspects of the Southern community that they might not have been aware of. By the third issue of the newsletter, I had other SCSU organizations and faculty reach out to me to put things in the next issue. The weekly newsletter helped build a network of students and faculty that reflected the needs and ideas of our community.

AI. 1 *One More Dish**

Author(s): Kaan Senocak & Victoria Ingram

Mentors: Melanie Uribe, MFA – Assistant Professor, Graphic Design

Department: Art & Graphic Design

Abstract: We buy too much food, eat too much food, throw away too much food, and do so in reckless ways. The food waste problem in the US keeps growing and most often the food is edible, healthy produce and the amount generated is more than enough to tackle a problem that has no place in a developed country. Food waste is the single largest component of US landfills, accounting for 22% of municipal solid waste (Nov 30,2020 www.earth.org).

This project raises the fact that we're living with the unbearable food-wasting crisis in the United States. The One More Dish project will be showcased for the matter of preventing food waste, improving our economy, and saving the world while reducing greenhouse emissions into the atmosphere. The project aims to reduce the fact that the US spends over \$240 billion on food waste in a single year by wasting almost 50% of the food supplies from the harvest. We wanted to create a platform that can be a solution for the food-wasting problem based on our researches and case studies that we have done. We have figured that one of the biggest reasons behind the food-wasting crisis it occurs as the inability of connecting with people who are in need. Within the project, we would like to solve this underlying problem which affects enormously our community and our economy.

One More Dish aims to reflect the feeling of being able to share food with others instead of wasting it. It is a gateway between individuals and business owners to serve the community by giving them an opportunity to find each other easily. It's about finding motivation to make some simple changes in day-to-day routines to help others and build a stronger and unified community for everyone.

This poster will outline the user experience (UX) research which involved both in-person and online surveys, asking individuals about their experience and opinions regarding food waste. This included what factors they feel are responsible for so much food waste and what keeps people from making more responsible choices regarding their food habits. Research was done on both the individual level as well as those who work in the food service industry. With the data in mind, user personas were created and then further used to create a map of how the app would work, as far as what choices would be made and what steps were involved. Poster will also showcase the user interface (UI) process, or how the app looks and feels. Every asset was designed with simplicity in mind. We wanted the app to be as user-friendly as possible, with the intent of it being easy to navigate regardless of the user's age.

*This project involves issues of social justice

AI.2 *Self-Love**

Author(s): Isabelle Seward

Mentors: Melanie Uribe, MFA – Assistant Professor, Graphic Design

Department: Art & Graphic Design

Abstract: The current COVID-19 Pandemic has required months of isolation and social distancing to help contain its spread. While these restrictions have begun to lessen, the implications of these measures take a silent toll on individuals, particularly that of college students who are deprived of the typical university experience. Staying connected to peers in today's world is done almost entirely digitally. In an age of digital perfection and self-comparison, I want to use type and light as a vehicle to promote self-awareness and love in students and open up minds from unconsciously projecting fears onto others in the form of racism, homophobia, transphobia, and other forms of discrimination.

In creating an immersive typographic experience, these individuals can interact with their own identities as a means to foster positive self attributes and to challenge negative ones. I am proposing this piece to be installed in the hallway of Southern Connecticut State University's own Earl Hall. Students can enter the art wing of the building to be greeted by this piece that allows them to physically step into the light and become a part of the piece.

I developed a list of words to be used in the piece representing either positive or negative self attributes. Typeface needs to be legible as a projection of type and bold enough to create distinguishable characters. Words with positive attributions will be arranged as outlined type, with no fill, to be projected on the floor/walls as light. Negatively associated words will oppositely be constructed as solid-filled type to be projected as a shadow. The arrangement of words on the rectangular block will follow no order other than to fill the entirety of the space like puzzle pieces. Words can be oriented at 0°, 90°, 180° or 270°, encouraging the piece to be viewed from all angles it may be approached from.

Even though this interactive typographic art installation is being proposed for Earl Hall, the piece is having the benefit of not being tied in one location and can be adjusted to fit any space.

**This project involves issues of social justice*

AI.3 *Senior Exhibit*

Author(s): Jamie Lewis

Mentor: Jeremy Chandler Associate Professor, Art | Photography

Department: Studio Art & Photography

Abstract: I have a passion for creating documentaries about individual people. I enjoy the process of selecting a subject and working with them one-on-one to discover aspects of their life and their interests. Through interviews and images, I want the audience to get to know my subject and learn something from them about a hobby or interest that makes them unique. My first documentary was about my sister Leanna's life in New York city and what it is like to be a New Yorker. I also created a documentary about my cousin Kayla who owns chickens and what it's like caring for them every day.

My most recent documentary is about Zach, a man in his early 20's, who collects and dresses in Victorian era clothing. His love for this time period has led to a deep knowledge about it. Zach is not afraid to stand out with his unique sense of style. I see him as an inspiration to those who want to express themselves through fashion.

Through creating my short documentaries, I believe photography and videography can express how everyone has something interesting about themselves to share with others. I have always learned so much from my subjects and I am excited for future projects.

AI.4 *Senior Art Exhibition*

Author(s): Chelsea King

Mentor: Jeff Slomba, Professor of Art

Department: Studio Art

Abstract: My recent work has been the creation of artist's books using elements of printmaking, watercolor painting and other types of paper manipulation. The combination of these paper-based techniques, alongside book arts, feed my natural desire for planning ahead – mapping out layers of ink and paint, measuring and cutting material to size – and require precision with just enough wiggle room for fluid expression. The dichotomy between the making of the artwork (the conceptual side), and the construction of the book and box (the methodical side), allows me to be constantly thinking in different ways and keeps the making process interesting.

Each book tells its own abstracted, dramatized story of a lingering thought, reflecting how I often dramatize those thoughts and feelings in my own head. The format of the artists' book compels the viewer to physically interact with the images through opening the box and turning the pages. I give the viewer an intimate experience with my work, and I consider the one-on-one interaction with the book to be a conversation between the viewer and myself.

AI.5 *Senior Exhibition*

Author(s): Sophia George

Mentor: Karen Dow, Instructor of Printmaking SCSU

Department: Studio Art - Printmaking

Abstract: In the past year, I have developed an irrational fear of bathrooms. Traditionally, the bathroom is looked at as a place of self-care, where one maintains their hygiene, but it can also become a space of complete vulnerability. During the Coronavirus pandemic, the bathroom has become my symbol of daunting solitude. Confined to my own "figurative bathroom" of social isolation, I feel a constant state of emotional exhaustion and claustrophobic introspection. I created these works as a reflection of my time in quarantine, literally and figuratively.

The monotype and linoleum cut prints in this series mirror themes of loneliness, vulnerability, and confinement. I used a muted palette of black and different opacities of red in order to focus on rendering the subject and mood behind the works. I want the viewer to experience a bit of the discomfort that I felt, and continue to feel; to feel as if they are locked in solitude. I also invite the viewer to connect to these images, in hopes that they can confront some of the "figurative bathrooms" within their own lives.

AI.6 *Senior Exhibition*

Author(s): Anna Casa

Mentor: Jeff Slomba, Professor of Art

Department: Art – Jewelry Making | Metals

Abstract: I have always been interested in body parts – hands, faces, eyes, noses, lips and features of the male and female body. I am a collector of figurative fragments in many materials (metal, ceramics, clay, mosaics, wood) including masks that I purchased from artists on my trips abroad and in the United States.

The majority of the art I make is abstract and/or geometric with vibrant colors. These wearable objects often become stylized features of figures, faces, and anatomies. I am drawn to figurative shapes because they can be so diverse but yet familiar. I have been attracted to abstracted figurative elements since my youth. I also love using found or unused objects and arranging them to create new manifestations.

Metal is one of my favorite mediums because of its versatility. Working with enamels satisfies my need for color. I enjoy the challenge of starting with a flat sheet of metal, then using processes of cutting, shaping with heat and various tools, and then soldering or welding connections to create diverse forms. It's amazingly rewarding when you have completed this transformation.

AI.7 *Intimacy*

Author(s): Eleanora Carlaftes

Mentor: Mia Brownell, Professor of Art (<http://www.miabrownell.com>)

Department: Art | Studio

Abstract: “Real intimacy is a sacred experience. It never exposes its secret trust and belonging to the voyeuristic eye of a neon culture. Real intimacy is of the soul, and the soul is reserved.” — John O'Donohue

Intimacy is a profound human need. This innermost series of personal drawings explores the interesting idea of what it means to be intimate, while at the same time, also sharing from being impacted by Covid-19. During this global pandemic, and through my study of intimacy, I realized that people took human interactions for granted. Intimacy is more than just sexual relations with a person. Intimacy is about the relationship with any two people: significant other, family member, or a friend. It is more significant than physical touching alone; it is also deeply emotional, incredibly psychological, and powerfully spiritual. With social distancing, we lost the opportunity to be close to people, but it has also changed the way we connect. With this series, I explore interesting aspects of intimacy with my significant other. Simple, yet profound connections like having a cup of coffee on the couch to being sexual have all taken on new relevance are celebrated in these drawings.

AI.8 *Senior Exhibition*

Author(s): Lily Barragan

Mentor: Mia Brownell, Professor of Art (<http://www.miabrownell.com>)

Department: Art | Painting

Abstract: Dreams or Memories? “The dream has a very striking way of dealing with the category of opposites and contradictions. This is simply disregarded. To the dream ‘No’ does not seem to exist. In particular, it prefers to draw opposites together into a unity or to represent them as one.” Sigmund Freud, *The Interpretation of Dreams*

This series titled Dreams or Memories? reinforces the idea that no matter how realistic a dream or nightmare can be, it is not something that is real or tangible, and it only exists in a liminal plane. Like Magic Realism, dreams tend to blur the line between reality and fantasy. This series explores the dreams and nightmares I have had throughout different parts of my life. I paint the moments that push themselves into the spotlight in an unconscious state. My dreams have been palpably realistic and vivid, causing them to feel like memories. These subconscious visions have all been influenced by current affairs and traumatic events including the COVID-19 pandemic, gun violence, and sexual violence.

AI.9 *Senior Art Exhibition*

Author(s): Aliya Moore

Mentor: Jeremy Chandler Associate Professor, Art | Photography

Department: Art | Photography

Abstract: As a photographer, the art that I create focuses on self-portraiture and the documentation of my surroundings in the hopes of capturing the different facets of my personality and daily life. This work stems from my personal desire to investigate, document, and share my life with others on my own terms.

For this project, I have made a series of photographic self-portraits. In some of these photos I am not the main subject of focus, but instead I depict what I see on a daily basis and how it relates to or affects me. These self-portraits represent fragments of my life at the present moment from my perspective, which include images of my bedroom at home, my various morning routines, and what I eat for breakfast.

What keeps me curious about this project is wondering about other subjects, or subject matter, in my life that I could potentially document and share, such as family, friends, and other various surroundings. I took these pictures because I do want to get a little personal and vulnerable with the art I create and share the mundane parts of my life that I believe are interesting.

AI.10 *Senior Art Exhibition*

Author(s): Jamie Roy

Mentor: Mia Brownell, Professor of Art (<http://www.miabrownell.com>)

Department: Art | Studio Art | Painting

Abstract: My artwork is an exploration of a perceptual and sensory engagement with color, female empowerment, and the psychedelic. I am innately attracted to hues of sunsets; blue, purple, magenta, and orange. I use these colors to replace traditional highlights and shadows and create a visual “thermal” effect within my figurative subjects. I also incorporate saturation of these colors into the background of my pieces to create psychedelic, cosmic landscapes that support the nuances of the female form. The term “psychedelic” was coined by the British Psychologist, Humphry Osmond to mean “mind manifesting” and psychedelic art often sought to imitate the intense, colorful, and surreal visuals manifested after the ingestion of certain psychoactive substances. By combining the subject of feminine forms with a cosmic setting, I seek to create such surreal and otherworldly images that feel almost god-like and sexually empowering from a feminist perspective.

AI.11 *Senior Art Exhibition*

Author(s): Zina McBride

Mentor: Jeff Slomba, Professor of Art

Department: Art | Studio Art | Sculpture

Abstract: I try and get to know myself through my art. I explore themes of identity, mending, loss, the body and Romanian heritage. Each work either asks a question or poses a statement. Sometimes it is straightforward, other times I leave it to the viewer to introspectively investigate the work. I gravitate toward more organic shapes because of the way my pieces tend to evolve, through intuition guided by a current state of mind and instinct. The themes of my work are closely related to the process of their fabrication; from stitching, tying and stuffing, to layering, stretching, and sawing. I love to play with material and often work with found objects and recycled textiles. My textile work is experimental but also traditional when I am using materials such as beans or sheepskin that reference historical Romanian mask-making. I think just about anything can be transformed for a new purpose, and the process of experimenting with these materials leads me to discover a finished piece.

AI.12 *Senior Art Exhibition*

Author(s): Elisabeth Warren

Mentor: Professor Michael Lake

Department: Art | Jewelry | Metalsmithing

Abstract: Working with my hands has always been meditative and rewarding for me. In 2015, I found myself eight months pregnant and desiring a new creative outlet while preparing for this next chapter. I purchased some pliers, wire, and put my stone collection to good use. When I discovered how satisfying it felt to design and create wearable art for others, I was compelled to continue creating.

My work has since evolved from simple wire wrapped pieces to fabricated works of art that thematically engage the viewer/wearer on an emotional level. My inspiration comes from stones (and thus, nature itself). While the stones may be the focal point of each piece, they are intended to have a symbiotic relationship with the metal—as I fuse these two very different elements to become one.

This body of work was inspired by the four seasons and their symbolism for transition, growth, and re-birth. While the experience of some seasons may feel darker and colder than others, each serves an important purpose. Just like life, each chapter helps us grow a little bit more and gradually shapes us into who we are meant to become.

P1.1 *Heavy mineral composition and sedimentology of Laurentide Ice Sheet glacial sediments in the Connecticut River Valley*

Author(s): Ryan Paston, Carey Ciaburri, Jules Scanley

Mentor: Nicholas Fedorchuk, Ph.D

Department: Earth Science

Abstract: As glaciers retreat from their maximum extent, they erode away at the underlying terrain and deposit sediments in front of them. Yet, little is known about how the location of erosion changes as they retreat. The goal of this study is (1) to understand the depositional environment associated with the movement of the Laurentide Ice Sheet in the Connecticut River Valley, and (2) to better understand the provenance of the glacial sediment left behind by the retreating ice sheet. A detailed stratigraphic and sedimentary analysis was carried out to describe the depositional environments found along the studies' transect. To aid in this, stratigraphic columns were then used to create facies associations. A heavy mineral analysis was carried out to assess the different minerals that were found in the samples at each outcrop and correlate how these percentages changed as the glacier retreated north through Connecticut. It was determined that the retreat of the LIS and the glacial melt waters that ensued created a series of Gilbert-type delta systems, which is a type of delta associated with a river or stream flowing into a freshwater lake. The heavy mineral analysis has showed several different minerals that are found at each location in various percentages, with the most common being pyroxene, garnet, amphibole, tourmaline, ilmenite, and magnetite. This type of study may help us understand how patterns of glacial erosion and deposition will change in the present day, as warming temperatures impact ice sheets all around the world.

P1.2 *The Presence of Microplastics in the Gills and Digestive Tract of Atlantic Menhaden (*Brevoortia tyrannus*)*

Author(s): Maeve Rourke

Mentor: Vincent Breslin, Professor, Environment, Geography and Marine Sciences, Co-Coordinator, Werth Center for Coastal and Marine Studies

Department: Environment, Geography, and Marine Sciences

Abstract: The volume of plastic pollution in our oceans is growing proportionally with our dependency on plastic products. Plastics can fragment and degrade forming microplastics that pose a serious threat to marine environments. Microplastics are plastic particles smaller than 5.0 mm in size and are ubiquitous in coastal and open ocean waters. Due to their size, they pass through municipal wastewater treatment systems and can be ingested by filter feeding marine organisms. In this study, Atlantic menhaden (*Brevoortia tyrannus*) gills and alimentary canals were examined for the presence of microplastics. Fifteen menhaden from regional Connecticut and Rhode Island bait shops were digested in nitric acid and microplastics were isolated from the digest solutions using a density separation and filtration process. Microfibers were the predominant form of microplastic identified in menhaden. In total, 49 discrete microfibers and one microplastic fragment were found in the 15 menhaden examined (3.26 microplastics per fish). Overall, more microplastics were identified in the intestinal tissues of the menhaden compared to the gill tissue. The majority (60%) of the fibers identified were clear. Red (17%) and blue (15%) fibers were also abundant, while there were significantly fewer black (8%) fibers. IR-ATR analysis of a fiber isolated from menhaden tissues was positively identified as polyester. The presence of microplastics within Atlantic menhaden raises concern about the potential for chemicals from the microplastics to be incorporated in fish oil supplements from reduction plants. Strategies to minimize the abundance and toxicity of microfibers in the environment include the combination of better laundering techniques, the use of natural or recycled fibers, and using bio-sourced additives within synthetic fibers.

P1.3 *Evaluation of Prospective Biochar Projects*

Author(s): Emma Sweeney

Mentor: Christine C. Broadbridge, Ph.D.

Department: Physics

Abstract: Biochar is a charcoal produced organically from biomass. Though it has been in existence for hundreds of years, it hasn't been until relatively recently that many began to study it. Due to the growing attention that biochar has been receiving, much research is being conducted to decipher biochar's structure and the extent of its capabilities in bettering soil fertility. Biochar's porosity and high-water retention ability have allowed biochar to become an efficient soil amender. Companies and producers of biochar continue to invest their resources in biochar studies to better understand its potential commercial uses. To aid in the understanding of biochar, a literature analysis was conducted to assess current studies on biochar and its properties. This analysis aimed to identify gaps in current biochar knowledge to help guide future research. Results of this study revealed a significant need to begin standardizing the various forms of biochar for better regulation. This study was made possible by the Werth Industry Academic Fellowship Program.

P2.1 *An Investigation of Early Mesozoic Brittle Faulting in the Orange-Milford Belt*

Author(s): Brendan Taylor

Mentor: Dr. Jennifer Cooper Boemmels

Department: Earth Science

Abstract: Connecticut has a long geologic history and the evidence is preserved in the bedrock geology. Roughly 200 million years ago, the area that became Connecticut experienced rifting associated with the breakup of the supercontinent, Pangea. The Central Valley of Connecticut formed as a product of rifting and divided the state into the Eastern and Western highlands. Since then, the landscape of Connecticut has been shaped by other geologic processes like glacial erosion. This investigation explores evidence for early Mesozoic brittle faulting (roughly 200-180 million years ago) in the Milford-Orange area. Methods include collection of structural bedrock data via Brunton compass, evaluation of LiDAR images of the overall study area, and observations of bedrock thin sections via petrographic microscope. Structural field data has been evaluated using stereonet software produced via computer programming. The orientation of bedrock foliation, fractures, and outcrop-scale faults at the sites has been characterized. Cumulative results indicate that the foliation at the outcrop sites follows a NE–SW orientation while fracture measurements show a dominant NW–SE orientation. LiDAR imagery displays a variable landscape across the study area with rugged hills and valleys likely carved from glacial activity and streams. Petrographic analysis of thin sections is ongoing and current observations indicate the bedrock consists of garnet mica schist with some compositional variation and alteration. The bedrock is crosscut by quartz veins. Some evidence for outcrop-scale faulting was also observed and may be associated with early Mesozoic deformation.

P2.2 *Analyzing COVID-19 in the United States Using Particle Swarm Optimization Model*

Author(s): Peyton King

Mentor: Alaa Sheta, Ph.D.

Department: Computer Science

Abstract: As of July 19, 2020, there are more than 3,900,000 cases of COVID-19 confirmed in the United States with greater than 154,000 deaths due to complications. Other impacts from COVID-19 also include the highest rates of unemployment since 1939 and the ability to handle distribution of personal protective equipment (PPE). To better predict COVID-19 spread in the United States, we need to have a well-developed model that can consider the rate of infection and many other attributes. In this research we explore the use of both the traditional regression model with the model parameter estimated using least-square estimation and the famous metaheuristic search algorithm, the Particle Swarm Optimization. The results of estimation were compared using various evaluation criteria such as the mean square error and variance-account-for. The research results show that the proposed models were able to predict the number of infections with an accurate performance.

P2.3 *Using Genetic Programming Techniques to Model Lipase Production*

Author(s): Olivia Liebler

Mentor: Alaa Sheta, Ph.D.

Department: Computer Science

Abstract: Lipase is an enzyme used for the hydrolysis of lipids. Lipase is useful in many biotechnology industry applications. It can be produced inexpensively by bacterial cultures through fermentation processes. However, optimizing these processes for good production requires effective modelling of the many variables of the fermentation, and these variables have a nonlinear relationship. In this research, we create a model of the lipase fermentation system using multigene symbolic regression genetic programming techniques. Genetic programming is a technique which is often effective at modeling nonlinear systems. The GP models developed in this paper are based on data collected by previous studies that used other methods to model the system. The results of this research show that genetic programming produces models that are good compared to other techniques, and that genetic programming is a modelling technique that is worth investigating further.

P3.1 *Fermentation process modeling Using Artificial Neural Networks*

Author(s): Michael Macesker

Mentor: Alaa Sheta, Ph.D.

Department: Computer Science

Abstract: The fermentation process is essential in several biotechnological applications. However, developing a model for the fermentation process is believed to be challenging because of the model complexity. The source of complexity is motivated because the proposed models need to be exact, not expensive while having a short record of data. In this paper, we utilize the computational intelligence method of Artificial Neural Networks (ANN) to develop such a model. ANN shows a successful performance in developing nonlinear complex systems since they simulate can simulate the human brain. ANN is a powerful method for the classification and clustering of large data sets. ANN uses the BackPropagation (BP) learning algorithm to tune its weight. In this work, we also provide a comparison between ANN and the standard modeling-based linear and quadratic regression models. Our results showed evidence that ANN is effective in producing high-performance modeling capabilities compared to other models in the literature.

P3.2 *The role of ageism in jury sentencing**

Author(s): Megan Latte, Jacklyn Ramos-Arvelo, Sehar Ghaffar & Alexa Phillips

Mentor: Dr. Patricia Kahlbaugh

Department: Psychology

Abstract: Using a jury simulation paradigm, this lab investigates the effect of ageism on perceptions of a defendant's guilt. Discrimination based on age can be measured by the length of assigned prison sentences. We predicted that those with higher ageistic views will sentence defendants who killed young victims to more jail time in comparison to defendants who killed old victims. Forty-one participants were randomly assigned to read vignettes depicting a crime of the vehicular manslaughter of either a) a 5-year-old child or b) a 70-year-old senior and were asked to make sentencing decisions for the perpetrator ranging from 1 to 25 years. In addition, a prescriptive ageism measure was administered (North & Fiske, 2013). We did not find that ageism interacted with the victim's age to influence the defendant's sentence; however, our experiment may have been underpowered. Additionally, we may have wanted to make the older victim even older (85 vs. 70), and the outcome paralysis, not death. Although our hypothesis was not supported, in a world where life expectancy is rising, it is important to investigate the value placed on lives of older people, the effects of ageism in the justice system, and the way in which that is translated into a prison sentence.

*This project involves issues of social justice

P3.3 *Electron Microscopy in the Center for Nanotechnology*

Author(s): Jules Scanley, M.D., Ph.D.

Department: Center for Nanotechnology

Abstract: The Center for Nanotechnology which is on the lower level of the new science building has two electron microscopes. These microscopes are used to visualize things as small as ~ 1 nm for the transmission electron microscope and ~ 10 nm for the scanning electron microscope. We collaborate with students and faculty from biology, chemistry, earth sciences and physics on a wide variety of research projects. This demo will highlight the scanning electron microscope and several of the projects that have been done with this instrument.

P4.1 *Ageism and Aging Anxiety**

Author(s): Rashea Brown, Je'suca Maurice, Mary Roper & Bianca Alvarez

Mentor: Dr. Patricia Kahlbaugh

Department: Psychology

Abstract: Ageism and aging anxiety are prevalent today and are more dominant in younger generations. As we age, a change in perceptions about our physical appearance and anxiety about aging is inevitable. The current research study investigates the relationship between ageism (descriptive and prescriptive) and aging anxiety. Twenty-eight people, both old and young, were given three scales among which one measured aging anxiety and the other two measured descriptive and prescriptive ageism. We predicted that there would be age differences in aging anxiety and correlations between aging anxiety and both forms of ageism. Although no age differences were found in ageism or aging anxiety, there were positive correlations between prescriptive and descriptive ageism and three of the four aging anxiety subscales (fear of old people, psychological concern, fear of loss). This study illuminates the relationship between ageism and the fears of aging. Younger people will eventually become older; therefore, understanding how ageism and aging anxiety are intertwined is important when discussing the aging process with younger people. Any future intervention should be focused on addressing these anxieties.

*This project involves issues of social justice

P4.2 *Age differences in Prescriptive Ageism*

Author(s): Sydney Kmetz, Ashley Anne Gaydownen, Meghan King, Alexa Cruz & Wanda L. Caraballo Quiles

Mentor: Dr. Patricia Kahlbaugh

Department: Psychology

Abstract: The prevalence of ageism held toward the elderly often goes unrecognized but has negative effects on older people. Thus, it is essential that we investigate who is most likely to have ageist beliefs. We studied prescriptive ageism, which focuses on attitudes about what older people should or should not do. An example would be the belief that older people should retire to make room for the younger generation. Three types of prescriptive ageism are succession, identity, and consumption and these are assessed with the SIC questionnaire developed by North & Fiske (2013). We predict that younger individuals will be more ageist in succession, which specifically targets beliefs about older people having too much power and influence. Twenty-eight people were given the SIC questionnaire, 14 were young (30 years and younger) and 14 were old (50 years and older). As predicted, younger individuals were found to have more ageism in succession, perceiving older people as a barrier to their own success and influence. This discovery can inform future research focusing on these specific misconceptions or bias.

P4.3 *Electron Microscopy in the Center for Nanotechnology*

Author(s): Jules Scanley, M.D., Ph.D.

Department: Center for Nanotechnology

Abstract: The Center for Nanotechnology which is on the lower level of the new science building has two electron microscopes. These microscopes are used to visualize things as small as ~ 1 nm for the transmission electron microscope and ~ 10 nm for the scanning electron microscope. We collaborate with students and faculty from biology, chemistry, earth sciences and physics on a wide variety of research projects. This demo will highlight the scanning electron microscope and several of the projects that have been done with this instrument.

P5.1 *Nature Exposure and its Effect on Self-compassion in College Students*

Author(s): Baatinu Plair, Mirza Martinez, Taslima Sultana & Kalin Mcquade

Mentor: Katherine W. Marsland, Ph.D

Department: Psychology

Abstract: This study explored the relationship between self-compassion, nature-exposure, and nature-connectedness. Self-compassion was predicted to positively correlate with nature exposure and nature connectedness. To test this hypothesis, a sample of Southern Connecticut State University students from PSY 100, PSY 393, and other classes filled out a Google Forms survey. This survey asked them questions pertaining to their time spent in nature, their connection to nature and questions about the extent of their self-compassion. The results supported that there were in fact a positive correlation between the three. There were significant correlations found when self-compassion was separately compared with nature-exposure and then with nature-connectedness, as well as when nature-connectedness and nature-exposure were compared with each other. This data reinforced that the more time students spent in nature and the more they connected with it, the higher the levels of self-compassion they reported. This study can be a great catalyst for future experiments that explore how outdoor activities and other forms of physical activity can affect a young adult's self-compassion and subsequently their overall well-being.

P5.2 *Culturally Responsive Evaluation and Diagnosis of ASD in Children Ages Birth to Three**

Author(s): Dayana Lituma-Solis, Cheryl Durwin & Angela Lopez-Velasquez

Mentor: Barbara Cook, Ed.D., CCC-SLP

Department: Communication Disorders

Abstract: Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by persistent deficits in social communication and social interaction (American Psychiatric Association, 2013). An early diagnosis of ASD will allow children and families to access EI through government-funded, Birth to Three Early Intervention programs. Research has shown that EI can assist in improving a child's overall development (Harris, Durodoye, & Cole-Ennis, 2016). Although the benefits of EI are well documented in the literature, recent studies have indicated that children from ethnically and culturally diverse backgrounds tend to be underdiagnosed for autism spectrum disorders within the Birth to Three population (Mandell, Ittenbach, Levy, & Pinto-Martin, 2007). A delay in EI services for children with autism can negatively impact their later communication abilities. As a result, it is critical to identify the factors that may lead to the delay in diagnosis and access to EI for children who are ethnically and culturally diverse, as soon as possible.

Since it is unclear how these clinicians consider culture and ethnicity when conducting a differential diagnosis of autism, for the purposes of this research project, surveys were distributed electronically to clinicians who diagnose for ASD within this age demographic in order to gather an understanding of practicing practitioners' preexistent knowledge and awareness of culturally responsive models needed when conducting evaluation procedures for ASD. IRB approval was obtained to successfully administer assessment surveys to research participants. This research poster will summarize the findings of the author's Undergraduate Honors Thesis successfully defended in December 2020.

*This project involves issues of social justice

P5.3 *Potential inhibitors of the 3C-like protease of SARS-CoV-2*

Author(s): Jason D. Aceto

Mentor: Todd R. Ryder, Ph.D.

Department: Chemistry

Abstract: Protease inhibitors are mainstay in the treatment of viral diseases such as HIV/AIDS and hepatitis C. More recently, there has been interest in the discovery and development of compounds that inhibit the 3C-like protease found in SARS-CoV-2, the novel coronavirus responsible for the pandemic that began in 2020. We used a virtual screening application called MTi OpenScreen to look for compounds that bind to the active site of this target. The software provides a ranked list of structures in order of predicted binding affinity. We examined the top hits and prepared profiles for the most promising compounds to prioritize them for future biological studies.

O2.1.1 *Synthesis and Determination of Stability of β -Ketoesters and β -Ketoamides Under Physiological Conditions*

Author(s): Therese Ziaks

Mentor: Candy S. Hwang, Ph.D.

Department: Chemistry

Abstract: Antibiotic resistance is a global threat, particularly in the United States, and is often the result of the overuse of antibiotics. One promising method that could potentially be used in place of antibiotics is the use of “nonantibiotic” synthetic molecules that interfere with quorum sensing (QS). The use of acetophenone and its analogues for the syntheses of β -ketoesters and β -ketoamides remains a promising synthetic route to inhibit QS in various strains of Gram-negative bacteria. Once successfully synthesized, the β -ketoamides must undergo rigorous solubility and stability analyses. These analyses will provide pertinent information on the properties of the molecules which can be utilized to assay the functionality of the compounds under physiological conditions. Using High Performance Liquid Chromatography (HPLC) and spectrophotometry with various buffer solutions, the solubility and metabolic stability properties of β -ketoamides can be determined. Results of this study will be utilized to determine the optimized synthesis conditions for various acetophenone analogues and physiological properties of β -ketoamides.

O2.1.2 *Colorism at SCSU**

Author(s): Abigail Oladapo

Mentor: Professor Theresa Marchant-Shapiro

Department: Political Science

Abstract: This project will be analyzing the experiences of black students on campus and how their experiences with professors varied based on their individual skin tones.

*This project involves issues of social justice

O2.1.3 *An Examination of Food Insecurity, Mental Health, and Drug and Alcohol Substance Behaviors Among College Students*

Author(s): Latasha Neal

Mentor: Victoria A Zigmont, PhD MPH

Department: Public Health

Abstract: Studies in the United States have estimated that nearly half (43.5%) of postsecondary students experience food insecurity (Nazmi et al., 2018). At SCSU, about 30% of SCSU students are food insecure as well (Zigmont et al., 2020). Food insecurity is strongly correlated with poorer mental health and increases in substance use behaviors. This study investigates if there are any relationships between food insecurity, mental health and substance use behaviors among students attending SCSU by conducting a secondary analysis of the 2020 Student Health Survey conducted at the institution. A total of 589 undergraduate students participated in this study. Approximately 38.5% students were considered food insecure, 24.8% experiencing low food security, while 13.8% were considered to have very low food security. Results indicate a statistically significant relationship between having a diagnosis of depression and experience of depressive symptoms among food insecure students at SCSU. A significant correlation was also found between marijuana use in the past 30 days and being food insecure. The results of this study will contribute to the existing knowledge of the food insecure students at SCSU and will assist in the development of programs that cater to the needs of this population.

O2.1.4 *The relationship between disability, education and poverty*

Author(s): Michael Gaffney

Mentor: Matthew Miller, PhD.

Department: Geography

Abstract: Research has shown that there is a strong correlation between having a disability and low educational attainment as well as low income. By utilizing data from the 2018 five year American Community Survey this research examines this relationship in order to establish where it exists and the strength of the relationship. It is hoped that the current research could be used to forecast where limited resources need to be made available both at the state and county level.

O2.2.1 *"La Gringa": A Latina's Education in Whiteness and Class**

Author(s): Lupita Barajas

Mentor: Professor Charles Baraw

Department: English

Abstract: This comic memoir that will serve as my honors thesis will be about my personal experiences growing up confused about my ethnic identity and how I use my white privilege to help others in the Latinx community. It's quite common for white Latinas to talk about their struggles growing up white-passing. What they fail to discuss, however, are the privileges that comes with being white passing. The graphic memoir will have a present-day "me" reflecting back at my childhood and illustrating instances where I was isolated for being Latina, but also the moments where I received different treatment from my family for being white. The conclusion of the comic memoir will show a present-day "me" coming to terms with my white privilege and how my experiences growing up effected my activism.

*This project involves issues of social justice

O2.2.2 *DIY Comic- Bookself*

Author(s): Lyndsey Robinson

Mentor: Professor Charles Baraw

Department: English

Abstract: In a world where you are represented by a single object, how do you define yourself when you feel others have already defined who you are. Can you use skills from regulating anxiety to make peace with the knowledge that others will never see you how you see yourself? How does a person come to terms with the fact that 'identity' is an ever-changing thing, an open-ended question that one spends their entire life on understanding and learning about?

Most of the comic will be done in flashbacks and aspect to aspect transition to show Book's thought processes during the therapy session. It will also be viewed through the lens of IFS (Inter Family System) therapy, or the idea that people are made of emotions called 'parts' that work together with a 'Self' part as well. There is no specifically good or bad 'part', which Book and their therapist relate to how others view Book as well. In addition, the art of the comic will use the surrealist visual motif of object heads, which is when a person is represented by a singular item or object as their head as a means of identification (the most popular being a computer screen or other electronic device). Book is, as the name would suggest, a book, but will change titles and genres to both reflect Book's personal feelings as well as show how others view them. Other characters will have similar depictions to show Book's way of identifying them.

O2.2.3 *"DIY Comic: Border Migrations"*

Author(s): John MacDonald

Mentor: Professor Charles Baraw

Department: English

Abstract: Thousands of Mexicans cross the land bridge between North and South America to seek the freedom that America provides, some fleeing corrupt governments or dangerous gangs. Though the conditions at the U.S Mexico border are well known, few talk about the actual conditions of the journey they embark upon in the Sonoran Desert, one of many entry points to the U.S.A. To illustrate some of the dangers that Mexicans would face, I will be focusing on another large-scale migration that occurred millions of years ago during the ice age called the Great American Interchange. To this end, I will apply features and characteristics of ice age animals endemic at the time to characters.

The story will focus on Jim Platensis, a mysterious figure cloaked in a black robe to hide his identity. He is travelling to South America to "stop and smell the roses" (what most herbivores quote as the unofficial reason). While he is able to pass the S.A.B.E.R guards (Specialized army barring emigrating ruminants) with ease, he observes a family being denied entry. Along his journey he will witness the harsh and dangerous state of the Sonoran which raises the question: "Is it worth it?"

O2.2.4 *The Last and the First: Homelessness and Religious Narrative in New Haven**

Author(s): Jacob Chamberlain

Mentor: Dr. Cindy Stretch, English Department

Department: English

Abstract: Religious narrative is among the most fundamental tools human beings use to understand themselves and their world. There are few forms of human storytelling more pervasive and powerful in helping communities create a locus of identity and belonging. However, the stories of the faithful do not always receive equal attention. Too often, the deciding factor in who gets their story told is a matter of privilege -- leaving marginalized communities without the platform to have their voices heard. In a time of growing wealth inequality coupled with a lack of affordable housing, New Haven's low-income and unhoused residents face a greater threat to their narrative capacities than ever before. This paper seeks to examine the lived experience of homelessness in New Haven and the spiritual narratives homeless authors use to overcome it; it will attempt to come to a deeper understanding of how religious narrative enables its author to transcend the alienating experience of homelessness through an analysis of religiously-informed stories, poems, and autobiographies. As its primary source, it draws upon submissions to the Elm City Echo, a local literary magazine written entirely by authors experiencing homelessness in New Haven. Secondary sources include the work of Yale Divinity Prof. Willie Jenkins, literary scholar Jonathan Gottschall, and French anthropologist Marc Augé. It will demonstrate the basic human need for narratives that imbue the individual with a sense of dignity and purpose -- regardless of their physical surroundings.

*This project involves issues of social justice

O2.2.5 *The Power of the Gaze in Concentration Camps*

Author(s): Elizabeth Mercado

Mentor: Steve Larocco, Professor of English

Department: English

Abstract: In his essay, "Panopticism," from *Discipline & Punish: The Birth of the Prison*, Michel Foucault writes that the major effect of the Panopticon, a concept brought to life by placing a central tower within a circle of prison cells (Ethics Explainer: The Panopticon) is "to induce in the inmate a state of conscious and permanent visibility that assures the automatic functioning of power" (Foucault 6). Foucault's essay focuses on the idea that visibility can be used as an effective form of discipline; by constantly being watched by those in power, prisoners feel they have no choice but to act accordingly. Foucault also introduces the concept of the "gaze," writing, "[i]nspection functions ceaselessly. The gaze is alert everywhere" (Foucault 2). Although Foucault focuses his idea of visibility on the concept of the Panopticon, the same theory can be applied to the way German concentration camps were run during the Holocaust. The idea of treating the prisoners as a mass entity connects to some of the same techniques used on the prisoners in the Panopticon; in both the concentration camps and the Panopticon, visibility was used in part to discipline; however, Foucault suggests that the gaze is used in a productive way, reforming the prisoners. Primo Levi's Holocaust memoir, *Survival in Auschwitz*, uses Foucault's theory of the gaze, but reveals that concentration camps used the power of visibility to not simply to reform its prisoners, but to demolish every aspect of humanity in man, forcing them to work to simply stay alive.

O2.2.6 *The Effect of Foucault's Concept of Power on Levi's Experience in a Nazi Concentration Camp*

Author(s): Liz Getts

Mentor: Steve Larocco, Professor of English

Department: English

Abstract: In this paper I analyzed the effect of Foucault's ideas on visibility according to Levi's experience as a prisoner in Auschwitz. In my presentation I'll discuss the theory I researched and relate it to modern day social issues such as increased governmental power, especially during the pandemic.

O2.3.1 *Serving as a Teaching Intern During COVID19*

Author(s): Regina Misercola

Mentor: Professor Charles Baraw

Department: English

Abstract: Take interning in an English classroom, throw it online and do it during a pandemic. This past fall semester, I served as a teaching intern in ENG 307: Literary Analysis. I had had roles in classrooms before, but interning in a virtual classroom, during a pandemic, was uncharted territory. Through the computer screen, I learned to attune to students, their needs, and emotions, both spoken and unspoken. What was once easily recognizable in a classroom became like mining of gold in the dark. To know if a student was struggling, I looked for facial cues in students' virtual boxes, missing assignments, or simply a camera turned off. Through this careful attention, I facilitated a sense of community and trust between the students and I. And, perhaps both most challengingly and most rewardingly, I engaged in discourse with my supervising professor on ethical grading, especially during a time of distress for many students. Interning online challenged me to recognize every student through the screen and nurture an environment where students felt eager to learning and open to expression, both in terms of our course texts and topics and beyond.

O2.3.2 *Teaching Internship*

Author(s): Crosby Fox

Mentor: Professor Charles Baraw

Department: English

Abstract: If you are at all interested in unpacking the inner workings of professors' rationale for their approach to teaching a course, then you may thoroughly enjoy a teaching internship. The insight one gains from a teaching internship is incredibly valuable—especially for students (like myself) pursuing a career in education—because of just how instructional and informative the experience truly is. As an intern for a Shakespeare course, I worked closely with my professor to explore how he goes about grading various assignments, discussed the various methods for facilitating effective class discussion, as well as a wide range of other topics. In my presentation, I will discuss the observations I gleaned from being privy to students' assignments and the professor's feedback to students at different levels. I will also reflect and elaborate on a class period where fellow intern, Miranda Kross, and I took over instruction for an entire class. Being given the freedom to select a play of our choice as well as any aspect of the play as the basis of class discussion was tremendously educational, for we were able to put our numerous insights gained throughout the internship to use. No matter what course you decide to select for a teaching internship, the experience is undoubtedly unique and exceptionally educational. My experience has further prepared me for a career in teaching, and never before have I worked so closely with a professor to unpack all that goes into the complex, creative, and rewarding practice that is teaching.

O2.3.3 *Interning at SCSU*

Author(s): Samuel Martin

Mentor: Professor Charles Baraw

Department: English

Abstract: How does interning in a comic class connect to special education, I asked myself last fall. At the time, I did not know the answer to that question, but now I am starting to see the connection.

This semester, I am interning in Professor Baraw's ENG 218 class. I would best describe the position as a "trusty sidekick". I work along the professor in our online classroom to encourages learning and community-building. It is a real challenge to engage students virtually but being an intern has taught me strategies to keep the students' camera on.

Education is all about data and evaluation. I am delighted to be involved with grading assignments and providing constructive feedback. Grading is a lot harder than it looks! Commenting on written work is almost like a science, providing language that supports the learner rather than targets them.

The perspectives and teaching techniques that I am learning about through interning support my education courses in training me for my future classroom.

O2.3.4 Internship in Teaching Writing Panel

Author(s): Miranda Kross

Mentor: Professor Charles Baraw

Department: English

Abstract: What's the most important part about teaching? No, really, you tell me. As a teaching writing intern for ENG 323: Shakespeare II, I've participated in curriculum building, grading, and discussion moderating, exploring that the most fundamental aspect of teaching is the need to keep learning.

P6.1 *Word Reading Difficulties in a Child with Cortical Visual Impairment (CVI)*

Author(s): Annie Prusak & Caitlin Yarrish

Mentors: Jennifer McCullagh, Au.D., Ph.D., CCC-A & Richard P. Zipoli, Ph.D., CCC-SLP

Department: Communication Disorders

Abstract: Decades of literature argues whether auditory processing and phonology skills are related. Auditory processing and phonological assessments were conducted on school age children to investigate this relationship further. One test subject has Cortical Visual Impairment (CVI) resulting from a perinatal, hypoxic, bilateral parieto-occipital infarction and subsequent seizures. This poster is a case study focusing on his performance on the phonology and literacy testing battery. The focus of this study is to expand on the findings of Ek and colleagues, who studied four children with CVI, which demonstrated that children with CVI experienced slow reading abilities and extremely low processing speeds on the Wechsler Intelligence Scale for Children. Our study introduced phonological awareness and rapid autonomic naming tasks because these skills are predictive of reading ability. The testing battery included subtests from the following measures: Comprehensive Test of Phonological Processing-2, Woodcock Reading Mastery Tests-III, Test of Word Reading Efficiency-2, and the Gray Oral Reading Tests-5. Orthographic stimuli from the tests were adapted to a 26-point font with double spacing and triple kerning to meet specifications provided by the subject's Teacher of the Visually Impaired. The test subject performed in the below average range in timed tasks, he could be described as an accurate but not automatic reader. We found evidence of deficits that could not be solely attributed to slow processing of print, suggesting more global deficits.

Educators and clinicians who work with children with CVI should continue to interpret timed measures of word recognition and reading fluency with caution.

P6.2 *The Perceptions of Culturally Diverse College Students who Stutter**

Author(s): Katarina Viniczay

Mentor: Sujini Ramachandar, PH.D., CCC-SLP

Department: Communication Disorders

Abstract: This study investigated how college students from various cultures who stutter are perceived by college students and professors. A survey was distributed to college students and professors with questions regarding their perceptions of college students who stutter and college students who stutter and are culturally diverse from them. Participants were asked about their perceptions of college students who stutter socially, academically, and in areas such as the workplace. Themes in survey responses such as perceiving college students who stutter as anxious or marginalized have been found. Responses indicate that not all college students and professors view college students who stutter and are culturally diverse from them the same as those who do not stutter and are a part of their culture. Responses also indicated that some students and professors aim to be supportive of college students who stutter and do not view them differently from their peers.

This project aims to bring attention to the perceptions of and possible stigmatizations that culturally diverse college students who stutter face. It is important that all college students feel comfortable and accepted. Having a communication disorder can sometimes make this harder. Individuals sometimes perceive others who are culturally diverse from them in a different way than individuals from their own culture. Therefore, this study was designed to investigate what perceptions of college students who stutter from various cultures are present. The results of this survey support the need for more education regarding stuttering and acceptance of those who stutter for the general public.

*This project involves issues of social justice

P6.3 *Computational study of the double bond isomerization in the synthesis of cephalosporin analogs*

Author(s): Jenna Krechko

Mentor: Dr. Ericka C. Barnes

Department: Chemistry

Abstract: The β -lactams family of antibiotics include the fungal-derived penicillins or "penams", and the cephalosporins or "cephems". In this study, the isomerization of a specific double bond is currently the biggest hurdle in the development of new chemistry to make cephalosporin analogs. The molecular structures, vibrational frequencies, and Gibbs free energies of cephalosporin intermediates are calculated using B3LYP/6-311G+(d,p). The results are compared with experimental observations and will aid in the development of new chemistry for synthesizing cephalosporin analogs by way of Suzuki coupling reactions on cephem compounds.

P7.1 *Effects of Explicit Versus Implicit Metacognitive Monitoring and Regulation on Student Academic Performance*

Author(s): Lauryl Giuliano

Mentor: Cheryl C. Durwin, Ph.D.

Department: Psychology

Abstract: This experiment investigates the following question: “What effect does engagement in metacognitive monitoring and regulation have on academic performance when students are instructed to actively write down their predictions and self-evaluations before and after completing an academic task, versus only mentally monitoring their thought processes and strategies?” The purpose is to discover if the implicit nature and practice of monitoring and regulation are sufficient in strengthening students’ academic performance, or if taking the extra time to write down these types of metacognitive thoughts might enhance their effects on student performance. Participants will be 20-30 college students of any age and academic major attending any university in the United States. All participants will be asked to complete a short, online quiz about an SAT-style reading passage through a Google Form. They will be randomly assigned to two groups, one of which will be asked to write down their responses to a set of questions that promote metacognitive monitoring and regulation before and after completing the quiz (i.e., “How well do you think you will do?”, “How difficult do you expect this task to be?”, “What strategies will you use to complete this task successfully?”, etc.). The second group will only be asked to mentally respond to the same set of questions before and after completing the quiz. All subjects’ academic performance will be measured and evaluated by their overall score on the administered quiz. Data will be collected in mid-April. Results and conclusions will be discussed.

P7.2 *Spatial and Temporal Patterns in Norwalk Harbor Sediment Contamination*

Author(s): Renee Chabot

Mentor: Vincent Breslin, Professor, Environment, Geography and Marine Sciences, Co-Coordinator, Werth Center for Coastal and Marine Studies

Department: Environment, Geography, and Marine Sciences

Abstract: The Norwalk harbor is an active and economically important harbor located along the Connecticut shoreline in western Long Island Sound. The harbor has many possible sources of contamination such as municipal wastewater treatment plants, coal/oil combustion, battery manufacturing, and historical contamination from the hatting and pottery industries. 6 Previous studies have shown that the harbor sediment is contaminated with metals of environmental concern. Present day, a large portion of Norwalk’s economic growth has come from their active shellfishing industry and it is essential to protect the shellfish from the contaminants within the harbor sediments. The objective of this study was to determine the spatial and temporal trends in metal contamination. Sediment samples were collected in three separate cruises in 2018-2019 to determine the sediment physical and chemical properties of Norwalk river and harbor sediment. Results show that there is a well-defined spatial trend, with sediment metal contamination decreasing from north to south in the harbor. Sediment copper, zinc, and mercury concentrations ranged from 169 to 61.3 mg/kg, 396 to 136 mg/kg, and 1.23 to 0.23 mg/kg respectively. The spatial trends in sediment metal contents correlated with the sediment physical properties (loss on ignition values and grain size). Results of this study were then compared previous studies within the past four decades and results showed significant decreases over time in sediment metals within the river and inner harbor sections of Norwalk.

P7.3 *About Covid-19 Vaccine (Moderna, Pfizer and Johnson-Johnson)*

Author(s): Z’hane Ellison

Mentor: JiongDong Pang, Ph.D.

Department: Chemistry

Abstract: This research presentation will be for educational purposes to inform the public about the current approved COVID-19 vaccines: Moderna, Pfizer, and Johnson and Johnson and to answer to any speculations that they may have or any questions that they have. As someone who wants to become a physician assistant, I wanted to do something that will help the general public by informing them of the safety of the vaccine and why they should consider getting it, because some may be too scared and skeptical. It is understandable, with a pandemic, it is scary for anyone. That is why I want to give them as much information and clarity as possible to eliminate any of those fears.

P8.1 *A Review and Analysis of Natural Products as a Treatment for Lyme Disease*

Author(s): Alyssa Rolls

Mentor: Candy S. Hwang, Ph.D.

Department: Chemistry

Abstract: Lyme Disease is caused by the bacteria *Borrelia burgdorferi* and is mainly transmitted by the tick genus *Ixodus*. This disease has infected approximately 340,000 people a year and is increasingly infecting more people each year. The antibiotics that are currently used to treat the disease are doxycycline, cefoperazone, and daptomycin, but often times are not effective at killing all forms of the bacteria (i.e., spirochetes, round-bodies, and biofilms). My research project focused on how effective natural products were at treating Lyme Disease and how they compared to the efficacy of commonly used antibiotics. I performed literature searches to find eight natural products and the three most promising candidates were meropenem, tetracycline, and vancomycin. We then performed a structural analysis between the three antibiotics and the candidates to determine the similarities and differences in functional groups. Eight natural products were found to be more effective at killing all forms of the bacteria compared to the traditional antibiotics, which were unable to kill the round-body and biofilm forms. Stevia was more effective at killing bacterial subcultures and bacterial growth on different surfaces, while bee venom and its component melittin were found to be more effective at killing bacterial subcultures than the three antibiotic treatments individually or in combination. Next steps are to test these compounds with similar concentrations to the antibiotics and determine how the molecular structure of the natural products contributes to its ability to be effective against the bacteria responsible for Lyme Disease.

P8.2 *Detection and Quantification of taste cells within a taste bud in a manatee*

Author(s): Manjot Kailey

Mentor: Meghan Barboza, PhD.

Department: Biology

Abstract: In the sensory system of a manatee, quantification of taste cells has had little to no research. Taste cells are important for manatees because not only do they use their taste cells to detect toxins, but also to determine the saltwater gradient around them. This study focuses on quantifying taste cells within the taste buds on a manatee tongue. All tissue samples were previously fixed and embedded in paraffin. For this project, samples are sectioned on a microtome, stained, and examined under a light and fluorescence microscope. H&E and DAPI stains are used to locate and quantify the taste cells. Two techniques are being employed. One uses Volocity software along with Nikon Eclipse Ti microscope to create 3D images using z-stacks to quantify the taste cells. The red fluorescent channel is used to detect fibers and blue nuclei. Both channels are stacked on top of each other, so the red fluorescent shows the surrounding tissue and blue fluorescent shows the taste cells. In addition, cell counts on light microscope images using an Olympus Infinity camera are being completed. Many types of epithelium and mucosal glands have been observed in the tissue, but taste cells are limited to the foliate papillae.

P8.3 *Tissue Hunt for Smell Within a Seal's Nasal Cavity: Differentiation of Epithelial Tissues Through the Analysis of Micro-Ct Scans*

Author(s): Camila Ramos

Mentor: Meghan Barboza, PhD.

Department: Biology

Abstract: Among the many mysteries within a seal's skull, segmenting and quantifying epithelial tissue within the nasal cavity is a challenge yet to be overcome. This research project is based on the use of Dragonfly, a software that allows for the proper analysis of micro-ct scans of a harp seal's head; allowing for measurements to be taken, including volume and bone density, surface area, etc. In addition, we have used a bone bandsaw to grossly segment the skull and taken representative samples for histologic examination using H&E staining. We aim to use histology to differentiate the two types of epithelium present within the nasal cavity: olfactory and respiratory. It has been difficult to quantify epithelium on the software, therefore, our goal has become to differentiate between the bone surrounding the nasal cavity and present in the septum, from the bone making up the turbinates within the cavity. It will then be possible to quantify the epithelium's surface area; since epithelium lays on top of the bone. The goals of this project are: the segmentation and quantification of turbinate surface area and the proper identification of tissue through gross anatomy of a seal's skull and histologic techniques.

P9.1 *Solitary Chemosensory Cell Identification in Manatee Tracheal Epithelium using Ga gustducin*

Author(s): Brienne Simmonds

Mentor: Meghan Barboza, PhD.

Department: Biology

Abstract: The purpose of my research project is to identify solitary chemosensory cells in tracheal epithelium of the Florida manatee, *Trichechus manatus latirostris*. Solitary chemosensory cells are located in the nasal cavity and respiratory tract and are believed to help with innate immunity by triggering a response to protect the respiratory system when bitter irritants are detected. I am comparing the gross anatomical differences of the trachea, which has a smooth side and a bumpy side. I am using immunohistochemical staining to identify SCCs and assess which methods are best in finding them. I am staining the tissue samples with Ga gustducin (GNAT), a protein that helps taste receptors identify umami, sweet, and bitter. Slides are sectioned on a cryostat at 7um and stained with the GNAT antibody at 1:100, 1:200, 1:300, and 1:400 concentrations on both the smooth and bumpy epithelium. I have also tested the chromogenic protein detector Diaminobenzidine in different time intervals and have found that fifteen seconds works best not to overstain the tissue. Potential SCCs have been identified in smooth epithelium, and I continue to determine the best GNAT dilution for SCC identification.

P9.2 *A Virtual Study and Modification of the Dad Locus in Drosophila melanogaster*

Author(s): Marisa DeCiucis, Brittany Mignott & Mikolaj Sulkowski

Mentor: Mikolaj Sulkowski, PhD.

Department: Biology

Abstract: In fruit flies, Dad encodes for an iSMAD that are in the BMP, or bone morphogenetic pathway. This gene is responsible for growth regulation and developmental patterns in *D. melanogaster*. If this gene malfunctions, then the BMP pathway will not be controlled and irregularities in cell development may occur. Thus, Dad was studied to understand development and the biological mechanisms of underlying diseases like cancer. To study Dad and its effect on the BMP pathway, we created a genetic scheme using CRISPR-Cas9 on Benchling. This involved the entire Dad locus excised as well as its protein domains. Secondly, a fluorescent tag was inserted in the Dad locus to track Dad's cellular processes. Lastly, a FRET construct between Dad and other pathway components, Mad and Medea, was designed to understand how iSMADs inhibit BMP signaling.

P9.3 *Computational Investigation of Quorum Sensing Inhibition in β -ketoesters*

Author(s): Vincent Dias, Minahil Gilani, Candy Hwang & Ericka Barnes

Mentor: Dr. Ericka C. Barnes

Department: Chemistry

Abstract: Small, biosynthetic molecules such as β -ketoesters have demonstrated quorum sensing inhibition, which can prevent bacteria from forming biofilms that lead to antibiotic resistance. B3LYP/6-311+G(2d,p) geometry optimizations, vibrational frequency, polarity, and excited state calculations of fifteen β -ketoester analogues were carried out to investigate trends in charge distribution and lambda max values in UV-Visible spectra. Trends in these properties can provide insight in how quorum sensing inhibition is impacted by the substituent on the aromatic ring of each analogue.

