



2023 Austin College Scholars Conference President's Letter of Welcome

Welcome to the Austin College Scholars Conference! Austin College is pleased to showcase our students' intellectual curiosity and their participation in the pursuit of new knowledge and achievements. Over the course of the past 11 years, more than 1,800 students have presented their outstanding work at ACSC.

One of the hallmarks of an Austin College education is our belief that learning takes place everywhere. Our students go beyond the boundaries of the classroom and into the laboratory, the studio, the stage, and the community. The work presented here demonstrates how students have extended their learning across many disciplines and methods of study.

Research and scholarship are not only valuable in their own right; the process brings with it many other positive outcomes. Students develop a variety of communication skills to present their results. They gain persistence, patience, and commitment by testing their own hypotheses, considering alternate solutions, and seeing their own original research questions through to completion. All of these efforts serve students well in whatever interests they pursue into the future. Another hallmark of an Austin College education is the individual mentoring relationships our students find here. Faculty members demonstrate their own intellectual curiosity through academic pursuits and also create structures that both engage students and provide opportunities for them to embark on independent study. Without faculty support and guidance, this conference would not be possible. I would like to particularly thank the conference planning committee for the time and energy they spent providing a showcase for student achievement of such depth and breadth.

This conference is designed to encourage dialogue and engagement. We hope you will take this opportunity to meet new people and encounter new ideas.

Sincerely,

Steven P. O'Day, J.D., L.H.D.
President
The Cecil H. and Ida M. Green
Chair of Creative Educational Leadership

Schedule of Events

SATURDAY ~ MARCH 25

9-11am	POSTER SESSION II - Grum Sanctuary
11:15-12:15pm	RESEARCHING SOCIAL JUSTICE IN NORTH TEXAS - Wright Campus Center Living Room
1-2pm	BORDERLESS POETRY - Wright Campus Center Living Room
2:15-3:45pm	ORAL SESSION II - Wright Campus Center Classrooms
4pm	<i>Beautiful Music Together</i> - Craig Recital Hall
5pm	RECEPTION - Art Gallery, Craig Hall

Student Contributors

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POSTER AND ORAL PRESENTATIONS

Breast Cancer Healthcare Access in Rural and Low-Income Women

Abigail George

Faculty Sponsor: Dr. Andy Carr

Oral Presentation

The World Health Organization (WHO) states that good health is the culmination of socioeconomic status (SES), genetics, access to health services, and more. The literature indicated that the relationship between SES and health exists on a gradient where increases in SES correspond to better health. However, in breast cancer incidence, the gradient disappears only to reemerge when looking at mortality rates (Adler and Ostrove, 1999). Those with low SES also have limited access to health services, causing increased rates of late-stage diagnoses as there is little access to deterrents (Adler and Ostrove, 1999; Roberts, 2011).

This study focused on low-income and rural women and how their identities shaped breast cancer issues, such as body image, sexuality, and femininity. While all women diagnosed with breast cancer are affected by these issues, low-income and rural women are at an increased disadvantage due to their lack of healthcare access and resources. These women are at an increased risk of developing late-stage diagnoses, which are associated with more invasive treatments and surgeries that they often do not have access to due to financial reasons, familial responsibilities, or the providers available in their environment. Specifically, many women do not have easy access to reconstruction surgery, which limits their psychological recovery. Rural and low-income women require better access to reduce the existing health disparities that breast cancer only exacerbates.



Mycenaean Terracotta Figurines and the Archaeology of Religion

Cayden Griffith

Faculty Sponsor: Dr. Brian Watkins

Oral Presentation

By analyzing material culture, realizing the complexities of the past, using complex ethnographic analogies, and acknowledging that the view of the archaeologist is not objective we can get a better sense of the past. Using this lens we can see the possible flaws in how Mycenaean terracotta figurines have been interpreted and attempt to show that the various forms of these figurines may have different uses and functions important in ritual, religious, and other contexts. Even the same type of figurine may have different uses and functions based on its particular context, yet all may possibly have religious undertones due to the Mycenaean worldview.

Although material culture cannot reveal the full complexities of the past it should be further explored as it does in fact play a vital role in our attempt to understand the past. Through analyzing the various forms and interpretations of Mycenaean terracotta figurines we may be able to have a greater understanding of the domestic and religious practices of the Late Helladic. I will argue that the feminine terracotta figurines in particular have a role in understanding popular religion of the Late Helladic period, and possible variations. Additionally, this may give us a better understanding of Mycenaean religion's relationship to that of later Greece.

Use of Classical Mythology in 4th-6th Centuries CE Synagogues in Palestine

Stephanie Hardin

Faculty Sponsor: Dr. Martin Wells

Oral Presentation

It is common in Late-Roman (3rd-7th centuries CE) synagogues in Northern Israel to have mosaics depicting scenes from the Hebrew Bible. The mosaics also commonly include motifs from Greek and Roman mythology. I am interested in this use of pagan iconography in Israel in these Jewish contexts of the Late Roman period: why are they here? I concentrated on two pairings of Greek and Jewish characters: Odysseus paired with Jonah and Orpheus paired with King David. To investigate this question I went to Israel, where I did in-person research at the archaeological site of Huqoq and its early 5th century CE synagogue in June of 2022. This involved going to some of the other sites relevant to my research. Lastly, I reviewed the literature regarding Jewish-Greek cultural integration. I found repeated uses of Odysseus-Jonah and Orpheus-David over four centuries (middle of the 3rd century CE to 7th century CE) in multiple places including North Africa, Huqoq, Gaza, and Syria. This shows the long-term adoption of external motifs and stories in Late Antiquity. This research provides evidence of cross-cultural exchange around the Mediterranean. My research is significant as it discusses the history of the cultural integration of Greeks and Jews as well as the iconographic mixing within Jewish spaces. This research, taking the approach of looking at this from a classical lens, is novel as most research has been done from the tradition of the Hebrew Bible.

"Good Immigrants" and The Dreamer Narrative

Judith Juarez

Faculty Sponsor: Dr. Terry Hoops

Oral Presentation

The Dreamer Narrative's purpose was to assign empathy and worthiness on the Dreamer population, especially during the Obama Administration's fight for The DREAM Act and implementation of Deferred Action for Childhood Arrivals (DACA). Despite its noble beginnings, the effects of this narrative are toxic and unrealistic for a population as vulnerable as undocumented immigrants. By assigning strict regulations, both DACA and The Dreamer Narrative have removed the humanity of undocumented immigrants with and without DACA by forcing them to prove their worth solely through what they provide for the United States, whether that be academically or economically. This study delves into interviews with DACA recipients about their lives and views of themselves within the context of American society. Whether working or in school, DACA recipients have strict views on work ethic and productivity, created by the unrelenting demands that maintaining DACA requires. They all shared a desire to visit their home country, anxious feelings regarding their status, the future of DACA, and the need for more than just that. On top of this, having parents who share their status but are ineligible for DACA produces further issues with either fear of family separation or are living through the reality of it. Examining the issue through a social justice lens, undocumented immigrants are currently suffering through psychological, legal, and economic struggles as legislation seemingly does nothing to help.

Purification and Overexpression of Alpha B Crystallin

Carlos Suarez & Duy-Dan Thai

Faculty Sponsor: Dr. James Hebda

Poster Presentation

Alpha B Crystallin (α B) is a small 22kDa heat shock protein commonplace in the human organism, especially in the eye lens. Its function is to act as a chaperone and bind to misfolded or denatured proteins to prevent them from aggregating. Protein aggregation is the cause of many degenerative diseases, such as cataracts. This phenomenon is regulated by the interaction between C-termini of α B dimers, which is characterized by palindromic sequences that allow for binding in two directions. Previous studies have shown that the strand exchange of the C-termini affects chaperone function. Here we show how mutations in the palindrome α B sequence affect chaperone function by inducing irregular electrostatic interactions that will favor one orientation over the other. In the present project, we have been producing and overexpressing more wildtype (WT), K92E, E156K and E164K mutants to replicate previous research findings on α B aggregation prevention of insulin. Past results suggest that the K92E mutation is close to wildtype; and that mutations E156K, E164K show less effective chaperone function. Future steps involve the completion of mutant overexpression and purification, and re-trial of insulin aggregation assay.

Beta-2-Microglobulin Protein Misfolding

Rahul Hanumandlu

Faculty Sponsor: Dr. John Richardson

Poster Presentation

Beta-2-microglobulin (B2M) is a 99 amino acid long protein chain. When this protein spontaneously misfolds, it can then induce soluble Beta-2-microglobulin molecules to misfold creating aggregates. These aggregates form into amyloid plaques that deposit into the cartilaginous joints of the body. Normally Beta-2-microglobulin is filtered out by the kidney before it has the chance to misfold. However, patients with malfunctioning kidneys are not able to properly filter out the circulating protein and aggregates begin to develop. Even with the help of hemodialysis, the aggregates continue to accumulate. The plaques clump in the joints and can lead to a disease called Dialysis Related Amyloidosis (DRA). DRA can cause symptoms such as severe joint pain. Researching B2M misfolding will not only provide more insight into DRA but could also allow for better analysis of other protein misfolding-related diseases such as Parkinson's, Alzheimer's, and even Type II Diabetes. The purpose of this project was to analyze the effects of mutating particular amino acids on B2M aggregation. First, samples were purified to isolate the mutant and wild-type B2M proteins. Then Thiovalin T assays were performed to compare the wild-type B2M with mutant K58T.

Beta-2-Microglobulin Aggregation Assay Development

Jed McPike

Faculty Sponsor: Dr. John Richardson

Poster Presentation

Beta-2 microglobulin (B2M), a 99 residue protein capable of forming amyloid, is often associated with Dialysis Related Amyloidosis (DRA), a disease correlated to individuals treated with long-term hemodialysis. Although hemodialysis serves to filter out some solutes from the blood, the misfolded "seeds" that act as nuclei for amyloid formation are not removed. Given enough time the amyloid formed in the blood will deposit into cartilaginous tissues and form function-inhibiting plaques of misfolded aggregate.

Aggregation assays were used to determine the kinetics of amyloid formation. The Biotek Synergy H1 was used to detect the fluorescence of Thioflavin-T as it bonded to amyloid fibrils for a period of 10 hours. A pH of 2.5 was used to promote protein unfolding and increase amyloid formation as a result. However, initial B2M assay results conflicted with previous research. In order to diagnose the problem, pipetting techniques, assay solutions, number of wells, and instrument settings were varied.

New Mutants of Alpha B Crystallin and their Chaperone Function

Jennifer Qian

Faculty Sponsor: Dr. James Hebda

Poster Presentation

Alpha Crystallin B (α B) is a small heat shock protein (sHSP) that ranges between 17-24 kDa and is very abundant in mammalian lenses. Alpha-B and Alpha-A Crystallin make up 40% of the lens content and function as a molecular chaperone to bind to misfolded proteins in order to prevent protein aggregation within the eye, but mature lens fibre cells do not have organelles, meaning they are unable to recycle and produce new crystallin proteins. As a result, cataracts form due to how individual proteins are unable to maintain their structure or solubility, causing light scatter and loss of visual acuity (Moreau & King, 2012). Through analysis of α B's C-terminus, its nine residue palindromic sequence is involved in the dynamic strand exchange within dimers and allows for a variety of modes to interact and bind to neighboring molecules (Laganowsky et al., 2020). In this study, mutants were designed with expected electrostatic interactions and analyzed in parallel and perpendicular orientations, since α B's structural plasticity has been linked to its chaperone function and oligomer formation. Mutants were tested in aggregation assays with an insulin control to analyze the chaperone activity of each mutant in comparison to the wild-type. The goal of this study is to determine which mutant has an increase in chaperone function and a lower relative aggregation with respect to its binding orientation in hopes of furthering the onset of cataracts.

The Characterization and Recombinant Expression of Co-assembling Alpha-Helical Peptides

Austin Rue

Faculty Sponsor: Dr. James Hebda

Poster Presentation

Self-assembling peptide fibers have many applications including tissue engineering, drug delivery, and environmentally friendly textile materials. Previous peptide designs have features that require them to be synthetically produced, limiting the feasibility of large-scale use of self-assembling peptides. Previously, we designed three peptides for co-assembly: a positively charged 35-residue peptide, a negatively charged 28-residue peptide, and a negatively charged 21-residue peptide. In the current study, we characterize new peptides which are inspired by our initial design. Circular dichroism was used to determine the secondary structure of our peptides. Aggregation assays were conducted to track the assembly of higher-order structures in our samples. In addition to characterizing new peptides, *Escherichia coli* was utilized to test for the recombinant expression of our initial design, demonstrating that our designs may be efficiently generated under biological conditions. These experiments provide new information about how new peptide structures may more readily form fibers under the selected conditions. Peptides which only co-assemble when mixed are unique as they have the potential to be expressed in bacteria without being toxic to the cell, providing an efficient method for synthesizing such peptides. Our study also aims to provide evidence that our designs can be expressed in *E. coli* through

Purification and Overexpression of Alpha B Crystallin

Duy-Dan Thai & Carlos Saurez

Faculty Sponsor: Dr. James Hebda

Poster Presentation

AlphaB-crystallin is a small heat shock protein. Its function in the eye lens is to bend light and help maintain the transparency of the lens by acting as a protein chaperone. However, as an individual grows older in age, alpha crystallin no longer repairs itself and uncontrolled protein aggregation occurs resulting in cataracts. Based on previous research, the mutants have been designed and selected based on similar electrostatic interactions with those of the favorable wildtype. This research utilizes a nanophotometer to help review fractions that had protein overexpression at absorbances of 260, 280, and 320 nm. Here we show the different variants of AlphaB-crystallin which have been overexpressed and purified to determine whether they are more effective than the wildtype. Mutants E156K, E164K, and E156K + E164K have been purified and shown overexpression. With data gathered from the nanophotometer, the AlphaB-crystallin variants are ready to compare to the wildtype in order to determine its effectiveness as a protein chaperone. Immediate implications that this study has is the potential creation of a mutant variant capable of replacing the wildtype AlphaB-crystallin in older adults. Future research aims to also purify and test the K92E variant due to previous research indicating its similarity to the wildtype.

Effect of Anthropogenic Noise on Fox Squirrel Foraging Behavior

Elena Aventa

Faculty Sponsor: Dr. Jessica Healy

Poster Presentation

Anthropogenic noise can decrease an animal's ability to perceive threats, which could cause them to increase vigilance and decrease foraging in response to unfamiliar noise. Less time spent foraging means less energy for reproduction which can lead to decreased lifetime fitness. Many species are known to be negatively affected by anthropogenic noise, but there are no published studies about fox squirrels (*Sciurus niger*). My goal is to assess the change in foraging behavior in fox squirrels in response to anthropogenic noise (e.g., train noise). I hypothesize that vigilance will increase in response to anthropogenic noise and decrease foraging behavior. Squirrels will be exposed to 3 sound treatments (silence, natural noise, and anthropogenic noise). Each treatment will be played for 1 min to acclimate to noise prior to recording behavior every 5 sec for 1 min. Behavior will be categorized into vigilance, foraging (feeding with head down), alert feeding (upright with food in forepaws), grooming, or intentional movement. This research is important to broaden our understanding of how human expansion is affecting the behavior of various species. In the future, effects of noise pollution should be studied in a more natural setting. Since this study was conducted in a park, fox squirrels are habituated to human noise and may not respond to anthropogenic noise in the same way that animals in the wild would. We found a significant effect of wind and sound

Investigating the Effects of Metabolic Regulation on Telomere Dynamics in Hibernating Garden Dormice (*Eliomys quercinus*)

Adam Bel Hadj Kacem & Kenneth E. Otah Jr.

Faculty Sponsor: Dr. Jessica Healy

Poster Presentation

Hibernation is a biological process used by a wide range of mammal species to increase survival by avoiding predation and scarcity of resources. During hibernation, the organism's metabolic rate is regulated in a cyclic fashion between cooling (torpor) and rewarming process (arousal to euthermia). Reactive oxygen species (ROS) are released during the arousal process and increases the incidence of oxidative stress in some tissues. Telomeres protect the interior coding regions of the DNA from oxidative stress by acting as a protective buffer. This study used previously derived methods of quantifying telomere lengths to study their dynamics through the hibernation cycle of Garden Dormice (*Eliomys quercinus*). We hypothesized the telomere dynamics will be tissue specific and proportional to the metabolic activity of the tissue during arousal. Using RT-qPCR, we determined the relative telomere lengths (RTL) in DNA extracted from BAT, heart muscle, and liver tissues from twenty-seven male garden dormice. We predicted the brown adipose tissue (BAT) would have the greatest shortening of telomeres between torpor and euthermia. The liver samples would see some shortening of telomeres, and the heart tissue telomeres would not change significantly. We found that the telomere lengths were not different in any statistically significant way within each tissue between torpor and euthermia. The heart muscle tissue had significantly longer telomeres than both the BAT and liver tissue.

An Analysis of the Abyssopelagic Zone and the Potential Threats of Polymetallic Nodule Mining

Madison Bigler

Faculty Sponsor: Dr. David Aiello

Poster Presentation

Polymetallic nodules, or manganese nodules, are abundantly found on the sea floor. These nodules possess many important elements, such as cobalt, copper, and lithium. There has been an increase in demand for metals such as these in order to create electronic devices and vehicles leading to an increased need for alternative collection methods of these resources. The Clarion-Clipperton Zone, an area of the Pacific Ocean that is abundant with polymetallic nodules, is of specific interest to many mining companies. Nodules are mainly found within the abyssopelagic region of the ocean. Contrary to popular belief, much life is found here, and a wide diversity of organisms depend on the stability of this ecosystem in order to ensure viability. Although it is unknown exactly how mining polymetallic nodules will affect the organisms that reside in the abyssopelagic zone, there are potential risks that may impact both individual species and the environment as a whole.

Through the research done by different primary and secondary literature sources, the mining of polymetallic nodules has been shown to potentially disrupt areas largely due to potential wastewater recirculation, accumulation of toxic chemicals, and sediment plumes. Consequently, these hurt bioluminescent creatures, limit the filtering abilities of deep-sea corals, and deteriorate the health of species such as the dumbo octopus

The Effect of PA28 γ Expression in 4T1 Cancer Cells

Natalia Bowman , Isabel Ma, & Niharika Saran

Faculty Sponsor: Dr. Lance Barton

Poster Presentation

PA28 γ is an ATP and ubiquitin independent proteasome activator that is overexpressed in many cancer cells. In healthy cells, PA28 γ transcription is controlled through AP-1 following phosphorylation by p38, and translation is restricted through mir-7. Both pathways may be deregulated in cancers to impact the expression of PA28 γ in cancer cells. Butyrate treatment can reduce PA28 γ expression, but the mechanism for reducing PA28 γ expression is not understood. The goal of this project was to identify how cancer cells deregulate PA28 γ expression and how butyrate may be employed as a therapeutic treatment. Immunoblots and qPCR were used to understand how sodium butyrate impacts PA28 γ levels in 4T1 mouse mammary carcinoma cells. Sodium butyrate does reduce PA28 γ protein concentration in a dose and time dependent manner. In contrast, psme3 mRNA levels remained relatively constant, indicating that butyrate treatment is not affecting mRNA synthesis or degradation. Thus, butyrate is impacting the cell post transcriptionally, but further testing can elucidate the specific mechanism.

Observing the Effect of Sodium Butyrate on PA28 γ in 4T1 Cells

Natalia Boman & Dalton Cole Reese

Faculty Sponsor: Dr. Lance Barton

Poster Presentation

PA28 γ is an ATP and ubiquitin independent proteasome activator overexpressed in many cancers. In healthy cells, PA28 γ transcription is controlled through AP-1 following phosphorylation by p38, and translation is restricted by mir-7. Both pathways may be deregulated in cancers to impact the expression of PA28 γ . Butyrate treatment can reduce PA28 γ protein levels, but the mechanism for reducing PA28 γ expression is not understood. The goal of this project was to identify how Cancer cells deregulate PA28 γ expression and how butyrate may be employed as a therapeutic. Immunoblots and qPCR were used to understand how sodium butyrate impacts PA28 γ levels in 4T1 mouse mammary carcinoma cells. Sodium butyrate does reduce PA28 γ protein concentration in a dose and time dependent manner. In contrast, PA28 γ mRNA levels remained relatively constant, indicating that butyrate treatment is not affecting mRNA synthesis or degradation. These data suggested that butyrate is impacting the expression of PA28 γ at the translational level. To determine what was occurring mechanistically, half-life assays were performed on cells without butyrate and cells containing an 8mM dosage of butyrate for 48 hours. It appeared that the half-life of PA28 γ had remained between 6 - 9 hours between the treated and untreated, meaning that butyrate could possibly be affecting the mRNA of PA28 γ . Further testing is necessary to confirm how butyrate may be affecting PA28 γ pre-translationally.

Result of Mammal Survey at Hagerman National Wildlife Refuge

Carolina Coreas

Faculty Sponsor: Dr. Jessica Healy

Poster Presentation

Small mammals play a major role in maintaining the health of prairie ecosystems by feeding on insects and grasses. By feeding on these grasses, they aid in clearing several small areas at a time which in turn provides enough space and resources for new populations to grow. In the meantime, by feeding on insects, they control the population that would otherwise uncontrollably deplete the available plant life. When combined with other forms of maintenance, they contribute to the conservation and restoration of prairies. The survey was performed at the Hagerman National Wildlife Refuge, located in Grayson county in North Texas. This refuge serves as a space for the conservation, management, and restoration of native species and migratory birds that inhabit the woods and prairies along the Big Mineral arm of Lake Texoma. To account for each season, Sherman traps and camera traps were set up in different parts of the refuge during the months of March and August and have yet to collect data for this November and February of 2023. As of now, the Sherman traps have accounted for 8 species of mammals for both spring and summer, while the camera traps have accounted for 11 species in the spring. The individual camera trap photo captures have yet to be tabulated for the summer, but so far have accounted for at least 5 species. By performing this survey, we are calculating the species richness by habitat type (prairie vs. woods) which can help ongoing

Investigating the Role of CRISPR-Cas9 Editing on the Expression of PA28 γ and its Effect on p21 in Cancer Cells

Riley Cregg & Danya Van Vuuren

Faculty Sponsor: Dr. Lance Barton

Poster Presentation

PA28 γ is a ubiquitin and ATP-independent proteasome activator that is overexpressed in cancer and is linked to high rates of tumor metastasis. CRISPR-Cas9 editing can be used to target the psme3 gene which codes for PA28 γ . Since mice are diploid organisms, it is difficult to isolate cells with both copies of psme3 affected. Additionally, due to PA28 γ 's role in progressing the cell cycle, PA28 γ knockouts may be outcompeted by their unedited neighbors. Through screening via western blots, several heterozygous cells with reduced PA28 γ expression were identified and used for preliminary phenotypic analysis.

It has been shown that cancer cells with reduced PA28 γ levels have lower proliferation rates. In normal cells, PA28 γ is known to degrade p21, a cyclin-dependent kinase inhibitor active in G1 that halts the cell cycle. Based on this, it is hypothesized that decreased PA28 γ leads to an accumulation of p21, which may be linked to reduced progression through the cell cycle. Unfortunately, initial trials showed no visible identification of p21 using western blots. To produce detectable amounts of p21, cells were exposed to UV radiation and serum starved to elicit a stress response. The relationship between PA28 γ and p21 has not been able to be identified in preliminary tests, but further investigation will be conducted. By expanding our knowledge of how PA28 γ interacts with p21, PA28 γ 's larger role in the development of cancerous phenotypes can be more clearly understood.

Fox Squirrel Acorn Preferences and Behaviors on a College Campus

Madeline LeBlanc

Faculty Sponsor: Dr. Jessica Healy

Poster Presentation

Polymetallic nodules, or manganese nodules, are abundantly found on the sea floor. These nodules possess many important elements, such as cobalt, copper, and lithium. There has been an increase in demand for metals such as these in order to create electronic devices and vehicles leading to an increased need for alternative collection methods of these resources. The Clarion-Clipperton Zone, an area of the Pacific Ocean that is abundant with polymetallic nodules, is of specific interest to many mining companies. Nodules are mainly found within the abyssopelagic region of the ocean. Contrary to popular belief, much life is found here, and a wide diversity of organisms depend on the stability of this ecosystem in order to ensure viability. Although it is unknown exactly how mining polymetallic nodules will affect the organisms that reside in the abyssopelagic zone, there are potential risks that may impact both individual species and the environment as a whole.

Through the research done by different primary and secondary literature sources, the mining of polymetallic nodules has been shown to potentially disrupt areas largely due to potential wastewater recirculation, accumulation of toxic chemicals, and sediment plumes. Consequently, these hurt bioluminescent creatures, limit the filtering abilities of deep-sea corals, and deteriorate the health of species such as the dumbo octopus and viperfish. Impacts are likely to be seen for decades following initial mining disturbances.

Can Hazel Dormice Learn a Maze?

Adam Myers

Faculty Sponsor: Dr. Jessica Healy

Poster Presentation

Is it possible to retain memory post hibernation for animals? This matters due to the potential medical applications and unknowns about hibernation. We have plenty of cases where hibernating animals do not remember being "tame" post hibernation. However a recent, unpublished, experiment shows edible dormice (*Glis glis*) are able to retain some level of memory of mazes post hibernation. This project looked at what behavior hazel dormice (*Muscardinus avellanarius*) displays when initially put into a maze and if a maze can be taught to these dormice. This ultimately is for the purpose of testing the ability to retain memory post hibernation hibernators. Most of the previous literature on the hazel dormice is on their interaction with their environment and diet (Juškaitis, 2008). We found that there was a significant difference in behavior between male and female dormice within the maze. Also we found that it is possible to teach hazel dormice a maze, however they require a smaller maze than edible dormice.

Measuring Effects of Hibernation on Spatial Memory in 13-lined Ground Squirrels

Adam Myers

Faculty Sponsor: Dr. Jessica Healy

Oral Presentation

The goal of this research is to learn how hibernation affects spatial memory in thirteen lined ground squirrels (TLGS, *Ictidomys tridecemlineatus*). Hibernators like TLGS feed and fatten during a spring and summer active season, then sequester into burrows, cease food intake, and drop body temperature to ambient temperature in multi-day torpor bouts for several months in the hibernation season. During the active season, TLGS cache food and use primarily spatial memory to recover their caches. I tested spatial memory in TLGS by teaching them to complete a Barnes maze prior to hibernation, and then tested them in the maze post hibernation to check for retention of spatial memory. Additionally, I tested a new method for observing body temperature of hibernating TLGS non-invasively through the use of infrared cameras.

PA28 γ is Not a Factor in Age Related Changes in Immunity

Augustine Neiningger

Faculty Sponsor: Dr. Lance Barton

Poster Presentation

Immunoproteasomes are essential to effective antigen processing and presentation. Proteasome activators, such as PA28 γ , function in the proteasome system to promote MHC I presentation and CD8+ T cell development and activation. Mice deficient in PA28 γ have decreased amounts of CD8+ T cells numbers at adulthood, but later develop age-related spontaneous autoimmune symptoms. Previous studies suggest that age related immunity changes are due to specific antigen processing. We examined phagocytic efficiency using peritoneal macrophages and *E. coli* as a pathogen and found no differences in phagocytic efficiency related to age or PA28 γ expression. We monitored the maturation of TH1 and TH2 helper cells using flow cytometry and found no differences related to age. In the results of the flow cytometry, we found that PA28 γ had no effect on age related changes in T cell populations in the spleen. Using the western blot's, we examined the master regulator for T regulatory cell development FoxP3 and found no differences in expression related to age or genotype; however, we found that age is related to immunoproteasome expression. This is consistent with previous studies that immunoproteasome expression changes with age.

Examining Seasonal Difference in Telomerase Activity in Garden Dormice

Kenneth E. Otah & Adam Bel Hadj Kacem

Faculty Sponsor: Dr. Jessica Healy

Poster Presentation

The high metabolic rate of endotherms like Mammals makes it energetically expensive to maintain a high body temperature (T_b) when ambient temperatures are low. Mammals that hibernate reduce their T_b in multi-day torpor bouts where metabolic rate is dramatically decreased, resulting in energy savings over the cold winter months. However, rapid re-warming to euthermia from low torpid T_b ('interbout euthermia') may cause telomere disassembly and senescence, potentially resulting in telomere degradation and aging. Some hibernators (like Garden Dormice, *Eliomys quercinus*) may upregulate the telomere lengthening enzyme telomerase during torpor, preventing telomere shortening and extending lifespan. To test the hypothesis that telomerase is upregulated during interbout euthermia in garden dormice, I extracted whole-cell lysates from the livers of dormouse harvested at various stages of torpor and subjected them to digital droplet polymerase chain reaction to detect telomerase quantified at each stage. I found a significant difference in telomerase between dormancy stages or in dormouse fed or fasted before dormancy. Future directions will include increasing the sample size, analyzing fresher samples for PCR amplification and DNA extraction, using different tissues such as skeletal or adipose tissue, and carefully managing temperature. This research has implications for understanding and slowing the harmful effects of aging in humans.

Cost of Courtship in Mice

Lexi Ross

Faculty Sponsor: Dr. Jessica Healy

Poster Presentation

Courtship is a behavior that is typically performed by males and is of central importance in many species due to sexual selection. Sexually dimorphic traits and displays that are not directly involved in reproduction are known as secondary sexual characteristics. Since these are costly to produce and maintain, male energy reserves indirectly influence sexual selection.

The focus of this experiment was to investigate the possible costs for males in the species *Mus musculus musculus* to engage in courtship behaviors. One secondary characteristic exhibited by this species is the production of Major Urinary Proteins (MUPs) while scent marking. Scent marking is likely physiologically costly due to the production of MUPS, which are complex, energetically expensive proteins.

By stimulating male courtship displays while the focal male was in a respirometer, we hoped to quantify the energy expenditure. We expected to see an increase in carbon dioxide production when the mouse was stimulated to court thus showing an increased energy expenditure. There were significant changes in behavior between the first and second hour of the experiment, but a significant amount of energy devoted to courtship was not found. This was most likely due to disturbance from other behaviors and respirometry difficulties. Statistical analysis is still being conducted, and hopefully, the findings of this study will aid in future experiments aimed at quantifying energy expenditure in the species.

How Mammal Presence Shapes the Soil, Plant, and Invertebrate Ecology of the Blackland Prairie

Davis Stellman

Faculty Sponsor: Dr. Jessica Healy

Poster Presentation

Mammals play a powerful and often overlooked role in maintaining prairie ecosystems. Previous research suggests that the presence of mammals (from large grazers to small rodents) in prairie systems alter the vegetation, affect invertebrate communities, and even alter ratios of carbon to nitrogen (C:N) in the soil. This study aims to evaluate changes in areas of a prairie restoration property from which mammals have been excluded for approximately 10 years. We will examine soil cores taken from three areas of the restoration property: 1) Small mammal exclosure plots (both small and large mammals excluded), 2) Small mammal access plots (large mammals excluded, but small mammals allowed access), and 3) Control (both small and large mammals have equal access). Soil cores will be examined for differences in total C:N ratios between the plot types. This is carried out to observe possible relationships between the presence of small mammals and C:N, the presence of large ungulates and small mammals on C:N, and the absence of both mammal types on C:N ratios. Additionally, this experiment aims to investigate if the presence or absence of large ungulates and/or small mammals are associated with changes in invertebrate community structure as well as plant diversity and coverage within the prairie restoration site and compare those variables to measurements

Characterization of the MRTF/SRF Pathway in Zebrafish Embryos

Aiden Varnell & Hannah Herron

Faculty Sponsor: Dr. Kelli Carroll

Poster Presentation

Serum Response Factor (SRF) is a transcription factor involved in critical embryonic processes including cell proliferation, apoptosis, and differentiation. SRF frequently works with the Myocardin Related Transcription Factors (MRTFs), a family of proteins which play a key role in actin polymerization. In unstimulated cells, MRTF is found bound to G-actin in the cytosol; however, after receiving signals that induce actin polymerization, the MRTFs are freed from G-actin. The MRTFs then translocate into the nucleus where they will bind to SRF and upregulate genes involved in actin turnover and other cellular processes. Previous work in mice has shown that the MRTFs are required for many developmental processes including cardiac and skeletal muscle development. While this pathway is well understood in mice, little is known about it in other model systems. We are striving to characterize this pathway in zebrafish to gain a deeper understanding of its evolutionary conservation. Due to a partial genome duplication, zebrafish have four isoforms of MRTF: Aa, Ab, Ba, and Bb. qPCR determined that MRTF Ab and Bb were most highly expressed during the first 48 hours of development. To assess the function of this pathway, fish were treated using small molecules that inhibit MRTF translocation into the nucleus. The results were then assessed from 0-48 hours post-fertilization. Inhibition of the MRTF pathway resulted in morphological abnormalities including stunted body length and spinal cur

Identification and Characterization of Tango6 in Early Zebrafish Development

Sydney Versen

Faculty Sponsor: Dr. Kelli Carroll

Oral Presentation

The Undiagnosed Disease Network (UDN) is a collection of clinicians and researchers that diagnose individuals with rare or previously uncharacterized diseases. A UDN participant with mutations in TANGO6 presented with heart and brain abnormalities. The International Mouse Phenotyping Consortium (IMPC) knocked out Tango6, resulting in embryonic lethality, suggesting that it is required for development. Despite this study, the function and expression patterns of Tango6 is largely unknown. In order to understand the role that Tango6 plays in development, we utilized embryonic zebrafish to analyze the quantitative and spatial expression of Tango6. It is expressed from low to moderate levels between 24 and 120 hours post fertilization (hpf). In situ hybridization demonstrated that Tango6 is present in the brain beginning at 24 hpf and expressed in the developing gastrointestinal system around 120 hpf. Preliminary data of mosaically edited Tango6 knockouts generated using CRISPR have found an accumulation of blood in the gut by 96 hpf, suggesting defects in gut morphogenesis or function. In total, these data suggest that Tango6 is involved in brain and gut development, and further analysis of knockouts and spatial expression patterns is underway to determine the precise role of Tango6 in development and disease.

Preparation of Anisucoumaramide

Beau Beshires

Faculty Sponsor: Dr. Ryan Felix

Oral Presentation

Anisucoumaramide has been recently isolated from *Clausena anisum-olens*, a plant commonly found throughout Southern China and Southeast Asia. Recently, the Felix lab has been exploring new synthetic pathways for the formation of this coumarin-based molecule. Coumarins are a common bioactive compound with high functionalization potential. There are two main advantages for the total synthesis of anisucoumaramide – increase the commercial availability of this novel compound and provide an opportunity to conduct research on its potential biological applications. The scientists who discovered anisucoumaramide tested its ability to inhibit MAO, an enzyme implicated in the development of Parkinson's Disease. It showed a high level of inhibition, but further testing was unavailable due to their isolation from *Clausena anisum-olens* in low yields. However, given the coumarin component of the molecule, this may not be the only beneficial property it contains. Coumarins are components of a variety of pharmaceuticals including warfarin, a common anticoagulant. The current research for the synthesis of anisucoumaramide is focused on creating two halves of the molecule separately and combining them in a convergent step.

Computational Investigation of Criegee Intermediate Reactions with Carbonyls in the Atmosphere

Bridget Ferris

Faculty Sponsor: Dr. Aaron Harrison

Poster Presentation

Carbonyl oxides or Criegee intermediates (CIs) are critical transitional states in the ozonolysis of alkenes and are very important in oxidation chemistry fundamental to atmospheric processes. For instance, the ozonolysis of isoprene, an organic compound released from trees, is a significant source of CIs on a global scale having an impact on the atmospheric oxidizing capacity and generation of secondary organic aerosol and hydroxyl radicals in the troposphere. Despite the importance of these species, until recently, there were no experimental means of directly measuring the gas phase kinetics of these highly reactive intermediates. Though some experimental data on the reaction kinetics of CIs has now been collected, there are still many gaps in experimentally measured rate constants. In this research, the unknown reaction rates of CIs with differing alkene oxidation products of Acetaldehyde, Acetone, Hexafluoroacetone, Biacetyl, Acetylacetone (in its enol form), Methyl Vinyl Ketone, and Methacrolein will be investigated using computational chemistry in conjunction with experimental measurements. Furthermore, frontier molecular orbital theory and known rate constants will be utilized to develop structure-activity relationships to expand predictive capabilities to similar carbonyl species.

Synthesis of a 3,4 Bis-Urea Organogelator with a C3 Spacer Derived from Caffeic Acid

Logan Herring

Faculty Sponsor: Dr. Andrew Carr

Poster Presentation

New ways of reducing the impact of oil spills on the environment have been proposed with the use of gelators. Gelators, when used in high concentration, are able to self-assemble into long, fibrous structures that create entanglements within themselves due to intermolecular forces, forming a 3-D network structure. This structure allows for the trapping of organic solvents allowing the cleanup of oil spills in a safer and more effective way than the methods used currently. This research involves the synthesis of an organogelator with a greater spacer length between a urea and benzene ring than a previously synthesized bis-urea organogelator and the quantitative difference in the gel's effectiveness in different solvents. While the theorized organogelator was not able to be produced, drastic steps were made in the synthesis.

Synthesis and Characterization of a C3 spacer, Bis-Urea Organogelator

Sebastiao Martin

Faculty Sponsor: Dr. Andrew Carr

Poster Presentation

The usage of bis-urea organogelators in the cleaning of oils spills has been discussed as an alternative to conventional methods of reducing the environmental impact of the spills. Dr. Andrew Carr et al has done work in synthesizing bis-urea organogelators derived from 3,5-dihydroxybenzaldehyde for the purpose of removing oil from oceanic environments. These organogelators have shown success in gelling a variety of alkanes, including toluene, hexanes, and octanes. The different gelling abilities of a C-3 spacer with alkyl tails at the 3,5-aromatic position has been studied. The synthesis of the bis-urea organogelator begins with 3,5-dihydroxybenzaldehyde, which is alkylated under basic conditions with 1-bromododecane in N,N-dimethylformamide, yielding the diether alkylated product in a 73.7% yield. The aldehyde was then converted to a conjugated nitrile group under basic conditions with diethyl cyanomethylphosphonate in tetrahydrofuran, yielding 90.6% of product. The conjugated nitrile compound was then catalytically reduced under acidic conditions with a palladium-carbon catalyst in tetrahydrofuran and acetic acid at 60 psi of H₂ gas at 40°C, yielding 98.5% of primary amine product. The primary amine compound was then reacted with 1,6-diisocyanatohexane in dichloromethane to yield 85.6% of the bis-urea product.

Synthesis and Characterization of a C3 spacer, Bis-Urea Organogelator

Sebastiao Martin

Faculty Sponsor: Dr. Andy Carr

Oral Presentation

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Spectroscopic Properties of Aerosol and Atmospheric Brown Carbon

Ahmed Rushdi & Enson Flores

Faculty Sponsor: Dr. Aaron Harrison

Poster Presentation

Chromophoric organic matter referred to as brown carbon (BrC) directly impacts radiative forcing in the atmosphere and drives aerosol photochemistry through radical formation and excited state-sensitization reactions. Primary formation of BrC occurs through biomass burning and combustion of fossil fuels. Secondary formation of BrC occurs in atmospheric water and aqueous secondary organic aerosols (aqSOA) have been indicated as an important source of BrC, however, the chemical formation and aging is poorly understood. In aqueous aerosols or cloud droplets, reactions of dicarbonyls involving ammonium (NH_4^+) and sulfur-oxide ions can form nitrogen-containing aromatics and organosulfates, respectively. Many of the products formed from these secondary reactions have absorption extending into the near UV and visible parts of the solar spectrum making their chemical composition and properties of fundamental importance in modeling the role of SOA BrC in the atmosphere. The proposed research will characterize the largely unknown molecular identity and spectroscopic properties of SOA compounds derived from glyoxal or pyruvic acid reactions with ammonium sulfate. Additionally, synthesized samples were irradiated with a solar simulator to analyze changes in their spectroscopic properties and their atmospheric half-lives. The results indicated that the SOAs formed from glyoxal could have a potential warming effect.

Using Computational Chemistry to Create pH-Specific Binding in Opioids

Pavithra Upadhya

Faculty Sponsor: Dr. Aaron Harrison

Poster Presentation

Opioids are a class of drugs often prescribed by physicians for severe and chronic pain relief. However, addiction and overuse of opioids have led to a worldwide health crisis known as the Opioid epidemic which affects millions of people in the United States alone. Protonation of an amine group in opioid molecules facilitates their binding to opioid receptors, and at a physiological pH of 7.4, opioids are protonated and active throughout the body and do not specifically target pain sites in the body. Inflamed and injured tissue tend to display a lower pH than normal healthy tissue, therefore, if opioids are altered to be protonated and active only at lower pH, they can target inflamed tissue. The presented research aims to chemically design an opioid that targets inflamed tissue for the pain relieving properties without the neurological activity and addictiveness. The results show the viability of fluorinating different opioids to lower the pH range of their activity. The opioids investigated include codeine, hydromorphone, oxycodone, and levorphanol.

Polydentate Ligand Binding Formation of Bis-Urea Metallogelators

Rebecca Tobias

Faculty Sponsor: Dr. Andy Carr

Oral Presentation

Limitations in solubility of bis-urea molecules used to form thermoreversible gels in organic solutions has brought interest in examining mono-urea molecules to form metallogelators as an alternative. Work by Carr et al found success in gelling THF solutions utilizing a mono-urea ligand with two different metal coordinating groups, but coordination of metals with these ligands proved to be weak, limiting functionality. To improve metal coordination, a motif composed of dicarboxylate amine ($\frac{1}{2}$ EDTA) containing mono-urea ligand was synthesized and studied. It is believed that in the presence of a +2-metal cation, the $\frac{1}{2}$ EDTA urea ligand will coordinate to the metal octahedrally, creating a bis-urea organogelator in-situ. Mono-urea ligand synthesis starts with the alkylation of 3,5-dihydroxybenzaldehyde with 1-bromododecane under basic conditions in dimethylformamide, producing the diether. The aldehyde was then converted to the benzylic amine by the reduction of the in-situ oxime. The isocyanate is formed by slow addition of the benzylic amine to triphosgene and dimethyl aminopyridine. The metal-binding region synthesis begins by mono-protection of 1,6-hexanediamine with di-tert-butyl dicarbonate. The carbonate amine was doubly alkylated with methyl-bromoacetate, and the amine was deprotected by acidic work up. The isocyanate and the alkylated amine were added in a 1:1 ratio, producing the urea. Further purification of the final organic product and gel testing are forthcoming.

A New Voice in the Yucatan: Gender Roles in Two Novels by Sol Ceh Moo

Diana Gomez

Faculty Sponsor: Dr. Patrick Duffy

Oral Presentation

Marisol Ceh Moo is a Yucatec Mayan novelist. She is an important figure in literature for Mayan culture, and currently is an activist for minorities of Mexico. My research will focus on two of her Spanish texts, titled "Tabita y Otros Cuentos Mayas" [Tabita and Other Mayan Stories] and "Solo por ser mujer" [Only for being a woman]. These two texts give us the opportunity, as outsiders, to learn more about the gender roles in these communities. They discuss and give us a first-hand perspective of life as a woman in an indigenous group. We are able to learn about how women are mostly seen as vessels for life, taking care of children, and making the food at home, while the men are seen as providers and with the responsibility of the agricultural labor. We are also able to learn about the implications of these values. Through my personal research, I hope to expand on the knowledge of being a woman coming from a world of machismo and often unfair norms/expectations. By acknowledging her experiences, the experiences of other women in her culture, and unique writing style, we can bring more attention to these hardly talked about issues. We can also further explore the characteristics that make Ceh Moo's work so unique. The overall goal of my thesis is to learn more about the gender roles in the Maya culture, what the implications of these roles are, and further describe what makes Ceh Moo's works so unique.

Identifying Connections Between Mayan Tradition and Contemporary Day of the Dead

Sage Newton, Carlos Suarez, & Ella Nunneley

Faculty Sponsor: Dr. Julie Hempel

Poster Presentation

The connection of duality, of life and death, good and evil, light and dark, are fundamental to traditional Mayan beliefs, myths, and practices. Death is understood to be as important a part of existence as life. The Mayan gods of death were as important as the gods of creation. The Mayans practiced burial and cremation. For their burial practices they would prepare the body by placing corn in the mouth of the deceased in order to give them food for the afterlife and to also symbolize the rebirth of the soul since the soul and body would no longer be connected. When they would cremate an individual, they would put the ashes in pots or idols. The family of the deceased would bring food to the idol on holidays similar to an individual who was buried. When an individual was buried they would be put to rest in graves that sometimes included multiple people and they would be buried near significant buildings facing north or west in order to face the Mayan Heavens. The people would be buried with rock whistles in the shapes of gods or animals and the remains were covered with cinnabar, a red mineral to symbolize death and rebirth. Cinnabar is believed to help the soul through their afterlife journey as well. A few years after the passing of a person, their family would dig up the remains, clean them, and then would re-bury them.

Linguistic Ecosystems in Writing Centers in the Midst of a Pandemic

Haydee Fuentes

Faculty Sponsor: Dr. Lisha Storey

Oral Presentation

When colleges shifted to remote instruction early in the COVID-19 pandemic, students experienced new ways to represent their identities, gaining control over the names they wanted to display as well as pronouns. However, it is unclear how far this language visibility extends during a return to in-person learning and instruction. Does acceptance extend to students' linguistic and cultural backgrounds? What kind of "normal" are we returning to? Multilingual writers might feel unnoticed by the writing center, unaware that peer writing tutors have shared cultural and linguistic experiences. How can the writing center be part of a linguistic and cultural environment on campuses where multilingual writers can feel safe despite the pandemic's atmosphere of uncertainty? This presentation explores the linguistic ecosystem of Austin College, using interviews with multilingual writers and tutors and insight from instructors' views on language in education. I will show how students experience this current climate of communication, what attitudes exist, and what role the writing center plays. I will also explore how writing centers can reshape linguistic attitudes to positively support multilingual writer's linguistic experiences.

The Edcouch Elsa Walkout of 1968

Mariagisse Morales

Faculty Sponsor: Dr. Claire Wolnisty

Oral Presentation

As a Scarborough Research Student, in the summer of 2022 I conducted research at the University of Texas Rio Grande Valley Archives in Edinburg on the Edcouch Elsa Walkout of 1968. At the archives, I worked with letters from the time, newspaper clippings, telegrams, and other sources to help analyze in depth the student's determination and the support they received for change to be made in the educational school system and power structure in South Texas. My research shows that Mexican Americans for years experienced racism, segregation, and discrimination in the school system leading Mexican American to question their identity. Additionally, due to their experiences in the school system this has impacted generations of Mexican Americans by assimilating to American culture and losing their Mexican roots.

The Desegregation of Austin College

Jackson Mullis

Faculty Sponsor: Dr. Felix Harcourt

Oral Presentation

Due to Austin College's increasing emphasis on social justice, I can't imagine a more important issue for the college than tackling its own history. My research project will attempt to answer the question "Why did Austin College desegregate in 1961?". External pressures on the school to desegregate - like the stance of the Presbyterian Church and the developments in national legislation will be explored in depth. Internal politics, such as the transition of power between college presidents, the makeup of the Board of Trustees, and student activism will also be tied to the issue. The experience of the school's first black student, Pierre Shamba, will be analyzed to reveal the struggles involved in this change. Finally, through comparison to SMU and TCU, two other private, Christian-affiliated, liberal arts universities, a broader picture of institutional desegregation in Texas will be achieved. To conduct this research, I used a variety of resources, including the Abell Library, interviews with alumni, and sources from SMU and TCU. Through interviews with alumni, I learned about experiences in which Shamba was racially discriminated against. One of the pressures on college administration in the 1960s to desegregate came directly from the students themselves. This story is proof that students have a role, if not a responsibility, to ensure that social justice is achieved at a liberal arts institution.

William J. Durham: A Forgotten Civil Rights Pioneer

Clemon White

Faculty Sponsor: Dr. Felix Harcourt

Oral Presentation

William J. Durham went from a farm laborer to a pioneering Constitutional Law and Civil Rights attorney. After serving in WWI in his early 20s, Durham traveled to Sherman, Texas, where he established his own law office in the city's Black business district in 1926 and took on civil rights cases. After surviving the Sherman Riot of 1930, which destroyed his law office, Durham went on to win transformative Supreme Court cases like *Sweatt v. Painter*, which desegregated the University of Texas at Austin School of Law and set a crucial precedent for *Brown v. Board*, and *Smith v. Allwright*, which eliminated Texas's white primary. Beyond the courtroom, Durham founded the Texas Council of Voters, a black-led voting rights organization, to expand and protect voting access.

Despite Durham's extensive legal career and activism, he has not been celebrated or recognized nationally or locally in the same ways as his co-counsel Thurgood Marshall or his activist peers. As part of the Mellon Social Justice Research Program, I utilized public records, newspaper articles, television news coverage, and his legal arguments and writings to explore this forgotten legacy and build upon the lack of existing information on this legal pioneer. Drawing on interviews with Durham's relatives, I also consider how his work slipped out of public memory and how his legacy could impact today's political landscape.

Encouraging STEM Education Through Food Science

Evelyn Inovejas

Faculty Sponsor: Dr. Martinella Dryburgh

Poster Presentation

This study follows a project designed to assist in teaching elementary school children about Science, Technology, Engineering and Math (STEM) education through food science with the Boys and Girls Club of Sherman and the Community Leadership Class at Austin College. The Community Leadership class at Austin College is designed to send students out into the community to design and lead hands on service learning projects that benefit nonprofit organizations in the Sherman community. Over the course of seven weeks, program directors visited all Sherman ISD elementary schools to teach children about food science, such as phase changes seen in butter and ice cream during cooking. Notable observations over the course of the program included that events had high participation rates, but low retention rates on the information taught over the course of the program. Future directions of the program include changing the type of activities done with the kids, developing age appropriate communication of ideas and information, so that the target audience of children ages 5 to 12 have better understanding and retention of information, and using more simple terminology when teaching so the young audience can understand and retain content better.

Musical Education in Economically Depressed Regions

Amie J Johnson & Clay Bourne

Faculty Sponsor: Dr. Martinella Dryburgh

Poster Presentation

My work with the Sherman Symphony Orchestra has been three fold. First, I examined educational inequalities in lower economic areas. Securing funding for schools is a cyclical process. Funding is allocated based on standardized test scores, but standardized test scores cannot be raised without adequate funding to support teachers. In lower income schools, where test scores are lower and schools have less funding, fine arts education is one of the first budget cuts made. Through the SSO, I created educational programming to support the musical education already offered through regional schools, delivered through the SSO's educational resources. Secondly, I worked with the SSO through the SEPA program to write grants that would pay and expand the academic programming that they already offer, as well as expand and rebrand their educational offerings. Lastly, I created my own musical education programming that was offered to community children through Austin College's Roo Boo. Here I piloted an Instrument Petting Zoo, a collection of instruments made available for children to physically explore and learn how sound is made, that increases early exposure to music for children of all ages. My work with the SSO has fostered my servant leadership by improving my awareness, as the SSO's work is to highlight the importance of musical education; along with foresight, as the SSO's programming is

Modeling Wave Propagation on Non-Homogeneous 2D Surfaces

Michael P Bose

Faculty Sponsor: Dr. Huy Nguyen

Poster Presentation

This research aimed to simulate wave progression on a surface and produce animation of waves traveling across rectangular surfaces with varying densities. The final mathematical model produced was a 2-D damped wave equation with Dirichlet boundary conditions. The visualization is designed using the numerical analysis method of Central Difference and was implemented using Python programming language.

Finding Resolution Tree Depth of Mathematical Braids

Tate Nelson

Faculty Sponsor: Dr. Andrea Overbay

Oral Presentation

Knot Theory is a relatively new field of mathematics that studies knots as mathematical objects. There are an infinite number of these objects and each one can be presented in an infinite number of ways. One way that knots can be represented is using a braid representation, and we can study the knot's properties within this braid framework. In this thesis, we look at braids and a way to "break them down" into simpler braids using a resolution tree, a branching diagram used to visualize each step of this simplification process. Determining how many steps are required in this process is a complex mathematical problem, so looking at the bounds of the number of these steps can help narrow down the complexity. In this presentation, we will generalize a previously known theorem that can provide an upper bound to the size of a resolution tree, all through an algorithmic process rather than a purely visual analysis. Along the way, we will look at other properties of these braids and dive into what purpose these serve for the resolution tree depth.

Modeling Hanging Chains Using Numerical Methods

Tobias Ward II

Faculty Sponsor: Dr. Huy Nguyen

Poster Presentation

The theory surrounding hanging chain has undergone many changes over time, and in its current form uses mathematical minimization to find the shape of the catenary. Creating a model of the hanging chain which changes over time requires a different approach. From the perspective of computer science, a much more obvious solution is that of object-oriented programming. We modeled hanging chains using several different object-oriented approaches, and improved our model until its current form which works relatively effectively.

The Effects of Long-Term Exposure to Sucralose on the Basal Ganglia and Hippocampus in Male Long-Evans Rats

Roopika Menta

Faculty Sponsor: Dr. Renee Countryman

Oral Presentation

The increase in obesity levels due to a high carb diet across the United States has led to an increase in the use of non-nutritive artificial sweeteners as replacements for sugars. One of the most common artificial sweeteners being used is Sucralose. While there are many studies on the effects of aspartame and saccharin there are very few that focus on the neurological implications of Sucralose. In this study, Thirty-six male Long Evans rats were divided into 3 treatment groups: Standard chow, Standard Chow + Sucralose, High Carb diet + Sucralose. The rats underwent behavioral tests, such as the Barnes Maze, Open Field Test, and Novel Object Recognition, to gauge their learning and memory, and anxiety responses. This study explores how sucralose impacts memory through a specific analysis of the Barnes Maze. After sacrifice, the brain tissue will be analyzed and stained to quantify the activation in the basal ganglia and hippocampus. The Basal Ganglia has been found to have a major role in motor skills and implicit memory during learning processes. In contrast, the hippocampus is mainly involved in the formation of declarative memory as well as spatial processing. Sweeteners activate the same β -pancreatic cells as sugar and stimulate the release of insulin. To explore how this relates to blood glucose the Blood glucose levels of the rats were also taken at 3 weeks and 7 weeks.

Sugar, Addiction, and Memory, The Ongoing Investigation of Sugar Consumption

Rebecca Paul, Storm Simonin,
Michelle Zhu, & Deron Dwomo-Bediako

Faculty Sponsor: Dr. Renee Countryman

Poster Presentation

The high intake of sugar that characterizes the Western Diet is linked to an increase in obesity and type 2 diabetes. However, changes in the brain as a result of high sugar intake are not well understood. To study the effects of sugar on learning, memory, and addiction, we measured Neuropeptide-Y (NPY) and Galectin-3 (Gal-3) in the CA3 and dentate gyrus regions of the hippocampus and nucleus accumbens of rodent brains. The three treatment groups (Water, 10% Granulated Sugar, and 10% Honey) were yoked on their respective treatments over a period of 6 weeks and weighed daily. Brain tissue was analyzed across the three treatment groups using immunocytochemistry for protein expression of NPY and Gal-3. We hypothesized rats treated with sugar would show a decreased expression of NPY and an increased expression of Gal-3. No statistical differences were found between treatment groups in terms of behavioral performance and protein expression. The null effects could suggest that high sugar diets do not disrupt homeostasis in the brain as robustly as previously reported. One important factor worth examining in greater detail is the duration of diet manipulation as many other studies will manipulate diet for 12 weeks or longer.

The Effect of Sugar Manipulation on Long-Evans Rats as Represented in the Hypothalamus

Michelle Zhu, Deron Dwomo-Bediako,
Storm Simonin, & Rebecca Paul

Faculty Sponsor: Dr. Renee Countryman

Poster Presentation

The high sugar intake of the Western Diet is related to an increase in obesity and type 2 diabetes. The purpose of this study is to observe how increased sugar consumption may impact regions of the brain that regulate feeding behavior, including the arcuate nucleus and ventromedial nucleus of the hypothalamus, and the optic nerve. Rats were yoked by body weight and divided into three water-based treatment groups (Water Control, 10% Granulated Sugar, and 10% Honey); their treatment continued for six weeks. At the conclusion of the study, rats were sacrificed and brains were prepared for immunocytochemistry. We measured the expression of Neuropeptide-Y (NPY), Insulin Receptor α (IN-r- α), and Galectin-3 (Gal-3). We hypothesized that the sugar-treated groups would have a lower expression of IN-r- α and NPY in the hypothalamus and a higher expression of Gal-3 in the optic nerve. All treatment groups had an increase in weight over the duration of 6 weeks, however, there were no significant differences between groups. Additionally, no statistically significant differences between treatment groups were found for NPY or IN-r- α in the hypothalamus, nor Gal-3 in the optic nerve. The lack of significance between treatment groups indicates a lack of conclusive results. However, there was a similar trend in NPY staining in the arcuate nucleus and ventromedial nucleus where the granulated sugar group had the lowest expression, and the control group had the highest expression.

Engineering Design: Charging Cord Holder and Umbrella Scabbard

Foster Ellis, Michael Bose, Weikai Rao,
Kendall Johnson, & Tobias Ward

Faculty Sponsor: Dr. David Baker

Poster Presentation

Austin College engineering physics students designed exciting new products as part of the Phy 281 Statics and Engineering Design course. We brainstormed over 40 ideas for products that could make a difference in our world today. We then selected the top seven ideas, performed market research, designed the products using computer-aided design (CAD) software, and printed prototypes using the Morris Product Lab 3-D printers. The products highlighted here are early prototypes, and feedback during the Austin College Scholar Conference will help refine our designs.

The Charger Hook: The End of Charger Bend. Have you ever broken your phone charger cable by bending it severely? The Charger Hook is a simple solution to fix this issue. This design attempts to alleviate the problem by adding additional support to cords to protect them from damage. The Charger Hook slowly turns the cable 90 degrees, allowing users to use the product as a support to hold up their phone while using it on almost any surface.

The Umbrella Scabbard: For Those Who Fight the Rain. The umbrella scabbard is a clever and innovative solution to a common problem faced by umbrella users. Instead of struggling to hold an umbrella by hand, the umbrella scabbard allows you to strap it to your waist or wear it on your back, freeing up your hands for other tasks. Whether you're commuting to work or running errands on a rainy day, you'll be the coolest and most functional umbrella knight in the room.

Engineering Design: The Pro Scoop and Flux Spigot

Deedee Jansen, Mark Leonard, Diego Sanchez,
Brant Stuber, Trey Adams, & Seth Kerstetter

Faculty Sponsor: Dr. David Baker

Poster Presentation

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The Pro Scoop. Athletes often make a huge mess when scooping pre-workout powder into a water bottle, especially since a separate funnel is required. The Pro Scoop solves this issue by combining a scoop and funnel in one. It works by taking a scoop of powder and then releasing the powder through a trap door, thus dropping the powder into the bottle without any mess.

The Flux Spigot: No Glug from Your Jug. The Flux Spigot addresses a common problem with gallon jugs: the pour can come out too quickly and glug unevenly when poured. This problem occurs for a variety of people, particularly those with mobility issues like arthritis or young children. To create a smoother flow, the design had two connected tubes. One tube is closed except for two air holes which allows for variable flow rates. The second tube allows the liquid to flow out smoothly.

Engineering Design: Zero Hair and Dua Drinka

Nereida Martinez, Justus J. Fagan, Gisselle
Melendez, Diego Rodriguez, & Eleanna S. Martinez

Faculty Sponsor: Dr. David Baker

Poster Presentation

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Zero Hair: A Comb for Your Brush. Cleaning a hairbrush requires a lot of tedious work and time. With Zero Hair, an easily attachable hairbrush product with a grid-like design to incorporate many hairbrush bristles at a time, you can choose to spend your time wisely. Hair will now accumulate on this product and the act of simply lifting this out of your brush will remove all hair.

Dua Drinka: Double the Liquids, Zero the Trouble. For avid coffee drinkers, it is also important to drink water to counterbalance high levels of caffeine. Our team developed a product that contains two separate liquids into one mug. Dua Drinka has two separate compartments for two different liquids, allowing you to drink your coffee and water with only one mug.

Engineering Design: Magna-Weigh

Enrique Pineda & Branson Vrazel

Faculty Sponsor: Dr. David Baker

Poster Presentation

Austin College engineering physics students designed exciting new products as part of the Phy 281 Statics and Engineering Design course. We brainstormed over 40 ideas for products that could make a difference in our world today. We then selected the top seven ideas, performed market research, designed the products using computer-aided design (CAD) software, and printed prototypes using the Morris Product Lab 3-D printers. The products highlighted here are early prototypes, and feedback during the Austin College Scholar Conference will help refine our designs.

Magna-Weigh: Feel the Magnetic Force. A sensitive upper-level physics experiment investigates the Room Temperature Hall Effect in which a small magnetic field is produced by electric current through a wire. In normal situations, a gauss-meter is used to measure the magnitude of the magnetic field. Unfortunately, the gauss-meter produces very erratic readings for the Hall Effect experiment. A more accurate measurement can be made using a weight scale. As current passes through the wire, the additional magnetic force can be measured by a change in the weight of the apparatus. The Magna-Weigh is engineered specifically to make a more efficient, sleeker, and stable design for the experiment.

The Impact of Digital Literacy Programs on Bridging the Digital Divide in Grayson County

Natalia Nevarez

Faculty Sponsor: Dr. Nathan Bigelow

Poster Presentation

Digital Divide is a serious issue that seemingly affects people in rural areas more than people in urban areas. However, even within these rural areas there is still a digital divide between the races; the reasoning behind this is attributed to many different things. Some scholars point to race being the driving factor for the divide, some think that the divide is driven by income disparities, and others believe that it is a combination of factors. In an attempt to gain a deeper understanding of what is causing the Digital Divide I have observed and interviewed two different groups; one is composed of all white participants and the second is composed of Hispanic participants. Both of the groups are from Grayson County; the point of this study is to compare the effectiveness of these groups while simultaneously discovering if race is truly a factor in these disparities.

Trauma within the Foster Care System and its Consequences

Mike Rodriguez

Faculty Sponsor: Dr. Nathan Bigelow

Poster Presentation

The topic of trauma awareness was written because the indicators of trauma within the foster care system, the educational system, and society are often ignored and seen as behavior that should be punished. Traits that are viewed as negative but are a response to trauma often put a label on children that indicate the path they will follow in life. A child can be called violent, intolerant, or unintelligent, and all this will do is make the issue worse as they are not receiving the help they need. Often foster children show more signs of behavioral issues and are diagnosed higher with mental illness. They are punished due to a non-trauma-informed populace. In this research it is with hopes to find what the foster care system is doing for children who experienced trauma and if society is aware of what is occurring which will bring to light whether we have a trauma-informed populace. The methods used within this research are browsing through foster care databases and their methods of Trauma-based Relation Intervention programs. Parties who are or were associated and involved with children in the foster care system. Upon contacting these services and reading the results was that many different programs are in place for helping children but there is still much to be done. The programs can only help so many and are limited in what they can do given their circumstances. This gives a strong insight into what can be done for the betterment of foster children and their lives after.

Perceptiveness and Empathy in Collectivist Cultures

Delaney Alexander, Jenna Gruver,
& Madeline Leblanc

Faculty Sponsor: Dr. Peter Marks

Poster Presentation

Previous research has looked at nonverbal communication across cultures that lead us to look closer at the factors of collectivism and individualism on communication. Doing so provided a deeper understanding of cultural influence. In the current study, we investigated factors that impacted perception of nonverbal cues, predicting that higher levels of collectivism and higher empathy would predict focus on nonverbal over verbal information. A total of 79 students were surveyed using an online questionnaire that included existing measures of individualism, collectivism, empathy, and indirectness, as well as a new vignette measure of verbal and nonverbal perceptions in social situations. Our original measure of verbal and nonverbal communication styles was found to be unreliable (Cronbach's alphas $< .276$). However, indirectness (a measure of the extent to which individuals communicate nonverbally) was found to be positively correlated with empathy and negatively correlated with individualism, confirming hypotheses ($p = .038$, $p = .813$). In contrast with expectations, indirectness was uncorrelated with collectivism ($p = .885$). We expected to frame the indirectness scale as an alternative way to measure nonverbal behavior. We found that indirectness does correlate with empathy, thus supporting our second hypothesis. This may indicate that those with higher levels of empathy are more likely to perceive indirect communication. Implications for future research are discussed.

Social Media Influencer-Based Content and Negative Effects

Shayla Caldwell

Faculty Sponsor: Dr. Peter Marks

Poster Presentation

The study combined findings and emerging findings on the impacts of increased activity on social media, life satisfaction, envy, and social media influencers (individuals who generate revenue by sharing and glamorizing their lives and/or specific content on social media platforms). The current study acquired data from a sample of 57 college students using an online self-report questionnaire that assessed life satisfaction, envy, time spent on social media, and time spent viewing influencer content—either centralized on influencers' lives or specific types of advertised content (fashion, travel, etc.). Unsurprisingly, participants who spent more time on social media were more likely to report interest in influencer content of different types. Contrary to our initial hypothesis, results did not show that increased time on social media was positively correlated with lower life satisfaction. As expected, however, results showed that increased time spent on Instagram, Snapchat, and Tiktok watching influencer content centralized on life was positively correlated with that of participants' envy scores. This suggests that time spent viewing the glamorized lives presented by influencers on these platforms promote feelings of envy and other potential negative effects. Further research should compare influencer content centralized on life with other constructs such as self-esteem, comparison, and more to continue the idea that social media influencer content can elicit adverse effects.

The Impact of Extracurricular Involvement on the Mental Health of College Students

Sarah Davis, Daisy Esquivel, Ella Owens,
Shruti Ramesh, & Lauren Rodgers

Faculty Sponsor: Dr. Elizabeth Preas

Poster Presentation

Beginning college represents a major transition in a young adult's life, and can be associated with negative mental health implications. Having an adequate support system and a sense of belonging are some key factors in helping college students adjust and maintain their overall mental health. A common topic of inquiry is if these factors can be promoted through the participation in extracurricular activities. The purpose of the current study was to examine the relationship between the extracurricular participation and mental health of college students attending a private liberal arts school, with mediating variables of social support, belonging, loneliness, and quality and quantity of friendship. To conduct this study, we utilized a multivariate correlational design and recruited participants using a convenience sampling technique. We hypothesized that increased participation in extracurriculars would result in better mental health outcomes, greater feelings of belonging and social support, a higher quantity and quality of friendship, and reduced feelings of loneliness. Keywords: Mental health, extracurricular activity, college students

Examining the Effects of Sucralose on Attention Span and Neuroinflammation in a Rodent Model

Caroline Fowler

Faculty Sponsor: Dr. Renee Countryman

Oral Presentation

Due to the rise of low-calorie sweeteners in the Western Diet, the study aims to examine the effect sucralose has on inflammation and attention when paired with a high-carbohydrate diet. 36 Long-Evans rats were sorted into 3 treatment groups: Standard Diet vs. Standard Diet + Sucralose vs. High-Carb Diet + Sucralose. All rats received water and standard chow ad libitum. Those in the standard and high-carb sucralose groups received sucralose daily. Those in the high-carb + sucralose group received mashed potatoes. Consumption and body weights were measured. Over 10 weeks of treatment, the rats underwent several behavioral tasks, including the Open Field Maze, Elevated+ Maze, Novel Object Recognition, and Barnes Maze. Activity and distractibility were observed, particularly in the Novel Object Recognition Task. It was hypothesized that the rats in the high-carb + sucralose treatment group would exhibit increased weight gain, and that they would exhibit increased activity and distractibility. The body weight hypothesis is supported, with the high-carb + sucralose gaining weight at an increased rate. The behavioral hypothesis is partially supported, with the high-carb + sucralose rats exhibiting lower levels of memory retention, possibly pointing to limited attention. After euthanasia, immunocytochemistry analysis will be conducted to evaluate inflammation in the pre-frontal cortex. It is hypothesized that the high-carb + sucralose group will exhibit more neuroinflammation.

Will This Transfer: Investigating Empathy Transfer Towards the LGBTQ+ Community

Haydee Fuentes, Victoria Couturier,
& Olivia De Leon

Faculty Sponsor: Dr. Michele Helfrich

Poster Presentation

The LGBTQ+ community has faced discrimination and rejection historically and they are often targeted in the culture wars perpetuated by the extreme right. The main interest of this research was empathy and whether induced empathy would transfer towards the LGBTQ+ community. Research has also indicated that imagery can more effectively produce emotional contagion than simple text and so another purpose was to investigate the additional influence of imagery on empathy. Participants were exposed to six different conditions described by an individual named Megan: a study routine with no rejection, a rejection from her friends after quitting the soccer team, and family rejection after coming out as gay; each condition either had a single written narrative or had a narrative accompanied by an image of Megan and her friends or family. Preliminary results indicated that women tended to support the LGBTQ+ community regardless of condition, while men were more supportive when reading about family rejection (demonstrating emotional contagion). In addition, conservatism and religiosity resulted in more anti-gay attitudes in general. Imagery did not have impacts on empathy. The results suggest that stories of family rejection may promote more support for the LGBTQ+ community.

Attractiveness in College

Elizabeth Funderburk & Amina Sam Onaiwu

Faculty Sponsor: Dr. Peter Marks

Poster Presentation

Previous research has shown that many individuals prefer to date others who are like themselves in multiple ways. Most people of color, have been more likely to date same-race individuals. Other previous research has also shown that White people that had friends/close relationships of a specific racial outgroup were more likely to be attracted to those specific racial outgroups, but not other racial outgroups. Our study will expand on previous studies to focus on all racial groups and not only one specific racial group. The current study investigated whether the diversity of one's close relationships can predict attractiveness ratings with same- or other- race individuals. Data collection is in progress. Thus far, 38 participants have rated the attractiveness of individuals of different races, and have completed surveys assessing questions about how ethnically diverse their close relationships (family and friends) are. Additionally, participants completed questionnaires assessing their acceptance of others from different racial backgrounds. Analyses will be conducted by correlating family/friend diversity ratings with attractiveness ratings for same-race and other-race faces. These variables will also be correlated with acceptance of diverse others.

Do Diversity Courses Impact Prejudicial Attitudes and Awareness of Privilege?

Scott Hall, Lora Vaughan, Alexis Fletcher,
Shreya Bhat, Amaiya Chalasani, & Carrie McIntyre

Faculty Sponsor: Dr. Danielle Franks

Poster Presentation

Previous research has found that college level diversity classes have helped students decrease color blind racial attitudes (Kernahan & Davis, 2010; Patterson et al., 2018), increased socio-cultural empathy (Patterson et al., 2018), fostered greater awareness of privilege (Case, 2007; Case & Stewart, 2010; Kernahan & Davis, 2010) and racism (Case, 2007; Kernahan & Davis, 2010), and generally fostered greater awareness of cultures besides their own (Kulik & Roberson, 2008; Farelly et al., 2021). However, these studies failed to address what factors may have helped or hindered the change in their attitudes/beliefs. This study aims to explore the elements of diversity education that help students understand the dynamics of prejudice and privilege. A survey was administered to Power, Privilege, and Inequality (PPI) and Global Diversity (GLO) courses as well as introductory psychology courses (PSY101) at Austin College. Participants completed the Colorblind Racial Attitudes Scale (CoBRAS; Neville et al., 2000), scale of ethnocultural empathy (Wang et al., 2003), privilege and oppression inventory (Hays et al., 2007), and self-reflection and insight scale (Grant, 2001). Participants also read a vignette depicting a racial microaggression and were asked to describe the situation and the cause (taken from Reid & Birchard, 2010). The research questions addressed both the quantitative and qualitative data. Regarding the quantitative data: (1) Does taking a PPI/GLO course significantly.

Effect of Perceived Parenting Styles on Stress-Coping Skills and Academic Performance in College Students with ADHD

Emily Henderson, Britney Martin,
Noor Ghaffar, & Humza Ashraf

Faculty Sponsor: Dr. Renee Countryman

Poster Presentation

Adjusting to college is difficult for most college students, as they are challenged to develop new studying skills and stress-coping strategies. The increasing prevalence of ADHD in college students makes this transition even harder. The aim of this study is to predict factors that influence the development of healthy coping strategies and academic self-efficacy in college students with ADHD. Data were collected from 93 college students with various degrees of ADHD symptomology. Linear regressions were used to determine the most significant predictors of academic self-efficacy (ASE), problem-focused coping strategies (PFCS), and emotion-focused coping strategies (EFCS). Individuals reporting greater ADHD symptomology were more likely to implement EFCS than PFCS. PFCS and EFCS implementation was unaffected by mother positivity (mPos) in individuals with higher degrees of ADHD, although we found that mPos directly influenced PFCS implementation in individuals with less ADHD symptomology. Father positivity showed the greatest moderating effect on the relationship between ADHD symptomology and ASE. This moderation showed that all individuals, regardless of their degree of symptomology, benefitted from having a more positive father. These findings have meaningful implications that academic performance and college adjustment can be predicted by factors like parent positivity and their effect on students with ADHD compared to students without ADHD.

FOMO: Is it Adaptive?

Grace Milligan, Breanna Wooten,
& Stephanie Cruz

Faculty Sponsor: Dr. Matt Findley

Poster Presentation

Widespread access to social media platforms has led to unprecedented levels of online communication and in this day and age, constant knowledge of others' selectively displayed social lives may lead to negative feelings like fear of missing out (FOMO). Since FOMO may arise from unmet needs such as belonging or social relatedness, people may adopt maladaptive approaches to securing these needs by chronically staying online or coping with more smartphone usage.

The present study investigates whether FOMO could potentially be adaptive if students respond to FOMO by engaging in more campus activities. Data from 77 undergraduate Austin College students who took an online survey was used to create two mediation models. We found that in the first model, FOMO correlated positively with campus engagement, which in turn, approached significance in predicting better social adjustment. Directly, greater FOMO almost correlated significantly with better social adjustment. Our second model showed no significant patterns between indirect measures of FOMO-driven phone use, campus engagement, and social adjustment. Thus, our study found preliminary evidence for feelings of FOMO being potentially beneficial by promoting increased face-to-face interactions which may contribute to better social adjustment. How we choose to cope with FOMO may determine whether we positively or negatively adapt to feelings of loneliness, threatened belonging, etc.

The Effects of Media Representation on Self-Perceptions

Rebecca Paul, Nataly Castillo,
& Emma Cook

Faculty Sponsor: Dr. Renee Countryman

Poster Presentation

In this study, we investigated whether social media representation affected women's overall body satisfaction, assertiveness, self-esteem, and self-presentation on social networking sites (SNS). In our survey, we used five pre-existing scales (Rosenberg Self-esteem scale, Rathus Assertiveness Schedule (RAS), Motivations for Social Media Use Scale (MSMU), Adolescent Body Satisfaction Scale, and the Perfectionist Self Presentation Scale) on undergraduate women (n =69). We found that self-esteem, body satisfaction, and positive different scores had various correlations. With these results, we also ran regression which provided us with predictors for body satisfaction, popularity, and self-presentation. Our findings indicate that the further an individual perceives their body type to be from the body type they most commonly see, the less satisfied they are with their body, the less assertive they are, and the lower their self-esteem is. These individuals are also less likely to disclose their imperfections and use social media sites for appearance-related reasons.

Social Media Filters and Their Effect on Body Image

Jocelin Robinson, Jaylee Phillips,
Lauren Zieske, & Pamela Mahan

Faculty Sponsor: Dr. Peter Marks

Poster Presentation

Previous research on social media has shown that viewing photoshopped images results in detrimental effects to body satisfaction. Social media filters are more accessible and more widely used than photo editing software, but relations between filters and body image have been insufficiently studied. The goal of the current study was to examine the association between social media filters and body image. 69 participants completed an 81-item self-report questionnaire on the amount of time spent on social media, reasons for using social media, filter usage, filter perception, and body image. Correlational analysis showed the total time spent on social media, particularly Instagram, Snapchat, and TikTok, was associated with greater use of filters. As hypothesized, individuals with lower body image were more likely to report using social media filters and we're more likely to believe that filters are effective at increasing attractiveness. However, body image was unrelated to time spent on social media or perceptions of filter use by others. This study provides an early step towards understanding the uses of social media filters and effects on self perception. Future research should focus on experimentally demonstrating the impact of Ewing social media filters on body image. Additional implications and directions for future research will be discussed.

Generational Experiences of Parenting Styles: How Do Parenting Styles Impact Life Satisfaction and Loneliness?

Storm Simonin & Rebecca Paul

Faculty Sponsor: Dr. Renee Countryman

Poster Presentation

The parents/guardians that we had while growing up affect who we become as an adult. We were interested if SES would moderate the indirect effect of parenting styles (authoritative, authoritarian, and permissive) on satisfaction with life via loneliness. Additionally, we were interested if loneliness would mediate the relationship between age generation and satisfaction with life. 181 adults over the age of 18 were recruited through a snowball sampling method. Participants' perception of the parenting style they received when they were younger was assessed using the PBI (Parker et al., 1979). We assessed the participant's perception of their satisfaction with life using the Satisfaction with Life Scale (Diener et al., 1985). The participant's perception of the parental authority they received during their childhood was assessed using the Parental Authority Questionnaire (Buri, 1981). The participant's subjective feeling of loneliness was assessed using the UCLA Loneliness Scale (Russel et al., 1980). Loneliness was found to fully mediate the relationships between the specific parenting styles (authoritative and authoritarian) and satisfaction with life. Participants who rated themselves as having an authoritative parent with high and middle SES were less likely to report loneliness with an increased life satisfaction rating. Individuals' perceptions of their parent's parenting style that they received in childhood still linger into adulthood with their outcomes of success.

Humans, Robots, Uncanny Figures; Who is More Attractive?

Storm Simonin & Haydee Fuentes

Faculty Sponsor: Dr. Renee Countryman

Poster Presentation

Human attraction toward non-human figures such as robots and those classified as the Uncanny valley, is a variable not yet investigated. We analyzed data from 70 undergraduate students (49 attracted to males, 21 attracted to females). The design was a 2 (Attraction Type: only to females v. only to males) by 3 (Model Type: human v. robot v. Uncanny figure) within-subjects factorial design. Participants then answered 13 questions from the Measurement of Interpersonal Attraction (McCroskey & McCain, 1974). A repeated measure, mixed methods ANOVA was conducted to find differences in gender attraction across the conditions. Attraction to males or females did not impact the ratings in most conditions. Physical attraction was the only condition where those attracted to females rated higher than participants attracted to males, though the effect was not strong. The findings have implications for specifying what type of non-human models are attractive to human participants. This further leads creators and developers of games and movies to curate animated characters that are attractive to humans. The more appealing an animated character is to humans; the more animated characters will be accepted by humans in the future.

The Relationship Between Cognitive Empathy, Social Anxiety, and Self-Perspective Inhibition

Lora Vaughan

Faculty Sponsor: Dr. Danielle Franks

Oral Presentation

Current research on the interaction between cognitive empathy and social anxiety is mixed. Potentially, the use of inaccurate self-report measures (Murphy & Lilienfeld, 2019), the treatment of cognitive empathy as one construct (Spunt & Adolphs, 2019), or the existence of a mediator such as self-perspective inhibition (Kelly et al., 2022) may contribute to the diverse results. Participants completed the Movie for the Assessment of Social Cognition (Dziobek et al., 2016) consisting of a series of videos depicting social interactions, a self-perspective inhibition task, and questionnaires assessing social anxiety and self-reported cognitive empathy. Unlike previous research, no relationship was found between social anxiety and cognitive empathy. However, scores for behavioral cognitive empathy and self-reported cognitive empathy were moderated by social anxiety, suggesting social anxiety influences how individuals perceive their ability to understand others. As the experiment did not have sufficient power, further research should be done to understand the relationship between social anxiety and the constructs of cognitive empathy.

Educating Victims of Intimate Partner Violence (IPV) on Women's Health Issues (WHIs) at the Grayson Crisis Center, Sherman, TX

Zoe Brass, Megan DeVaney, & Roshni Khosla

Faculty Sponsor: Dr. Saritha Bangara

Poster Presentation

Women with a history of intimate partner violence (IPV) are at increased risk for cardiovascular disease, human papillomavirus (HPV), cervical cancer, and human immunodeficiency virus (HIV). These have been collectively termed women's health issues (WHI). From the information gathered in our focus groups (n=38), we developed an educational module centered on WHIs and presented them to victims of IPV. We included COVID-19 as one such WHI as it has disproportionately impacted victims of IPV. The module aims to address the participants' questions and concerns while challenging and debunking commonly-held misconceptions regarding WHIs. Six educational sessions (n=21) have been presented thus far and pre-and post-tests have been used to evaluate the knowledge gained regarding these WHIs as well as the effectiveness of our education module and its delivery.

Menstrual Health Information Seeking Behaviors

Katherine Cox

Faculty Sponsor: Dr. Kerri-Anne Mitchel

Oral Presentation

A key part in creating a healthy life course for women is using Information Seeking Behaviors to learn about menstrual health. While effects of poor menstrual health are well documented, little is known about how women find information about menstruation during menarche, and how that affects health information seeking behaviors (ISB) in young adulthood. The study aims to 1) discover how young-adult women sought information about menstruation, 2) discover factors that influenced behaviors, and 3) use life-course theory to understand how menstrual health information-seeking in adolescence evolves and is reflected in health information seeking in young adulthood. This phenomenological study collected data from 15 participants at a small liberal arts college via semi-structured interviews and a written exercise. The data were transcribed and coded. Women described many adolescent ISB such as, using the internet, using the mother as a resource, and “learned from my friends.” Factors identified as potentially influencing ISB included: the regularity of the cycle, “take care of it,” and “ugh, you PMSing.” Themes related to the evolution of ISB over time were changes from parents to internet, a delay in seeking information, and a sparking event that reignited information seeking. This study seeks to add to literature surrounding menstrual health by understanding how menstruation is taught and explored by young girls and how that learning greatly impacts future health behaviors.

Factors affecting COVID-19 Vaccine Hesitancy among Austin College students

Jedidiah Lim

Faculty Sponsor: Dr. Saritha Bangara

Oral Presentation

With the recent advent of vaccines in response to the COVID-19 pandemic, factors such as concerns about vaccine safety have made it difficult for people to become vaccinated, which can affect controlling cases of COVID-19 (Lazarus et al., 2022). In particular, college campuses can become areas of elevated risk for infectious diseases due to a close number of social contacts among college students (Prillman, 2022). These social encounters can increase the virulence of infectious diseases such as COVID-19 (Bhattacharya, 2019). In our cross-sectional study, a 14-question anonymous survey was created using Microsoft Forms and conducted in Austin College classrooms during class time across disciplines, including the sciences and humanities. Statistical analyses, including Chi-Square testing and logistic regression, were performed appropriately using SPSS Data Analysis Software. These tests helped to determine the predictive power of variables such as perceived COVID-19 educational level and residential origin to vaccination status and belief in vaccine mandate. The results of this study may provide a better understanding of which factors may be associated with vaccine hesitancy and ultimately provide insight into avenues for intervention to promote vaccination on college campuses to protect college students against COVID-19.

Lack of Testing Among Healthcare Workers and its Impact on COVID-19 Infections in Healthcare Facilities

Ahana Shetty & Zoe Martir

Faculty Sponsor: Dr. Mathias Akuoko

Poster Presentation

Coronavirus (COVID-19) is a highly infectious disease that can lead to detrimental symptoms in some individuals and increase the risk of death. COVID-19 testing is a powerful tool that has been utilized to detect and prevent the spread of the disease. When COVID-19 in individuals is not detected, other people around risk being affected, and in turn infect others, even in healthcare environments. Given that testing protocols is the best available way to detect and prevent the spread of the disease, this study assesses COVID-19 testing protocols among nurses in healthcare facilities, and to analyze whether the lack of testing protocols among nurses impacted COVID-19 transmission rates in healthcare facilities and in communities. Using Google Survey forms to collect data, this study uses snowball sampling technique to survey registered nurses about COVID-19 testing protocols in their workplaces, and how that may have affected the spread of COVID-19 in healthcare facilities. We expect the results to inform us on testing protocols and other preventative measures taken by healthcare facilities to curb the spread of COVID-19 in and outside healthcare facilities.

First-Generation Students in Higher Education Institutions: Intersectionality and its Role in Understanding Students Needs

Cassandra Silva Salas

Faculty Sponsor: Dr. Cate Bowman

Oral Presentation

Using data from four qualitative interviews with first-generation, women of color, and low-income students, this article explores the experiences of such students in higher education institutions. Participants reported mixed experiences as they dealt with transitional points, social dislocations in terms of their intersectional identities, and issues navigating institutional norms and culture. However, they recalled finding coping strategies that aided them in overcoming internal challenges. These findings illuminate areas in academic spaces that need better structural and societal support for students of all identities - especially intersectional ones.

PANEL PRESENTATIONS



Women in Medieval Literature

Olivia Weber

Custance and the Sultanness as Religious Gatekeepers in Chaucer's Man of Law's Tale

Geoffrey Chaucer's *The Man of Law's Tale* employs female characters as agents of religious expansion, resistance, and stability. Custance, the Christian heroine, and the Sultanness, the Muslim antagonist, operate as the chief gatekeepers of their respective religions in the tale. Although Custance represents a passive Christian ideal and the Sultanness an aggressive Islamophobic stereotype, both characters maintain the spiritual integrity of their respective faiths in contrast with the male characters in the tale who remain impressionable and largely concerned with the secular and political aspects of religious power. Chaucer depicts Custance and the Sultanness using various sexist stereotypes, but both characters employ a significant amount of agency anchored by true, unadulterated commitment to their faiths. As female embodiments of the Christian and Muslim faiths, Custance and the Sultanness demonstrate the historic failures of Christian Crusades in the Islamic world, and their roles as religious gatekeepers subvert traditional medieval gender hierarchies.

Emma Schlomann

Nature v. Nurture in Le Roman de Silence

Set largely in 13th century England, *Heldris of Cornwall's Silence* (13th century) follows Silence, whose parents decide to raise them as a boy to circumvent gendered inheritance laws, sparking an ongoing debate between the allegorical figures of Nature and Nurture, through whom Silence's subsequent internal struggle and identity negotiations take place. This essay investigates some of the questions the author does not explicitly answer, namely: who won the Nature v. Nurture debate in *Le Roman de Silence*? While both Nature and Nurture are victorious, neither of them necessarily "win," demonstrating continuous process of developing one's identity, and indicating a complex understanding of gender that recognizes the influence of both Nature and Nurture, which is more nuanced than the historical progress narrative gives the time and its people credit for.

Charley Bartolo

**Cross-Dressing or Attempting To Pass in Ælfric's
Eugenia and Euphrosyne**

Ælfric of Eynsham's *Lives of Saints* (c.990-1002) through the stories of Saint Eugenia and Saint Euphrosyne shows women seeking to claim some of the power and authority over personal autonomy hoarded by men. While both women explore and experience the power of presenting as a man, their internal motivation and dedication to the position is presented very differently. While Eugenia chooses to live as a man for a portion of time, her motivations are more focused on avoiding detection than on a true desire to fully cast off her womanhood. Conversely, Euphrosyne assumes the identity of a man and persists in her desire for the identity throughout the course of her natural life. By exploring the motivations of both women, one can gain perspective on the different reasons a woman in the Middle Ages might choose to live as a male and the differences between these two women who choose to cross-dress before they were made saints.

Isabel Garrison

**The Roman de Melusine and Mother-Child
Relationships**

Before Hans Christian Anderson wrote "The Little Mermaid," Jean d'Arras wrote *Le Roman de Mélusine* (late 14th century), the story of a half-serpent half-woman named Mélusine who founded a lineage in France. The story winds through generations, starting with Mélusine's parents, Présine and Elinas, and continuing with her sons and their adventures. Jean d'Arras explores through Mélusine's family the tensions between marriage and the gender roles associated with marriage and noble families. Throughout the story, he makes choices that reflect medieval ideas about gender and inheritance. The relationships between Présine and her daughters and Mélusine and her sons strongly reflect medieval thoughts about patriarchal gender roles, demonization of women's bodies, and patriarchal control and lineage

English Department

Faculty Sponsor: Dr. Tom Blake

Joining Academic Conversations: Projects from the First-Year Seminar

Macey Johnson

Jackie Ponder

Carson Cook

Erica Romm

Sammi Guffey

A wide range of types of work from First-Year Seminar courses will be presented. Students were nominated for this panel by their faculty advisors.

Faculty Moderator: Dr. Erin Cople Smith

Mellon Pathways Grant Panel
*Researching Social Justice
in North Texas*

Saturday, March 25

11:15AM - 12:15PM
WCC Living Room

Dee Becerra Flores	Jonathan Lawrence
Abigail George	Natalia Nevarez
John Janes	Mike Rodriguez
Judith Juarez	Cassandra Salas
Timarea Kimbrough	Clemon White

In the Summer of 2022, 10 Austin College students embarked on community-based research projects funded through the Mellon 'Pathways to a Just Society' Grant. Many of these student are presenting their work independently at this year's ACSC, but in this special panel session, the research fellows are invited back to discuss their experiences with each other and the audience. This panel is of interest to the entire AC community, but is likely of particular interest to students who are considering applying for one of these experiences in the future.

Political Science
Faculty Sponsor: Dr. Nathan Bigelow

THEATRE

MUSIC

ART

POETRY

THEATRE PERFORMANCE
The Lady from the Sea
by Ibsen

Directed by Kirk Everist

Friday, March 24, 7:30pm

Beardsley Arena Theatre (Ida Green)

A Show By The Austin College Improv
Troupe (TACIT) will follow the performance.

CAST & CREW

<i>Ellida</i>	Megan Kiel*
<i>Dr. Wangel</i>	Brinn Flores*
<i>Stranger</i>	Jake Parrish
<i>Bolette</i>	Elizabeth Funderburk*
<i>Hilde</i>	Cecily Sims
<i>Arnholm</i>	Leo Dickinson
<i>Lyngstrand</i>	Percy Stout*
<i>Ballested</i>	Kennedy Shumate*
<i>Ensemble</i>	Jordan Silva-Ope, Zar Greer, Sean Jonte
Director	Kirk Everist
Assistant Director	Rees Foulger
Stage Manager	Brooke Lee*
Asst Stage Manager(s)	Mya Thomas*, Alora Uva
Lighting	Liz Banks, Sydney Versen*, Sawyer Ahmad*
Board Op	Siran Berberian*
Sound and Board Op	Rees Foulger
Scenic Design	Dan Pucul*
Costumes	Anna Fisher, Deedee Jansen*, Alexis Taylor
Props Master(s)	Hannah Wilemon, Keelyn Salisbury
Stage Makeup Artist(s)	Mia Rios*, Sarah Jez, Renata Loyo
House Manager(s)	Nabiha Hasan, Alexis Taylor

*denotes membership in Alpha Psi Omega

MUSIC RECITAL

Saturday, March 25

4pm

Craig Hall

Beautiful Music Together:
A Music 010 Journey

Lora Vaughan and Brianne Tseng (pianists)

Berenice Soto (soprano)

Jackson Mullis (violin)

Dr. John McGinn, Associate Professor of Music

Sylvia Rivers, Adjunct Instructor in Voice

Technically offered to help pianists meet an "ensemble" requirement for retaining departmental scholarships, Music 010 has evolved into so much over the years: a cherished opportunity for applied students to work intimately with their peers in a variety of collaborative music-making contexts, and with Dr. John McGinn who brings decades of chamber music performance (and delight) to the table. Attendees are welcomed into this rich, fascinating world – the process, goals, challenges, needs, discoveries, and above all joys for students and faculty alike. And of course, plenty of beautiful music!

Art Reception

Saturday, March 25

5pm

Craig Hall Art Gallery

Anita Renaud

Repetition

This is a study of double exposure in film photography and how we can portray the repetition of our everyday lives. This study exposes those moments that we may repeat either daily or yearly. It also may expose moments we wish wouldn't repeat. This study will also show how little we think about the mark we may leave on a place and how time changes places without us noticing.

Borderless

Poetry

Saturday, March 25

1PM - 2PM

WCC Living Room

Dee Becerra Flores
Alyssa Castillo
Isabella Lara

Larry Ramírez
Gilber Rodríguez
Zuni Rubio

"Borderless Poetry" includes students who are a part of different cultures writing poetry in various languages whether that be English, Spanish, French, Spanglish, or any other mix of two or more languages. Works that express the human experience of residing beyond a linguistic, cultural, or geopolitical border will be pursued, and all languages and language mixtures are included.

Classical and Modern Languages

Faculty Sponsor: Dr. Julie Hempel

Faculty Co-Sponsor: Dr. Sebastian Páramo

Raise Your Voice: First Generation

Suspension Literary Magazine

Thursday, March 23

7-9pm

Pouch Club

Leo Dickinson
Haydee Fuentes
Tracee Tarleton
Cyn Maciel
Apoorva Sakthivel

Diana Racila
Zuni Rubio
Jaidyn Vankirk
Cynthia Zapata

First-generation American students face many expectations from their families, peers, institutions, and society. This can make their journey to solidifying an identity or finding the right path difficult and full of emotional conflict; and these experiences are not all the same.

In the second running of Raise Your Voice, we invite Austin College students who identify as first-generation American to share their experiences having grown up with this identity, providing them a platform to freely speak. Whether it's spoken word or expression through art, these individuals are free to raise their voice to how this identity has shaped them.

English Department
Faculty Sponsor: Dr. Meg Brandl

Are you Creative?

Are you Artistic?

Are you Imaginative?

SUBMIT YOUR WORK TO

SUSPENSION LITERARY MAGAZINE

POETRY

FICTION

DRAMA

PHOTOGRAPHY

ESSAY

ART

ORIGINAL WORK

Send inquiries and submissions to:
suspension@austincollege.edu

ACUMEN

Call for Papers

ACUMEN is Austin College's student-run journal of research. Are you involved in a research project on campus?

Have you written a paper for class you are particularly proud of?

Submit your paper for publication!

~ All subjects welcome ~

How to Submit

Send your research paper (with bibliography) as .doc or .rtf to acumen@austincollege.edu

Submission Guidelines

- Submissions should be approximately 7-20 pages in length.
- Submissions may be the products of individual or class research, directed or independent studies. Please do not submit work that is up for publication elsewhere, such as honors theses or research done in collaboration with AC faculty.
- Students should consider their audience to be generally educated and well read. However, the emphasis on interdisciplinary exchange of ideas requires that technical terminology from any field be generally explained for this audience.
- Submissions may be selected for publication on a conditional basis, provided the student makes the necessary revisions.
- All papers must follow college guidelines for academic integrity.

For more information, or if you are interested in participating in Acumen as a member of the review board, please email the editor at acumen@austincollege.edu

Sponsors

CREATE@AC



AUSTIN COLLEGE
IS AN ENHANCED INSTITUTIONAL MEMBER OF THE
COUNCIL ON UNDERGRADUATE RESEARCH
Learning Through Research



SIGMA XI
THE SCIENTIFIC RESEARCH HONOR SOCIETY

*Acumen
Student
Research
Journal*



*Suspension
Literary
Magazine*



What is CREATE?

*Center for Research, Experiential,
Artistic & Transformative Education*

CREATE is the home for student research at Austin College. Located in the Wright Campus Center, room 204, CREATE helps administer opportunities for Undergraduate Research (UR) for Austin College students.

What will you CREATE at Austin College?

Director of CREATE

Renee Countryman

ACSC Coordinator

David Whelan

Scarborough Director

Mindy Landeck

Sciences Summer Research Director

David Aiello

Departmental Honors Program

Scott Langton

ENSURE Program Director

Lance Barton

Members at Large

Mikidadu Mohammed

Loriann Garcia

Student Representative

Jessica Hoffman

ACSC Committee



Coordinator

David Whelan

Associate Coordinator

Mikidadu Mohammed

Fine Arts Representatives

Kirk Everist

John McGinn

Mark Monroe

Humanities Representatives

Jeffrey Fontana

Colin Foss

Sciences Representatives

Huy Nguyen

David Whelan

Social Sciences Representatives

Danielle Franks

Mikidadu Mohammed

Student Representative

Hector Diaz

Administrative Representative

Jennifer Torres

WHAT DID YOU LEARN TODAY?

We are interested in hearing about your experience at the 2023 AC Scholars Conference!

Participate in a research survey for a chance to WIN a prize!!!

You have two options:

1. Use the QR code below, then email your confirmation page to:

CREATE@austincollege.edu



- or -

2. Sign-in at the registration table, or with one of our volunteers and complete the survey.

Congratulations to the 2nd Place Winner of the 2023 Abstract Book Cover Artwork Design Contest

Joseph Cernero '25

Intended Major(s):
Public Health & Business



If you are interested in seeing your art work on our 2024 program cover, or on posters we will use to advertise the 2024 Austin College Scholarship Conference, please email:

acsc@austincollege.edu

(Keep in mind that the due-date will be at the beginning of 2024 Spring semester.)

PAST FIRST PLACE ART CONTEST WINNERS:

2022 Winner: Ryann Ashlock



2021 Winner: Rachel Young



Cover Art Contest Winner

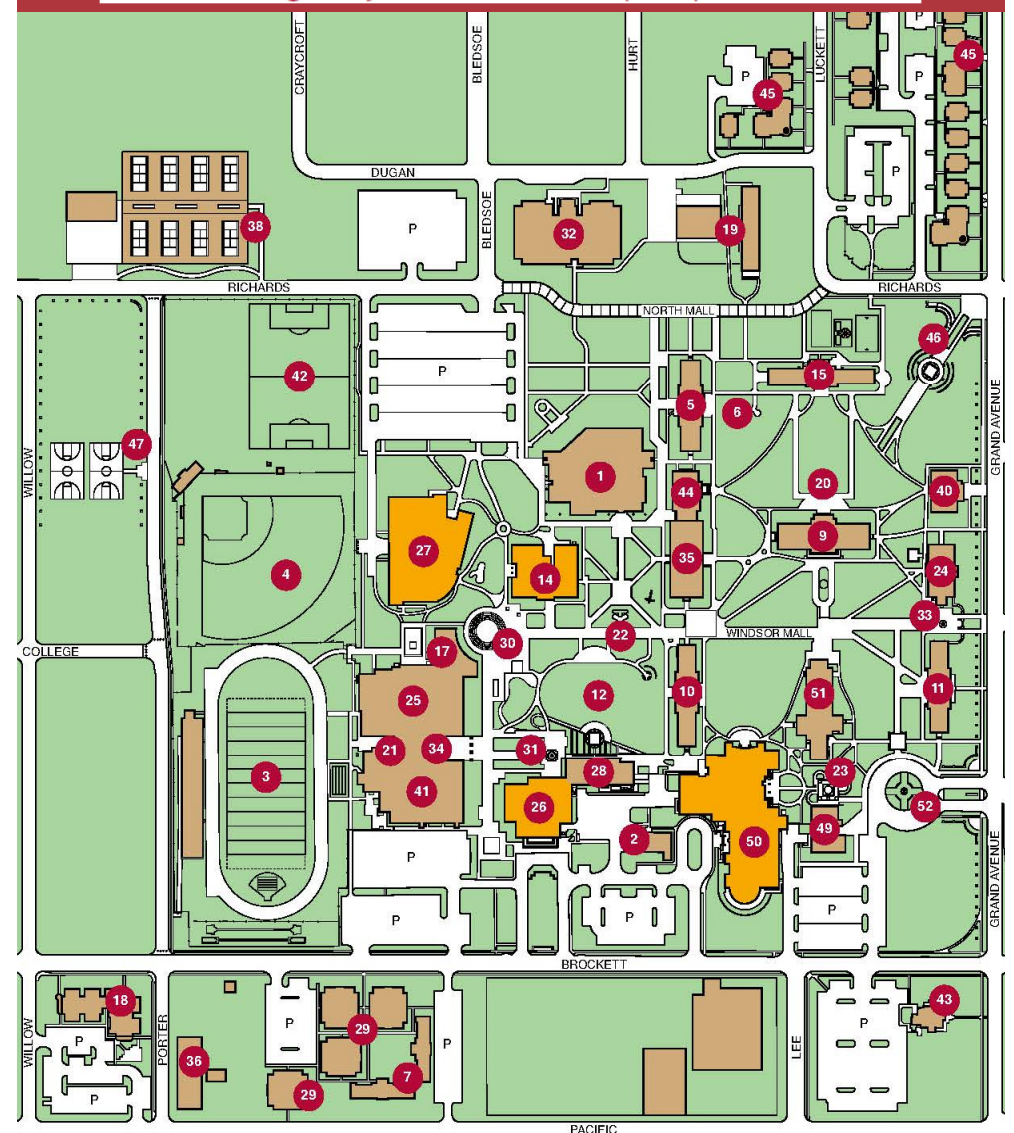
Congratulations to the Winner
of the 2023 Abstract Book Cover
Artwork Design Contest

Madison Wilson '23

Major: Business Admin and Graphical/
Human Interface Design



Austin College Map - Student Scholarship Conference Locations



MAP KEY

- | | | | |
|-------------------------------------|---------------------------------------|---|---|
| 1. Abell Library Center | 14. Craig Hall for Music | 28. Jackson Technology Center | 41. Sid Richardson Recreation Center |
| 2. Adams Center | 15. Dean Residence Hall | 29. Johnson 'Roo Suites | 42. Soccer Field |
| 3. Apple Stadium | 16. Detweiler House | 30. Jonsson Fountain | 43. Temple Center for Teaching and Learning at Thompson House |
| 4. Baker Athletic Field | 17. Dickey Fitness Pavilion | 31. Jonsson Plaza | 44. Thompson Hall (Sciences) |
| 5. Baker Residence Hall for Men | 18. The Flats at Brockett Court | 32. Jordan Family Language House | 45. The Village on Grand |
| 6. Ella Barker Memorial Garden | 19. Forster Art Studio Complex | 33. Kappa Fountain | 46. Williams Founders Plaza |
| 7. Bryan Apartments | 20. Hall Graduation Court | 34. Mason Athletic-Recreation Complex | 47. Williams Intramural Complex |
| 8. Carruth Guest House | 21. Hannah Natatorium | 35. Moody Science Center | 48. Windsor House |
| 9. Caruth Administration Building | 22. Hersh Memorial Garden | 36. Physical Plant Building | 49. Wortham Center |
| 10. Caruth Residence Hall for Women | 23. Honors Court and Collins Fountain | 37. President's House | 50. Wright Campus Center |
| 11. Clyce Residence Hall | 24. Hopkins Social Science Center | 38. Russell Tennis Center | 51. Wynne Chapel |
| 12. College Green | 25. Hughey Gymnasium | 39. Settles House | 52. Zauk Circle Drive and Garden |
| 13. Collins Alumni Center | 26. Ida Green Communication Center | 40. Sherman Hall (Humanities) and Hoxie Thompson Auditorium | P = Parking |
| | 27. IDEA Center | | |