

ABSTRACTS OF
THESIS PROJECTS

SPRING 2021

The Honors Program
and
University Scholars



Baylor University®

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Mahlet Adugna, Biology

LesLee Funderburk, mentor

The Effects of Leucine Supplementation on Lean Mass and Strength in Young and Midlife Adults

Leucine is well known as a supplement that has the ability to augment lean mass and strength. Multiple studies on the benefits of leucine supplementation in older age groups have been published. Thus, this review focuses on examining articles studying the effects of leucine supplementation in younger and middle-aged subjects. In such studies, strength and body composition were assessed and comparisons made between those subjects taking placebo versus those taking the actual supplement. Fat mass, lean tissue mass, and maximum strength measurements are key variables used to assess the success of the supplementation as they indicate body composition changes as well as strength gains. Furthermore, the effects of leucine supplementation during periods of inactivity or bed rest were also examined. In this review, the CINHALL and Pubmed databases were used to choose a total of ten articles with young adult (18-35) and middle-aged (36-55) subjects and then analyzed on the categorical basis of gender, age group, training program length, and leucine dose. Common limitations of studies were discussed as well as implications of the use of leucine supplementation in the younger population.

Mia Angeliese, Psychology

Jennifer Howell, mentor

“Made in the Image of God” – How the Tripartite Mind-Body-Spirit Structure of Humankind Mirrors the Trinitarian Structure of God, an Ontological Theory

This thesis presents a new ontological theory of imago Dei (the image of God) in humankind. Chapter One analyzes in-depth what it means to be made in the image of God, and what is required of any theory of imago Dei to be regarded as a plausible potential theory of how the image of God is represented in humankind. Chapter Two discusses Trinitarian theology as well as accepted truths of the Trinitarian structure and functioning. Chapter Three presents a new ontological theory of the image of God in humankind. This theory purports that humans have a tripartite (three-part) structure – mind, body, and spirit – that represents a sort of trinity in humankind which mirrors the Trinitarian structure of the Godhead and serves as God’s image in humanity. Chapter Four discusses mind-body-spirit health and wellness and suggests a holistic approach to healthcare that considers the whole of what it means to be human, made in imago Dei.

Alaina Grace Baird, University Scholar

Jeff Levin, mentor

A Faithful Man Suffering in Illness: Religious and Medical Perspectives on the Book of Job

Many works have examined the sufferings of Job in the Bible, but few have focused specifically on Job’s disease. This thesis looks at Job as a religious man struggling with sickness to gain insight into the relationship between religion and illness. First, I use the text of Job to determine what physical and mental diseases could have plagued Job. Then, I conduct an interdisciplinary analysis on the relationship between religion and health in Job from

medical, religious coping, psychosocial, neurobiological, and theological perspectives to consider why Job turns to God in illness and how religious beliefs and illness influence each other in Job. Lastly, I apply these findings to modern life. Major conclusions include that Job could be diagnosed with depression, that hope in illness is found not in understanding the meaning behind disease but in reaching for a transcendent being or purpose, and that a biopsychosocial-spiritual model is integral to understanding health. The implications of this paper are relevant to suffering patients, health care providers, scholars of religion and disease, and anyone supporting a loved one through illness.

Hudson Baker, University Scholar

Melinda Nielsen, mentor

Two Conceptions of Death in J.R.R. Tolkien's Works: An Ambrosian and a Thomistic Account

J.R.R. Tolkien says that the "real theme" of *The Lord of the Rings* is "about something much more permanent and difficult" than the desire for power; namely, "Death and Immortality." The theme of death is even more explicit in books such as *The Silmarillion* and *The Children of Húrin*. Tolkien is thus very concerned with death and the proper response to it, a concern which goes beyond his stories; while discussing the Eucharist in a letter to his son, Tolkien writes ardently about the meaning of death. In this thesis I explore the relationship between two accounts of death in Tolkien's works with those of two Catholic theologians: Ambrose of Milan and Thomas Aquinas. In doing so, I argue that the Elvish account correlates strongly with the theology of Ambrose, whereas the conception espoused by Men resembles the theology of Aquinas. Finally, I propose that these two accounts in Tolkien's works are synthesized in the story of Aragorn and Arwen to form a complete, balanced, and original conception of death, one which merits serious attention within Catholic theology on death.

Sreya Bhattaru, Philosophy

Anne Marie Schultz, mentor

Exploring The Philosophical and Cultural Significance of Avatar The Last Airbender

The Nickelodeon television series *Avatar the Last Airbender* was a popular children's show, which aired from 2005-2008. The show was an adventure-journey type of genre, which also mixed together eastern and western philosophical traditions. There are also socio-political topics that the show takes on in efforts to include a greater social commentary of the real world. My thesis explores these various philosophical traditions and cultural significance in order to display how it would be considered 'appropriate' media by Plato, and therefore, another text of philosophy, introducing the audience to various, realistic depictions of human nature, and virtue ethics. I first discuss the friendships in the show, while relating them to the different friendships outlined by Aristotle. Friendships were categorized as either having virtue or exhibiting qualities that resembled virtue. In my second chapter, I discover the different eastern and western philosophical influences of the show. I look at Hinduism, Taoism, Confucianism, Kung Fu, the Presocratic philosophers, Plato, Aristotle, and Heidegger. As the show embeds these philosophical traditions in a very respectful and never-done-before way, I found this show as a potential model of a new type of storytelling, that would encompass more complex thoughts regarding traditional notions of good versus evil. In my third chapter, I analyze a few key characters and their moral formations, while using Aristotle and Machiavelli as the framework in which to view their actions and individual journeys. In my final chapter, I interpret the various contemporary, real-world topics that the show masterfully embeds into various episodes. These include, the environment, disabilities, censorship, Asian representation in the media, Feminism, and colonialism/oppression. I also reflect on my thoughts on the show both when I saw it as a child and later as an adult—as well as other viewers' thoughts on the show, in order to display the impact it has on peoples' lives.

Callie M. Boren, University Scholar

Jason Whitt, mentor

Hearing Humanities: A Holistic Approach to Audiology Education

This thesis explores the intersection of Deaf/disability identity and the practice of audiology, and has three aims: first, to establish broad background information about the common cultures, identities, and models that relate to disability; second, to connect this background information to the personal and social domains of the lives of people with hearing loss; and finally, to establish current problems and provide direction in training future audiologists in order to ensure clinicians provide care that is above and beyond minimum ethical standards. The first aim will be accomplished by outlining the history and development of Deaf culture and its key features, framing the parallel history and development of disability culture and identity, and comparing and contrasting Deaf culture and identity with disability culture and identity. The second aim of this work will be accomplished by revisiting the definition of disability models, introducing the models that might have bearing on the lives of people with disabilities, and applying these models to the social experience of a person with hearing loss. The final aim of this work will be accomplished by establishing a brief history of the field of audiology, examining the ethics that guide audiology practice, defining and describing audiological counseling, and introducing a new approach to training clinicians that incorporates the humanities.

Fielding Brown, University Scholar

Scott Moore, mentor

The Mad Farmer's Medicine: What Physicians Can Learn From the Writings of Wendell Berry

11As a self-proclaimed contrarian, author Wendell Berry is a fierce critic of many aspects of modern American life. Most of Berry's work primarily discusses the industrialization of agriculture and the effects this has on rural communities, but he has also written about the healthcare system in both his fiction and an essay titled "Health is Membership". While many people agree there are flaws in the American healthcare industry, some readers might dismiss Berry's criticism due to his lack of medical training. In this essay, I will argue that Berry's understanding of health as wholeness is not only sound but can help aspiring physicians become better healthcare providers. In both his fiction and non-fiction, Berry's definition of health necessarily places an emphasis on communal well-being while highlighting the limitations of medicine. In a time of pandemic, the local wisdom of this "Mad Farmer" might be more important for physicians than ever before.

Nathaniel Brown, Electrical and Computer Engineering

Scott Michael Koziol, mentor

Neural Circuit Implementations Showing Stochastic Resonance Using Custom Integrated Circuits

Research has been on several fronts. First, uncovering and documenting how to use field programmable analog arrays (FPAAs) developed at GT. Second, circuit simulations to verify function of different neural circuits. Third, realizing circuits on the FPAA. Fourth and last, combining noise generator with silicon neurons to provide data to validate theory of stochastic resonance simulated in the Neuromorphic & Robotic Systems Lab at Baylor.

Ethan Bryant, Classics

Jeff Fish, mentor

Annotated Translation of Euripides' Ion

Euripides' play *Ion*, like his other works, has been translated numerous times into English. However, these translations are often completed in poetic verse, and while still readable, can deter or isolate modern audiences from engaging with the text. This translation aims to create a prose rendition of the play in idiomatic English that is easier to read while still retaining elements of the original Greek. Combined with a section of endnotes to help explain obscure mythological allusions as well as point out interesting features of the language, this project hopes to make the world of Greek tragedy a little more accessible to the modern audience.

Daniel Burch, Political Science

Pat Flavin, mentor

An Examination of Texas Public Improvement Districts & Legislative Intent

Business Improvement Districts (BID) are assessment-levying entities that tax the stakeholders within their borders in order to raise funds for improvements that would not otherwise receive funding. These are traditionally established in downtown areas suffering from neglect in order to revitalize them with the goal of ultimately improving the area, thereby attracting new visitors, streams of revenue, and investment. The downtown BID model is a well-documented entity and has many successful examples across the country and the world. The BID model's success, however, has attracted attention from other entities beyond the traditional downtown stakeholders it initially—and primarily—serves. In Texas, BID-type programs are called Public Improvement Districts, or PIDs. There are many Texas PIDs that serve downtown areas that date back to the 1980s and continue in successful operation to this day. However, there are also less-traditional programs operating under Texas' primary PID-enabling legislation, Texas Local Government Code Chapter 372. This study seeks to better understand these non-traditional PIDs by conducting both qualitative and quantitative comparative analyses between the older, traditional downtown PIDs, and the recent phenomena of residential PIDs (more specifically, those used to develop previously undeveloped land for residential purposes). I find that when converting residential PID developments' flat assessments into an assessment rate per \$100 of property value (the measure used by downtown PIDs in their assessment methodology) and simultaneously accounting for interest accrued over various increments (derived from PID renewal terms) that new residential PIDs feature significantly higher assessment rates compared to downtown PIDs while simultaneously providing less-substantive benefits. Chapter 372 requires that PIDs provide distinguishable and excludable "special benefits" to the district. In assigning PIDs a 0-1 score based on how closely they are following and adhering to the legislative intent of the law, I also visualize and analyze the interaction between assessment rate and legislative intent via a number of original databases. Finally, I make recommendations for how PID policy in Texas can be reformed or adjusted in order to ensure that these districts adhere to both the letter and the spirit of the law, and in doing so, can best serve as a tool of governance for Texans.

Carolyn Carper, University Scholar

Curt Nichols, mentor

Divergent Pathways of Development: Infant Mortality in Barbados and Guyana, 1834 – 1966

This thesis explores the development of health-related policy in British Guyana and Barbados, two of the first English-speaking colonies in the Caribbean to gain independence from Britain. Following emancipation in 1834, British Guyana seemed to have many developmental advantages over Barbados. However, by independence in

1966, conditions in Barbados were better than in Guyana. Using infant mortality data as a measure of community health, this thesis examines how labor and economic factors, political structures, and stability directly influenced health in these developing countries. Ultimately, health development in Guyana was slowed by ethnic and class conflict, economic isolation, and ineffective governance. Meanwhile, as Barbados adopted democratic values and leaned on education, international partnerships, gender inclusivity, and economic diversification, its health went from “worst to first.” Overall, this thesis identifies factors that directly influenced the development of healthcare in Guyana and Barbados. By doing so, it argues that developing countries ought to utilize a holistic approach to sustainably improve health outcomes.

Adam Casseri, University Scholar

Tiffany A. Rose, mentor

Post-partum Depression: A Multi-provider Examination in McLennan County

This thesis examines Postpartum Depression and Perinatal Mental Health through a cross-disciplinary examination of the current care models and overall provider perspectives in McLennan County, Texas. It looks to examine current practices and provider insights in relation to the prevalent current research discussion in the Perinatal Mental Health community. This thesis includes perspectives from four different disciplines and analyzes their individualized perspectives and opinions on the current processes for the identification, diagnosis, and treatment options for women in McLennan County who are diagnosed with Postpartum Depression.

Izza Chatta, Biology

Matt Asare, mentor

Exploring the associations between social cognitive theory and depression among college students

The transition from adolescence to young adulthood during college years brings many stressors simultaneously for students causing many to experience depression. The objective was to analyze depression among college students using social cognitive theory by determining the association between college student’s social environment and depressive symptoms. It is a cross-sectional study based on a questionnaire survey with demographic questions and various other questions to assess depressive symptoms, self-efficacy, relationships with professors, and relationships with peers among the student participants. About 400 Baylor University students with different demographics participated in the survey. The results of the study indicate that there is a significant correlation between depression, self-efficacy, relationships with peers and professors. The results also demonstrate that teens (below 20 years) were more likely to experience depression than adults (20 years and above), and the rate of depression among females was twice that of males. The higher rate in teenagers and females was consistent with many of the previous studies.

Bella Chavez, Film and Digital Media

James Kendrick, mentor

This Isn't Superman: A Study of the Effects of Film Adaptation and How to Make a Good One

Adaptation studies, though only recently a formal area of study, could be argued to have existed since the invention of the filmic medium, all the way back to 1895 when the Lumière brothers invented the Cinématographe. Many of the first films ever made were adapted from books or plays. Since the field has grown into a more formal area of study, cinema scholars have been wrestling with the question of what makes an

adaptation “good”? There are many different aspects of adaptation to consider. The list is extensive; there is fidelity, tone, atmosphere, length of each respective piece, interpretation, and so on. My thesis will be a development of criterion for what makes a successful comic-to-movie adaptation. This will be done first through an exploration of past research, then an examination of a number of comic-to-movie adaptations, looking at what made the movies work or not as an adaptation, and showing how meeting my criterion for a successful adaptation could have affected the adaptation.

Grace Chen, University Scholar

Arna Hemenway, mentor

The Slow Burn that Lasts Forever: Bookbinding Transformative Fiction

Fan studies and transformative fiction studies are still relatively new areas of scholarship. Fan studies also lacks focus on transformative fiction (“fanfiction”) of stories with transcultural roots, such as anime and manga fanfiction. Finally, although existing fan scholarship studies fanfiction from several perspectives—including areas such as English and communications, anthropology and ethnography, media, film, and television, psychology, and law (Hellekson and Busse)—there is focus on fanfiction’s past and present, rather than its future. In this project, I write long-form fanfiction that transforms two anime and manga franchises (Haruichi Furudate’s *Haikyuu!!* and Kyoto Animation’s *Violet Evergarden*) and use the work as material to bind into a case-bound, hardcover book. In doing so, I argue for fanfiction’s right to existence in a permanent, physical form, in opposition to its current, ephemeral existence online, thus preserving fanfiction’s transcultural, queer feminist, and folkloric nature.

Jessica Marie Clark, Anthropology

Michael W. Stroope, mentor

Promoting Cultural Humility in International Volunteer Tourism Discourse

The international volunteer tourism sector has grown rapidly in the past four decades. Some researchers argue that colonial ideas of Western superiority have flowed into volunteer tourism discourse. The language communicated by some of the organizations not only reveals their attitudes but has the potential to shape and reinforce volunteer perceptions. These communicated perceptions may be harmful when translated to host communities. This thesis examines the language these organizations communicate in their promotional materials. Seven characteristics were identified from the literature as most important for demonstrating an attitude of cultural humility and reducing neocolonial stereotypes in the discourse. These criteria are evidence of self-reflection, recognition of historical relationships, appreciation for mutual learning, building of partnerships, exhibiting respect for others, rejecting stereotypes of the “other,” and reducing praise of the volunteer. Six organizations were rated on these seven criteria on a scale of 1-5. Several organizations were concluded to communicate a value for partnership building but appeared to demonstrate a lack of respect for the host community. Goals for necessary improvement are to highlight the mutual benefit of the host-volunteer relationship and to challenge volunteers to reflect on their own expectations.

Payson Jeyaraj Clark, University Scholar

Charles McDaniel, mentor

Promise and Peril: Genetic Screening Technologies; Their Use Today and Potential Consequences Tomorrow

Knowledge is power. Through tireless research in the lab, new genetic technologies utilized for human treatments are coming to the American marketplace. Of these new technologies, those involved in genetic screening and testing are of particular interest to this thesis because of the subtle tensions that exist within these new tools of medicine. These technologies have great potential in identifying diseases so that they can be properly addressed through medical treatment. They reveal the genetic predispositions and history of individuals found in their very genetic code. However, these screening and testing technologies also present potential challenges to the American healthcare system. Questions concerning the implementation of such technology through traditional healthcare channels and access to these technologies remain unanswered. Such powerful pieces of technology, like those used in genetic screening, may also exacerbate societal divisions among the population. The potential, and unequal, use of these technologies coming to market is a crucial aspect to consider as those with more resources may become the sole, and repetitive, benefactors at the expense of those with less resources. Thus, this thesis serves as a vehicle to consider such key questions and hopefully inspire the necessary deliberation required to use these new technologies in a way beneficial to all.

Caleb Cruseturner, University Scholar

Robert Elder, mentor

National Interest Over Idealism: John C. Calhoun in British Newspapers

This thesis is an examination of John C. Calhoun's treatment in the newspapers of Great Britain and Ireland during the statesman's career. The thesis concludes that national interest best explained the British and Irish press's varied attitudes towards Calhoun. For instance, British newspapers tended to praise Calhoun when his foreign policy proposals dovetailed with British imperial interests and tended to denigrate Calhoun when their interests conflicted. Irish newspapers, meanwhile, tended to praise Calhoun, often based on a sense of shared culture heritage.

Melissa Ann Cullum, Medical Humanities

Michael R. Whinton, mentor

The Good Place: An Approach to Grapple with the Chaos of 2020-21

In an unfortunate turn of events, the year 2020 was not the year of 'perfect vision' that it was so highly anticipated to be. The uncertainties and tragedies due the devastating COVID-19 pandemic and an overwhelming increase in political and social disruption have only continued in 2021. These events undoubtedly have brought an acute focus on death and increased overall anxiety due to the reality of a premature death. This thesis addresses the ways in which 2020 and 2021 have created a mental shift in the United States and proposes a unique strategy to cope with the shift. The proposed strategy is anchored in the award-winning show, *The Good Place*, developed by Michael Schur. *The Good Place (TGP)* grapples with life after death, moral action, and the relationship between the two. *TGP* serves as a platform that those who have found themselves in existential crises during this year can use to explore moral and ethical enlightenment.

Micah Dadson, University Scholar

Matthew Fendt, mentor

Using an Interactive Narrative App on Object Oriented Programming to Teach about and Interest Middle School Girls in Coding

Central to learning is attention, and students are more likely to be engaged with material when interested in it. Learning games are a popular method to encourage engagement. We designed a narrative learning game that targets middle school girls to teach and interest them in object oriented programming (OOP). Because many students report difficulty with first time exposure to OOP, we thought it important to make learning more accessible. It has been shown that difficult material can be understood more easily and retained in memory for greater time if learned in a rich context and processed deeply[10]. The narrative framework of our game serves not only to entertain, but to provide a rich medium via which our subjects can learn. We found that most subjects were entertained by our learning game Narrate, that many had an increased interest in computer science, and that Narrate was effective in teaching various OOP concepts. This validates the use of narrative games to teach OOP.

Neal Ryan Deitz, Biochemistry

Debra Harris, mentor

Firefighter Hood Polycyclic Aromatic Hydrocarbon Absorption and Permeability

Firefighters face more dangers than fire and smoke. Their equipment is designed to protect them from the immediate operational hazards, but many firefighters will develop chronic illnesses such as cancer. Exposure to toxic chemical substances originating from fires affects the lives of firefighters internationally every year. One common group of potential carcinogens present in fire is polycyclic aromatic hydrocarbons (PAH). Studies regarding PAH contamination in firefighters after missions highlight the neck as a potential hotspot for dermal absorption. In firefighter gear, the hood is the component which best protects the neck. This thesis scrutinizes a standard Ara-Tek FR™ Tri-Blend Hood's ability to absorb PAHs from smoke by filtering smoke simultaneously through a hood filter and a control hoodless filter. Smoke was bubbled into water and subsequently filtered through SPE cartridges to extract the PAHs. GCMS was used to identify PAHs and quantify their concentrations.

Jannae Delacot, Sociology

Matthew Andersson, mentor

Mental Health Utilization Pathways During COVID: Results from a Private University

The majority of people who experience symptoms of mental illness never receive treatment for their mental health and college students are no different. This thesis examines college students' mental health service utilization journeys. Analyzing data collected from a survey given to students at Baylor University in the spring of 2021, this study looks for connections between informal and formal mental health service utilization as well as past support and peer networks. This research examines the data from perspective of the network-episode model of mental health utilization. This thesis tries to better understand the illness career and the social support systems that best correlate to mental health service utilization. The findings suggest that current and past social support provided by friends and family are associated with higher rates of utilization. Analysis of religious support indicate that there is little association between utilization rates for those receiving informal support from their religious community. The stress associated with the COVID-19 pandemic correlates with utilization rates and perceived need of help. The pathways to utilization are diverse. This thesis provides a closer understanding of utilization among students.

Ethan Dickey, Computer Science

Enrique Blair, mentor

Ab Initio Formation Energy Calculations for Defect Complexes in Diamond, ZnSe and CdS for Room-Temperature Quantum Computing

Quantum computers are beginning to demonstrate a potential for practical uses in data security, protein folding, artificial intelligence and machine learning, and economics. Current obstacles to reliable large-scale quantum computers include better decoherence times, improved error correction schemes, and consistent fabrication. Creating a qubit (quantum bit) that can exist at room temperature makes large progress in each of these obstacles while decreasing operational costs (since operation won't require cryogenic temperatures). Diamond has shown promising results when a defect known as the Nitrogen Vacancy (NV) complex is introduced via doping into the crystal. However, diamond is expensive to fabricate and foundries that can do so are rare. ZnSe and CdS, by contrast, can be grown at lower temperatures and pressures than diamond, and don't require the expensive retooling of foundries for the higher pressure and temperature required in diamond fabrication. This study provides a structure with which to identify semiconductors with similar desirable electronic properties as the NV defect in diamond and identifies potential defects for the two specified semiconductors of interest. This work may guide experimental exploration of quantum technologies based on semiconductor defects and could lead to lower cost, room-temperature qubits that are easily fabricated using the vast infrastructure of the current semiconductor industry.

Alex Dillard, University Scholar

Leslie A. Hahner, mentor

Faith-Based Films: A Cultural Analysis

This thesis analyzes two faith-based films, *God's Not Dead* and *Silence*, and corresponding paratextual sources, as cultural artifacts to identify each film's encoded and decoded messages and representations of Christians and non-Christians. First, a history of Christian film and summation of current literature is presented. Then, the significance and relationship between film, culture, and Christianity is discussed. Cultural studies, whose interdisciplinary tenets guide the methodology of this study, is explained. The analysis in this thesis is three-pronged and examines the production and marketing of each film, the films proper, and the critical response to each film. In light of this analysis, whether or not each film was able to maintain a label of faithfulness and the significance of the Christian culture industry is discussed. This thesis concludes that *God's Not Dead* is able to maintain a label of faithfulness through its explicit conservative, evangelical messaging and extensive marketing, while *Silence* is unable to maintain a label of faithfulness due to its vague messaging and noncompliance with the Christian culture industry. This thesis contributes to current literature by examining how paratextual resources aid in crafting an understanding of a film, identifying a faith-based pedagogy, and discussing the Christian culture industry.

Bethany Dollar, Medical Humanities

James Marcum, mentor

An Examination of Qi Through the Lens of Western Medicine

The concepts of Traditional Chinese Medicine, and specifically the concept of Qi, are frequently difficult to reconcile with the biochemical systems approach of Western Medicine. However, an examination of the physical, chemical, and psychological mechanisms associated with treatments related to Qi reveals that an approach to medical treatment through Qi philosophy affects health in a physiologically recognizable manner, with Qi-based treatments acting on multiple biological systems at once. Though a physical manifestation of Qi cannot be

demonstrated in scientific research, an understanding of Qi as a philosophical system that informs diagnosis and treatment of disease in Traditional Chinese Medicine increases the potential for integration of TCM medical knowledge into western medicine and encourages legitimization of the traditional Chinese medical perspective.

Madeline Drevlow, University Scholar

Matthew Andersson, mentor

A Head Start on Health: Early Childhood Interventions and Health Across the Life Course

Rich theoretical and empirical literature link early childhood factors to adult health outcomes, providing evidence that health disparities start early in life and propagate throughout the life course, with non-cognitive skills being increasingly implicated in this relationship. Model preschool experiments such as Perry Preschool and Abecedarian give further support to this claim in addition to highlighting an important and perhaps more promising feature of the life course view of health – that interventions in early childhood might be leveraged to reduce the effects of early disadvantage on adult health. Despite this hopeful preliminary evidence, concerns remain over whether such experimental findings can be implemented on a broader scale. This thesis examines the role of Head Start, the United States' largest federally funded comprehensive early childhood program, in supporting the earlier findings from model preschool programs. I address the limitations and gaps in existing Head Start literature that prevent comprehensive analysis of long-term health outcomes and give recommendations for utilizing existing longitudinal data in the Children of the NLSY79 study, which includes rich information on health behaviors, self-rated health status, and non-cognitive factors that can further our understanding of Head Start's impact on long-term health outcomes and the pathways through which early childhood interventions might act to influence adult health.

Rachel Elequin, Business Fellows, Finance, and Economics

David Reid, mentor

An Analyst's Guide to Patents

Prior to this work, Baylor Angel Network analysts and angels alike have handled patent diligence without the benefit of a simple framework to evaluate the patent component of an early-stage company. I aim to provide a concise, useful guide to help analysts rigorously and objectively evaluate companies that depend on patent protection. In sum, I recommend that the analyst should understand the stages of the patent(s), ask strategic questions to clarify the quality and depth of protection, and understand patent value in its broader context. Patents are primarily valuable when the company creates value within the patent's boundaries and inasmuch as the company has the practical ability to defend its patent rights. In addition to the patent overview, significant analysis has been completed on specific, confidential, medical device startups. Example analysis (anonymized to protect sensitive information) is included in the appendix and constitutes much of the work that went into the thesis project.

Nikita Farhaj, University Scholar

Jeff Levin, mentor

Efficacy of Community-Oriented Primary Care in Rural Areas: A Case Study of Kearny County Hospital

Social determinants of health have long been established components of patient outcomes, to the extent where occasionally an individual's position on the social gradient proves a greater predictor of health than certain physical risk factors. Systemic isolation of social and medical services as entirely separate entities often results in

gaps of care, while in contrast, their integration serves to narrow health disparities. In rural communities, these health inequities are far more substantial. This thesis serves to focus on Kearny County Hospital, located in rural southwest Kansas, as a case study analyzing the hospital's local impact through its identification of needs and initiation of relationships with potential community partners. Then based on the evidence gathered from the literature review, this thesis will examine KCH's incorporation of the practices and values discussed and their effectiveness in improving general local health. It will explore the potential of implementing similar care throughout other rural communities by generalizing the scope of the findings.

Megan M. Feikema, Medical Humanities

William G Hoy, mentor

Medical Students and Money: Investigating Medical Students' Perceptions of Money, Debt, and Spending

This grounded-theory study explores how medical students perceive debt and spending and discusses how their perceptions may impact their utilization of money and debt. To do this, interviews were conducted with current medical students and residents. In accordance with grounded theory methodology, interview field notes were coded for emergent themes and compared using constant comparison. Several themes emerged throughout the interviews: the necessity of debt, the abstract nature of debt, debt's effect on conscientious spending, and the importance of freedom. Medical students viewed debt as inevitable; they saw it as a necessary investment in order to become a physician. Students also held a very abstract and distant view of their debt, and generally did not see their lifestyle or spending decisions during medical school as impacting their financial situation. Additionally, debt-free students were more conscientious about their daily financial practices than students who had already accumulated debt. Freedom, including financial freedom, career choice, and location, was the most important factor in being debt-free and paying off debt for all the study's participants.

Kyla Ferguson, University Scholar

Michael K. Scullin, mentor

An Experimental Investigation of Sleep Restriction on Religiosity and Forgiveness

Religious institutions advocate for love, compassion, and empathy within their congregations. They also often push for time privately in prayer and reading religious texts. Sleep has been shown to have effects on cognition, forgiveness, and mood, which could affect religious individual's behaviors and treatment towards others. We investigated whether sleep deprivation can alter mood and cognitive resources and change religious cognitions and attitudes towards religious leaders who made mistakes. Forty-nine undergraduates participated in a two-session study that included mood questionnaires, cognitive tests, and measures of religiosity. All participants were given wake times of 7:30am and randomly assigned to bedtimes of either 10:30pm or 1:30am from Monday through Thursday night. Sleep restriction resulted in greater mood disturbance and reported sleepiness. Sleep restriction also resulted in rating God as less responsive, decreasing time in prayer throughout the week, and less forgiveness of religious leaders who made mistakes. Religious institutions should push for better sleep health within their congregations to positive feelings and actions towards both God and others.

Bethany Fernandes, Neuroscience

Stacy Ryan-Pettes, mentor

Role of Parent Psychopathology, Parenting, and Parenting Competence on Outcomes Following Multisystemic Therapy

Multisystemic Therapy (MST) is a comprehensive family-based treatment that is well-established for the treatment of youth with significant externalizing behaviors, with several studies examining its mechanisms of change, including parenting behaviors like inconsistent discipline. This study examined the association between parent psychopathology at the start of treatment and child aggressive behaviors at long-term follow-up, and whether perceptions of parenting competence and consistent discipline mediate this association. Results showed sense-of-competence and consistency of discipline were not sequential or non-sequential mediators of relations between parent psychopathology and aggressive outcomes at 6 months. More research is needed to better understand the complex relationship between sense-of-competence and consistent discipline as mediators of behavior. Future studies should examine other mediators of change in MST and whether the relationship is valid in cross-sectional rather than longitudinal models.

Peter Ferretter, English

Moisés Park, mentor

An English Translation of La sonrisa etrusca: The Etruscan Smile

La sonrisa etrusca is José Luis Sampedro's seventh novel and it remains his most successful work. This 1985 bestseller is featured in *El Mundo's* list of the 100 best Spanish novels of the 20th century, and in 2018 it even received a film adaptation. These achievements alone make it a worthy book to translate, and currently it is available in French, German, Dutch, Italian, Lithuanian, Romanian, Arabic, Hebrew, and Chinese. Amidst all these languages, there is no English translation. In an attempt to address this omission, this thesis presents the first thirty chapters of the novel in English for the first time.

Abigail Flanders, University Scholar

Jason Whitt, mentor

Addressing Postpartum Depression in the Primary Care Setting: Current Screening Practices and Quality Improvement

As the family's primary point of interaction with the healthcare system in the postpartum period, the pediatric primary care setting offers an invaluable opportunity to identify parents suffering from postpartum depression and refer them for treatment. However, research from the American Academy of Pediatrics indicates that physicians frequently underutilize opportunities to screen parents for the condition, and even those who do screen positive for depressive symptoms may never receive help. This failure to diagnose and treat postpartum depression on a consistent basis ultimately harms both parental and infant health. This thesis examines the current state of the problem, beginning with a brief history of the medicalization of postpartum depression. After giving some general background on the condition, this thesis offers a multivariate analysis of the incidence of postpartum depression in a private pediatric clinic in Northern Virginia. Finally, the referral practices of this clinic are examined, and suggestions are made for quality improvement.

Catherine Foley, Great Texts

Amanda Sigler, mentor

If the Shoe Fits: a Cultural Analysis of Cinderella

"Cinderella" is one of the most recognizable stories of all time. Universally beloved and the inspiration for countless retellings, she has touched hearts across the world with her goodness and kindness. This story has found a home in many different countries; over 400 different "Cinderella" stories have been documented across the world and throughout history. This paper recounts three examples of a "Cinderella" story, found in France, Germany, and Native American tribes in Canada. Through detailed analysis, it will look at the history of fairy tales, the elements of a "Cinderella" story, the cultural influences on the stories and the influence of the stories themselves. Along with a look into the symbolism in this tale, this paper will explore these themes to answer the question "What do fairy tales teach us?"

Emma Fraley, Science Research Fellows

Rizalia Klausmeyer, mentor

Containing COVID-19: A Case Study on the Oregonian and Texan Government Responses to the Coronavirus Pandemic

The American political response to the SARS-CoV-2 pandemic varied greatly based on state policies and procedures. There has been very little federal intervention in terms of coronavirus-related policies, leading to a disjointed effort to slow the spread of the disease. The states of Oregon and Texas chose opposing requirements in terms of mask mandates and social distancing guidelines, allowing for a comparison of the impacts of certain policy changes implemented for the COVID-19 pandemic. Despite the ongoing nature of the pandemic, the effects of these differing policies have produced observable variation in confirmed case number in each state. While there are demographic differences between these two states, the impact of the state government responses should not be understated. Understanding the ways in which state policies affected the spread of SARS-CoV-2 can serve to assist governments in future pandemics.

Kriti Garg, Biology and Economics

Mark Kely, mentor

The Effect of Baumol's Cost Disease and Physician Supply on Healthcare Expenditures

In this study, we examine how Baumol's (1967) cost disease and physician supply affect healthcare expenditures. Previous studies have found evidence to support the existence of cost disease in the healthcare sector, but many of these studies assume that labor within the healthcare sector is homogeneous. We divide healthcare workers into generalist physicians, specialist physicians, and nonphysicians to examine how the supply of each of these groups affects healthcare expenditures. Our results indicate that there is a shortage of both generalist and specialist physicians. Additionally, we find evidence that physicians of either type are complements, rather than substitutes, with nonphysicians. This means that increasing the relative supply of nonphysicians to physicians may further exacerbate the inefficient allocation of labor and lead to increased healthcare expenditures.

Aidan Gettemy, Music and Mathematics

Mikeal C. Parson, mentor

Early Perspectives on Musical Instruments in the Church

Scholars agree that the first Christians worshipped with music, yet the origins and practices of the first liturgical music are not fully understood. One mystery is the use of musical instruments in the Early Church. Consensus believes that as a result of various factors, musical instruments did not play a major role in Christian worship from the beginning. There are two important questions to address in understanding the early and enduring lack of musical instruments in Christian liturgical music; When were musical instruments first excluded and why did the absence persist? Many of the aspects defining the Christian musical heritage trace their origin to the beginnings of organized liturgy during and before the fourth and fifth centuries. As a result, searching this era for clues offers glimpses into understanding a form of auditory expression with minimal direct evidence. Through careful examination of modern scholarship and ancient writing, a clearer picture of the gains of the fourth and fifth centuries indicates that little changed from the a-cappella style of the fifth century until the late medieval period. During the fourth and fifth centuries the appropriation of Greek knowledge, the establishment of a unified tradition of worship, and the need to enhance the solemnity of worship led to an elaborate musical tradition that continually grew over time with the church. These ideas about worship in the first four centuries solidified a musical tradition with an uncertain attitude towards the appropriateness of musical instruments.

Pierce Gillen, University Scholar

David Corey, mentor

Identity Politics: Its Epistemology, Moral Framework, and Implications for Democracy

Identity politics has become a contentious and influential issue of American politics, but insufficient attention has been paid to how it may affect democracy and democratic norms. Primarily by means of a close reading of primary sources, this thesis describes certain epistemological and moral presuppositions of identity politics, especially its more recent critical social justice variant. It argues that these ideas have noteworthy implications for democracy and democratic norms, and indeed conflict with traditional understandings of freedom, self-government, and the role of the individual within American politics.

Paige Glass, Biochemistry

Amanda Sevcik, mentor

The Gut Microbiome & its Value in Autoimmune Disease

The crucial effect of the gut microbiome in human function is not yet fully understood, but it is highly significant. The gut microbiome functions in nutrient metabolism, immune modulation, drug metabolism, intestinal barrier regulation, and defense against pathogens. Although its complete function in autoimmune diseases has not fully been elucidated, many studies have linked the gut microbiome to specific autoimmune diseases such as inflammatory bowel disease, type 1 diabetes, systemic lupus erythematosus, and rheumatoid arthritis. In this review, the function of each of the key microbial players is reviewed in order to allow for a greater understanding of how the gut microbiome contributes to autoimmune diseases. The microbiome shows potential as a diagnostic or therapeutic target in the treatment of autoimmune diseases through probiotics, diet, and fecal microbiota transplantation.

Peyton Glinche, Biochemistry

Amanda Sevcik, mentor

An Educational Guide on Opioid Structure, Function, and Their Impact on Public Health for Undergraduate Science Majors

The opioid epidemic is a public health crisis that the United States has been facing since the 1990s and has continued to worsen during the COVID-19 pandemic. Many factors have led to the current state of the opioid epidemic, including inappropriate prescription of opioids, lack of understanding of the potential adverse effects of long-term use, opioid misuse, abuse, and dependence. The key to understanding both the addictive and analgesia qualities of opioids lies in their behavior and function in the human body on a molecular level. This thesis is an educational guide on the opioid epidemic, opioid basics, opioid receptors, and cell signaling pathways, opioid alternatives, and alternative treatments for chronic pain. The purpose of this literature review is to help undergraduate science majors generate an understanding of opioid history, function, and use and how they all have contributed to the current state of the opioid epidemic: awareness and education are crucial steps toward a potential solution.

Sophie Goodwin, University Scholar

Julia Hejduk, mentor

Behold, your Mother: Applying Medieval and Reformation Mariology to Modern Issues of Gender and Sexuality

This thesis project investigates Mariological trends during the Medieval era and the Protestant Reformations and considers the way in which such Mariology can be applied to three modern issues – gender identity, human sexuality, and abortion. Mariology refers to the theological study of Mary, the Mother of God. The first chapter discusses trends in Medieval Mariology, particularly the development of the doctrine of the Immaculate Conception, and the manner in which they interact with more general theological conceptualizations of humanity, God's grace, and gender. The Reformation Era saw a shift in Mariology that favored those doctrines that most clearly highlight Mary's personality and relationship to Jesus Christ, corresponding to the general Protestant insistence on the primacy of Scripture and God's grace. The final chapter proposes three modern applications of Mariology and suggests that Marian doctrine and devotion offers singular and valuable insight into the ways Christians might approach problems of the modern secular world.

Simar Goyal, University Scholar

Jay Yoo, mentor

Understanding the Body Image Issues among Cancer Patients: Developing Intervention Strategies

The goal of this thesis is to understand body image distress surrounding cancer patients and find ways to enhance their self-image and quality of life. Changes in cancer patients' appearance contribute to altered body image, feelings of rejection and stigmatization, and conditions such as anxiety and depression. In addition, cancer patients experience shame, embarrassment, and guilt related to the intense and sometimes rapid body changes. Addressing body image problems of cancer patients is essential to improving their quality of life. I conducted a literature review in which I looked at studies related to cancer patients' body image. They addressed the body image experiences of breast, head and neck, stomach, and skin cancer patients. A primary conclusion of the thesis is that cancer patients' own subjective assessment of their bodies and the effects of the cancer treatment are more relevant than the perspectives of others. The paper advocates for health-promoting interventions such as physical activity and exercise programs that can decrease morbidity and early mortality. In addition, cancer patients tend to camouflage their appearance; therefore, fashion-oriented consumption can be considered as a

means of improving their self-image and as a strategic endeavor to manage mood and, particularly, to reduce negative feelings due to their physical changes.

Clara R. Grimsley, Biology

Anne Marie Schultz, mentor

The Future of Healthcare in the United States: How an Integrative Medical Approach using Yoga as a Complementary Medicine in Addition to Conventional Medical Practices Can Revolutionize Hypertension Treatments

Conventional, complementary and alternative, and integrative medicines all capitalize on different aspects in treating their patients. While each has their own benefits, integrative medicine is the only one to place the patient in charge of deciding their treatment plan and the only one to combine different elements of the others into patient care. Because of this, integrative medicine blends well with yoga, which is a practice that is innately open to anything that may benefit the practitioner's body, mind, and spirit, which often is not only doing traditional yogic exercises, but also sometimes seeking out conventional medical care. Hypertension, or high blood pressure, is a multifaceted condition that is characterized by having a blood pressure at or above 130/80 mmHg (CDC, 2020). Due to its complexity, hypertension is difficult to treat with the unidirectional treatment plans provided by conventional medicine. However, an integrative medical approach that uses both complementary medicine in the form of yoga as well as conventional medicine practices treats hypertension from multiple directions, making it the most effective form of hypertension treatment.

Hannah Elizabeth Gruman, University Scholar

Annie T. Ginty, mentor

Threat-Based Childhood Trauma is Associated with Blunted Heart Rate Reactivity to an Acute Cognitive Stress Task

Research indicates a relationship between childhood trauma and adverse health outcomes in adulthood. Changes in the stress reactivity pathway may mediate this relationship. However, the exact nature of the relationship between childhood trauma and acute stress reactivity remains ambiguous. Some studies indicate hyperreactivity, others indicate blunted reactivity, some indicate no relationship, and some have found a more complex relationship. Categorizing trauma into different dimensions or types may help to clarify these ambiguous findings. In the Threat-Deprivation model, proposed by Drs. Sheridan and McLaughlin, trauma is categorized based on the dimensions of threat and deprivation. This study sought to determine the association between threat-based and deprivation-based trauma and cardiovascular and psychological reactivity to an acute stressor. Participants' (N= 459, Mean age (SD) = 19.53 (0.80), 68.1% female, 64.7% Caucasian, 81.9% non-Hispanic) heart rate, systolic blood pressure, and diastolic blood pressure were taken periodically during a ten-minute baseline and a four-minute Paced Auditory Serial Addition Task (PASAT). The PASAT is a mental arithmetic test that is intended to induce acute stress. Measures of cognitive and somatic impairment and intensity were also taken before and after the task. Threat-based trauma was measured using the 15 Likert-type questions from the three abuse subscales of the Childhood Trauma Questionnaire. Deprivation-based trauma was measured using the 10 Likert-type questions from the two neglect subscales of the Childhood Trauma Questionnaire. Of the associations examined, the only significant relationship was between threat-based trauma and blunted heart rate reactivity ($\beta = -.096$, $t = -1.994$, $p = .047$, CI: [-.320, -.002]). All other p-values were larger than 0.05. These findings indicate that threat-based and deprivation-based childhood trauma have distinct relationships with acute stress reactivity.

Alexander Hale, Business Fellows, Finance, Political Science and Philosophy

Ralph Wood, mentor

Giving color to the vague problem of boredom: Observations and Responses

One's superficial conception of 'boredom' is typically devoid of much meaning. Boredom is vaguely understood as a general marker and rubric of self-dissatisfaction and is technically understood by few. This paper contains four objectives: the first objective is to properly and technically define what the state of boredom is with precision and clarity. This is primarily done via an etymological approach. The second objective is to explain why the problem of boredom has become so prevalent in Western society today. This chapter largely takes modernization and the rise of what sociologist Zygmunt Bauman would call liquid modernism into account. The third chapter hopes to show the universality of the problem of boredom for both religious and non-religious moderns, and to re-emphasize that boredom is not so much a religious issue but an issue of alienation and identity that affects all Western moderns. The final chapter hopes to offer some responses, methods and solutions of how to address this pernicious problem of boredom in each of our lives.

Elisabeth Sydney Harrell, Great Texts

Melinda Nielsen, mentor

The Medieval Woman and the Transcendental Nature of Beauty

Can a woman's beauty be a catalyst—and even a guide—on a man's journey to knowing God, who is Beauty Himself? In the Middle Ages, where knights and their ladies are preserved in literature, the lady's beauty is the catalyst for a knight fighting with purpose. I believe that that a woman's beauty can begin the journey of discovery which leads to Beauty Himself, because He placed His image of beauty specifically within a woman. I will use Aquinas's definition of beauty from his *Summa Theologiae* as the foundation of the thesis. Aquinas's definition of beauty creates the framework for how the beautiful takes a person from the physical realm to the spiritual. I will explore his definition in Guillaume de Lorris's *Romance of the Rose* and the Sir Gawain poet's *Pearl* poem, as they contain ladies who exemplify the definition of beauty. Finally, Christine de Pizan's *Book of the City of Ladies* presents the role of beauty as she builds a city of beautiful—physically, morally, and spiritually—women. Ultimately, the three texts reveal that admiration of one beautiful woman can lead to the admiration of beautiful women, and then, like the rising stairs of Plato's *Symposium*, the beautiful eventually leads to the admiration of true, absolute Beauty.

Mallory Hatchel, Biology

Emeka Okafor, mentor

Transfer of Responsibility for Auto-Injectable Epinephrine Devices from Parents and Caregivers to Children and Adolescents with Food Allergies

Epinephrine auto-injectors are routinely prescribed for patients at risk of anaphylaxis, including children and adolescents with food allergies. Epinephrine carriage among patients with food allergies has a significant public health impact. This study sought to identify factors that impact the age at which parents and primary caregivers transfer responsibility for carrying auto-injectable epinephrine devices to their children. In addition, this study sought to determine whether the age at which parents and primary caregivers transfer responsibility for carrying auto-injectable epinephrine devices is associated with adverse outcomes like emergency room visits, parental anxiety, and patient anxiety. Data was collected using a 32-question Qualtrics survey and Amazon Mechanical Turk.

Jana Heady, University Scholar

Devan Stahl, mentor

Editing Humanity: A Disability Centered Approach to Human Gene Editing

Since the development of CRISPR technology, the reality of editing the human genome seems closer than ever. With this technology comes a plethora of ethical questions about the boundaries that should be imposed on gene editing and the impact of CRISPR technology on disability communities. Since CRISPR was first developed, scientists have been at the forefront in discussing the ethics of its application. However, this prioritization of the guidance of scientists has led to ethical horror stories, such as Dr. He Jiankui's experimentation on human embryos to create the first CRISPR edited children. To address the ethical questions surrounding CRISPR and its impact on disability, it is important to start with an understanding of disability by examining current models of disability, including the medical, social, and theological models of disability. Furthermore, an examination of the application of these disability models to eugenics, physician assisted suicide, and selective abortion provide helpful analogies to guide responses to human gene editing. To best proceed in the exploration of human gene editing, people with disabilities must first be seen as humans intentionally created by a loving God and as valued members of society. Their perspective on human gene editing must be prioritized, or genetic changes that most impact them will be made without their permission.

Cara Hoekstra, University Scholar

Jeremy Uecker, mentor

Differing Forms of Religious Participation and Their Effect on Fertility

Religion plays a major role in influencing fertility and fertility decisions. The relationship between religious attendance and fertility is well established. However, research has not looked at different forms of participation and their effect on fertility. Using Waves II-IV of the Baylor Religion Survey (BRS), this study explores the relationship between different forms of religious participation and fertility by comparing doctrine-related participation--Bible study or Sunday school--and social participation--fellowships or potlucks--and their effect on the number of children. Evidence suggests that doctrine-related participation affects fertility more than religious social participation. Doctrine-related participation also accounts for part of the effect of religious attendance while social participation does not. This suggests that the influence of reference groups within religious participation is more than social interaction but relates to the transmission and enforcement of doctrine.

Andrew Wellington Hollinger, Great Texts

Natalie Carnes, mentor

The Poetics of Disclosure: An Analysis of Kendrick Lamar's Rap Music

In this thesis I analyze in depth Kendrick Lamar's albums *good kid, m.A.A.d city*, *To Pimp a Butterfly*, and *DAMN*. Through a close reading of these albums, I examine the ways in which Lamar uses his music as a platform for prophetic music making. Lamar's prophetic music making comes to bear three general points, corresponding to each album: first, that vices are inadequate to deal with death-anxieties and it is only Jesus Christ that gives meaning to death and life. Second, that capitalism is a tool of American Anti-Blackness and this relationship is undergirded by satanic forces. Third, that God is both a God of salvation and of damnation, so it is important to relate to God with due humility. Through these three points, I argue that Lamar's prophetic music making can teach us something about the nature of the prophetic, that the prophet is a Divine-World discloser.

Madison Hoover, Political Science and English

David Bridge, mentor

Throwing Down the Gavel: How the Federal Courts Intervened in Desegregating South Carolina's Public Schools and Was Hindered by the State and Local Governments

This thesis examines the jurisprudential and political development of desegregation in South Carolina from the 1950s *Brown* era through the 1970s post-*Swann* era. By analyzing the actions of local school boards, the South Carolina General Assembly, and political leaders within the state and in Congress, this thesis reveals that the South Carolina state and local governments' delay in desegregating its public schools was both intentional and racially motivated. Further, this text reveals that these governmental actions both responded to and fueled racially discriminatory beliefs held by some white South Carolinians, and it demonstrates how these citizens' actions reflect these beliefs. When desegregated schools started becoming a reality for South Carolina in the 1960s, white parents took advantage of private schools' tax-exempt status and transferred their children to these institutions at alarming rates. Despite most of these schools admitting exclusively white students, the Internal Revenue Service did not revoke tax-exempt status for racially discriminatory private schools until 1970, and this change was not enforced until 1977. During this time, white parents also utilized the Tuition Bills the South Carolina General Assembly passed in 1962 and 1963, which granted tuition vouchers for any student who wished to attend private school; however, in effect, this allowed for white students to leave the public school system in shocking numbers, as few private schools in the state admitted black students. Public school desegregation in South Carolina became political from the start, and this thesis examines the actions of U.S. Senator Strom Thurmond, local school boards, and South Carolina governors to demonstrate this underpinning and how it hindered progress toward integrated schools. Finally, this thesis illustrates the current public education system in South Carolina, and it highlights how the problems that lead to the initial suit in *Briggs v. Elliott (1948)* persist in the state even in 2021.

Seth Cody Howton, University Scholar

Thomas M. Ward, mentor

Where the Shadow's Lie: Tolkien's Medieval View of Free Will, Temptation, and Evil

J.R.R. Tolkien wrote *The Lord of the Rings* in such a way that the story "absorbed" specific parts of Tolkien's own beliefs. Such an absorption allows for distinctly Medieval Christian beliefs to appear throughout the narrative. With careful observation and comparison, I will show how Tolkien's theories of evil, free will, and temptation fit into a broadly Medieval Christian tradition. I will show the connections between some of the foremost philosophical scholars of the Middle Ages and J.R.R. Tolkien by examining his letters and fantasy narrative, in conjunction with the relevant works of St. Augustine, St. Anselm, St. Thomas Aquinas, and John Duns Scotus. In my first chapter, I introduce the influences on Tolkien and how he intentionally included such elements in the story. In my second chapter, I investigate how Tolkien adopts a Medieval privation theory to explain evil. I then proceed to investigate the benefits of reading Tolkien's discussion of free will as an illustration of St. Anselm's two-will theory. Finally, I conclude by briefly examining the role of Grace in Tolkien's narrative and how it influenced his portrayal of evil and free will.

Ryan J. Hudson, Linguistics and Great Texts

Michael P. Foley, mentor

Participating in the New Creation

Owen Barfield has often been presented as an intellectual opponent of C. S. Lewis, but this fails to account for the complementary themes that appear in the works of these two friends, particularly themes regarding humanity in

the New Creation. Owen Barfield constructs an account of human history in terms of humanity's relationship to nature, tracing patterns and themes that lead up to and then grow out from the Incarnation of Christ. On the other hand, C. S. Lewis writes often about the New Creation, but he consistently emphasizes the mystery of what is to come. By applying Barfield's idea of the evolution of consciousness to the questions Lewis raises regarding the New Creation, this thesis aims to demonstrate the rich themes that the works of these two writers draw out from one another. To this end, the thesis will begin with an explanation of Barfield's *Saving the Appearances*, followed by an application of Barfield's understanding to Lewis's treatment of the New Humanity in *Mere Christianity*, interpreted according to Lewis's other works both in fiction (*The Chronicles of Narnia* and *That Hideous Strength*) and in nonfiction (*Mere Christianity* and *Miracles*). This application leads to an expansive and imaginative understanding of the New Creation as both a present and a future reality.

Caroline Hughes, University Scholar

William G Hoy, mentor

Perspectives on End-of-Life Decision Making for Adults with Intellectual Disabilities

This thesis explores different perspectives on the end-of-life care and decision-making process for people with intellectual disabilities through a grounded theory, interview-based research methodology. After learning about the challenges inherent in end-of-life care, particularly in situations where patient input is limited due to factors such as intellectual disability, the perspectives of people who were present with the patient hold value in dictating qualities of the process. A series of semi-structured interviews were conducted, and nine emergent themes arose that illustrated aspects of the process that were either beneficial or harmful to the respondent and the patient and/or loved one. While reviewing and accumulating the findings from these interviews, these themes were compared to the literature surrounding the topic to offer possible solutions. This thesis also examines the need within the medical education system for increased teaching about the treatment of patients with disabilities.

Meghan Hunt, University Scholar

Erika Abel, mentor

Effects of General versus Regional Anesthesia on Postoperative Respiratory Outcomes in Premature Infants

As neonatal intensive care practices and management have improved, the number of infants undergoing surgical procedures under anesthesia in early infancy has increased. However, central and physiological immaturity of the neonate respiratory system present a particular challenge to anesthesiologists and surgeons. This difficulty is especially pronounced in anesthetizing premature infants, as they display a greater degree of respiratory immaturity. The use of anesthesia during a surgical procedure can result in episodes of hypoxia and extended mechanical ventilation and can exacerbate existing respiratory complications such as apnea of prematurity and chronic lung disease of prematurity. These deleterious effects have been associated with worse pulmonary and neurological outcomes in surviving formerly premature infants. A systematic literature review investigated the potential relationship between the type of anesthesia, general or regional, and incidence of apnea of prematurity, hypoxia, and extended mechanical ventilation in premature infants. Though statistical analysis of included studies was not possible, qualitative results indicate that regional anesthesia is associated with a decreased incidence of adverse postoperative respiratory outcomes in this population.

Ifeoma Ikedionwu, Biology

Karon LeCompte and Dena Quigley, mentor

Investigation into the Learning Assistant Experience and Related Considerations for Learning Assistant Model Implementation

Classroom dynamics that incorporate undergraduates have existed for decades and have proven beneficial in increasing students' retention and overall class grades. In 2003, the University of Colorado, Boulder, created the Learning Assistant (LA) Program to utilize undergraduates beyond the professor and the students to foster higher-order cognitive thinking in the classroom. Many studies have investigated the benefits of LAs in the classroom. Some show that LAs help students conceptualize and apply material more so than in traditional instruction classes. In other studies, implementing the LA program has cut down on professor instruction time and increased peer-to-peer collaboration which has shown to foster more positive learning spaces. However, there has not been substantial research done on how the LA program affects and benefits the undergraduate Learning Assistants themselves. This thesis aims to investigate the Learning Assistant experience through LA-supported faculty, and undergraduates who are or were LAs to provide insight into their experience as well as provide consideration for ways to best implement LA programs to optimally benefit the professors, students, and undergraduate LAs.

Haleigh Inthavong, Biology

Eric Martin, mentor

The Rise and Development of Pediatrics as a Distinct Branch in Medicine

While many early philosophers in medicine discussed the anatomy of a woman and the process of childbirth, there existed a paucity of literature surrounding children's health and diseases. This thesis examines the narrative of how pediatrics came to be a distinct branch of medicine within the United States. It was not until the later eighteenth century that major advancements and advocacy programs for quality healthcare in support of children emerged shifting the perspective many had towards the young. Prior to the nineteenth century, children's health was commonly perceived as an extension of obstetrics and gynecology. Rising infant mortality rates during the nineteenth century was one element that spurred physicians and scholars to continue understanding childhood diseases and conducting patient assessments in an effort to improve how infants were nourished and managed. The nineteenth and twentieth century laid the foundation for how children were not merely small adults, and the establishment of the children's hospital played a significant role in illustrating the need for more specialized care for children. Abraham Jacobi, coined as the "Father of American Pediatrics," played an instrumental role in initiating pediatric teaching within universities, and his extensive presence spanned from the classroom to the hospital. Jacobi understood children to have a distinct anatomy and physiology, and he accepted numerous leadership positions within prominent pediatric organizations throughout his lifetime. Alongside the rise of specialization during the early twentieth century came the establishment of the American Board of Pediatrics, which reflected the reality of pediatric medicine being a specialty in its own right as it pertained to individuals under the age of eighteen years old.

Sarah Jeon, University Scholar

Jodien Johnson, mentor

A Historical, Social, and Medical Analysis on the Medicalization of Labor and Delivery in the United States

Despite spending the most money in healthcare, the United States has the highest rate of maternal mortality when compared to other developed countries around the world. Additionally, there is a rise of medicalization that has been coupled to labor and delivery. This thesis first analyzes factors that have, throughout time, been associated

with or supported medicalization. These include the social and medical history, social structures, government interventions and the institutions and policies that have or still do influence labor and delivery. Secondly, I will examine the current medical interventions and their effects to the overall process of labor. The argument of this thesis is that there is a steadily increasing rate of the medicalization following the transition of birth from the home to hospitals. In order to determine the exact cause of this trend, further examination and reconsideration of current practices must occur to provide the best care to mothers in America.

Dalton M. Jones, Biology

Daniel Romo, mentor

Title: Designing Novel Anticancer Drug Leads Based on the Natural Products Gracilin A and Pateamine A

Natural products form the foundation of many different small molecules used as drugs. Molecular modeling is a key tool in the early stages of drug development that helps to identify derivatives of natural products that might be promising drug leads. This thesis uses molecular modeling and computational studies to explore the potential of natural products gracilin A and pateamine A as the foundation of future anticancer drug leads. I first explore the role of specific target proteins in the body with a focus on cancer cells, then analyze the binding sites of the target proteins in a three-dimensional space with a focus on their compatibility with the natural products. Finally, I perform a series of docking simulations to identify promising compounds for future synthesis and testing in biological assays.

Forrest Jones, Biology

Dwayne Simmons, mentor

The Impact of Oncomodulin on Ca^{2+} Regulator Protein Expression in Outer Hair Cells

The mechanisms of hearing loss have long been elusive. The study of hair cells located in the cochlea of the inner ear has helped unveil these mechanisms. These hair cells transform sound waves into electrical signals that are sent to our brain for interpretation and are essential for hearing. Previous research demonstrates that analyzing the expression of particular calcium-binding proteins (CaBPs) located in, on, or around these hair cells is important in understanding the mechanisms involved with the development, maintenance, and deterioration of hearing. In mice where a particular CaBP, Oncomodulin (OCM), was genetically engineered to be missing, hearing loss was accelerated. In fact, 4 months after birth, they were essentially deaf. Thus, OCM is a CaBP of interest because it is directly involved in the maintenance of hearing. This project examines the role of OCM in cochlear hair cells during the development of hearing in order to gain a better understanding of how it maintains hearing. Of interest are potential relationships between OCM and other calcium regulator proteins. Several quantitative and qualitative methods were used, each uniquely contributing to the understanding of OCM's function during the maintenance of hearing. Data collection employed reverse transcription quantitative polymerase chain reaction (RT-qPCR) and immunohistochemistry. The engineered absence of OCM in OHCs produced a general downregulation in 3 purinergic receptors, 2 voltage-gated calcium channels, an intracellular calcium buffer, and an ATP-driven calcium exporter, demonstrating that OCM plays an important role in intracellular OHC calcium regulation.

Maleeha Khan, University Scholar

Michael Muehlenbein, mentor

South Asian Physician-Patient Interaction

This thesis looks at the relationship between South Asian physicians practicing in North America and the possibility of them having an implicit bias preferring South Asian patients as opposed to other patients. The first chapter of this thesis is a literature review covering the concept of the biopsychosocial model of thought and detailing how health and wellness is as dependent on biological factors as it is on socio-environmental and psychological factors. The second chapter then goes on to continue highlighting the difference in culture between western societies and eastern societies and how these contrasting societies can shape physicians' mindsets in such a way that they reflect the cultural values of their society in their practice. The purpose of this chapter is to see if there is a difference in mindset and practice due to cultural values among physicians who graduated from western medical colleges compared to physicians who graduated from eastern medical colleges. The third chapter of this thesis will focus more on patients and review literature to see if South Asian patients are more comfortable with more South Asian physicians or less South Asian physicians. The goal of this chapter is to determine if patients in predominantly South Asian communities report better healthcare and health or if patients in more westernized communities, with fewer South Asian physicians, report better care and health. The last chapter of this project will discuss the results and findings of the research done for this study over a randomized group of South Asian physicians who are currently practicing in North America. The goal is to determine if the South Asian physicians who participated in the study's survey research show any type of implicit bias that proves significant preference for other South Asian patients. Overall, the purpose of this research is to determine if South Asian physicians in North America have an implicit bias that shows a preference for patients with a similar ethnicity or race as them. The conclusion of this study will focus on some ways that South Asian physicians can do a self-reflection on their practice to help them apply ways on how to restrain any implicit bias or preference they may have for patients from a similar cultural or ethnic background as them.

Jin Hee Kim, University Scholar

Dwayne D. Simmons, mentor

Use of Mammalian Cell Culture Models to determine the role of OCM in Calcium Signaling

Hearing loss is a prevalent problem worldwide. One of the critical aspects of hearing is Ca²⁺ ion buffer system of the outer hair cells. AMA and Thapsigargin are drugs that can be administered to cells to bring about mitochondrial stress that can lead to programmed cell death. By measuring the effects of these drugs on cells transfected with GFP, OCM-GFP, APV we observed how this stress affects the Ca²⁺ control and regulation. We wanted to explore how OCM affects cell survival through calcium signaling using the two drugs. We hypothesized that OCM will function as a buffer by helping the calcium related stress for the cells. We performed cell transfections, drugging, immunofluorescence, I confocal imaging and analysis in order to qualitatively and quantitatively measure the cellular effects and potentially see the cellular mechanisms. In conclusion, we observed that OCM does not function as a mediator of mitochondrial stress under our specific conditions. Greater insight regarding these effects and cellular mechanisms will be helpful for further studies about inner ear mechanisms.

Joelle S. Kim, Science Research Fellows

Joseph H. Taube, mentor

Investigating miR-23a/b Regulation of KDM6A Protein Expression in Epithelial-Mesenchymal Transition Using Breast Cancer Cell Models

Tumor progression of epithelial cancers is facilitated by epithelial-mesenchymal transition (EMT) and mesenchymal-epithelial transition (MET), reverse processes that enable invasive cellular behavior. A key regulator of EMT/MET is lysine (K)-specific demethylase 6A (KDM6A), an activator of epithelial gene expression that is abundant in epithelial cell phenotypes. During EMT progression, the level of KDM6A protein expression decreases but there is no change in KDM6A transcript. Understanding the post-transcriptional regulators of KDM6A may reveal new modulators of EMT and potential therapeutic targets. MicroRNAs are short non-coding RNAs that bind mRNA transcripts to repress protein translation. To identify miRNAs that likely target KDM6A, we utilized seven databases as well as in vitro and clinical data to identify miR-23a and miR-23b as putative regulators of KDM6A. We then overexpressed miR-23a/b in breast cancer cells and, unexpectedly, observed no impact on KDM6A protein expression. Further research may explore other means of post-transcriptional regulation of KDM6A, including alternative splicing analysis and identification of small molecule inhibitors.

Kathleen Klinzing, Science Research Fellows

Michael Trakselis, mentor

Investigations at the Stalled Fork: Potential Pathways Involving the MCM8/9 Complex in Fork Stability

Efficiency of DNA replication is crucial to cell survival. Stalled forks must be resolved quickly to prevent fork collapse resulting in double-strand breaks (DSBs). The MCM8/9 helicase is believed to play a role in both protection of DNA at stalled forks and in repair of DSBs. Mutations in MCM8/9 have been attributed to cancer and infertility. MCM9 has a unique C-terminal extension (CTE) of undetermined function that contains a BRCv motif thought to be important in mediating interactions with Rad51 during homologous recombination following DSBs. MCM9 truncations containing the CTE as well as a double amino acid substitution within the BRCv were created and purified to determine the specificity of the CTE with Rad51. A GST pulldown with Rad51 confirmed a weak interaction between the CTE of MCM9 and Rad51. To assess the role of MCM8/9 at stalled forks, a CRISPR-Cas9 generated MCM9 knockout cell line was used to assess MCM8/9-mediated protection of stalled or reversed forks from nucleolytic degradation using DNA fiber assays. Interestingly, fork stability was restored in MCM9 knockout cells when BRCA1 was knocked down with siRNA. These results suggest that MCM8/9 plays a non-redundant role to BRCA1 in maintenance of replication fork integrity and protection of stalled replication forks. Understanding the proteins involved and order in which they arrive at replication forks during stalling could provide avenues for targeting chemotherapy-resistant cancer cells.

David Klopfer, Biology

Steve Block, mentor

A Plan For All Seasons: A Constitutional Framework That Secures The Blessings of Liberty

This thesis will examine the constitutional interpretation philosophies of Ronald Dworkin and Antonin Scalia. It will look at their own words whenever possible. The “moral reading” (Dworkin’s interpretive framework) and “originalism” (Scalia’s interpretative framework) will be described and contrasted. We will start with Dworkin and also include a “conservative” who is closer to Dworkin than the “conservative” might realize. We will critique this approach to constitutional interpretation. Finally, Scalia’s method (textualism or originalism) will be described and shown to be superior. The main contention of this project will be that there is no means of applying constitutional

principles that will yield perfect results in every situation. It is a human system. However, originalism is the least imperfect method, which is what its adherents claim.

McKenna Caroline Koy, University Scholar

Lacy McNamee, mentor

Coping in Quarantine: Examining Communicative Processes, Coping, Disclosures and Anxiety Disorders during Confined Cohabitation

This research examined traditionally college-aged students who have a pre-existing anxiety disorder and the way in which people in confined cohabitation navigated talking about their anxiety disorder with their confined cohabitants and how these communicative processes affected one's coping strategies and their respective efficacy. Qualitative data in the form of in-depth, semi-structured interviews was gathered with undergraduate students who quarantined with at least one other person and who self-identified as having been diagnosed with a clinical anxiety disorder prior to the pandemic. This study provides scholarly and practical insight into the implications of relational discourse about mental health and aims to increase understanding of the relationship between communication and coping, especially considering the novel stressor of quarantine and isolation mandates.

Morgan Koziol, Professional Writing & Rhetoric

Coretta M. Pittman, mentor

Quality of Life Differences Among First-Generation and Generational Students at Baylor University

This study addresses Impostor Syndrome and class differences through an analysis of the quality of life for first-generation college students and generational college students at Baylor University. With 158 anonymous survey responses, 60 first-generation experiences and 98 generational experiences were represented. Participants' responses were coded with IBM SPSS to run Chi Square and Fisher's Exact tests in R that reveal statistical trends distinct to each student population. It was hypothesized that the difference in quality of life for these two student populations on the Baylor campus would be an issue of socioeconomic class differences. Results confirmed this hypothesis as financial independence and financial instability are most visible in Baylor's first-generation college student population. These findings suggest that a student's college experience is dependent upon their socioeconomic status, which then facilitates impostor feelings within first-generation college students.

Augustine Landess, History and Classics

Ken Jones, mentor

From Intervention, To Insurgency, To Peace: How the Roman approach to interacting with the tribes in Iberia almost lost the province

This thesis takes a look at Roman Spain, from the initial intervention against the Carthaginians during the Punic Wars in the mid third century BC to the rebellion of Sertorius in the first. It attempts to answer the question of why the Romans had such terrible trouble pacifying the various tribes in the region, even though they were militarily inferior to Rome. The conclusion to this query is that mismanagement on the part of the vast majority of Roman magistrates assigned to the region resulted in the aggravation of those tribes. The subsequent mishandling of which created situations that almost resulted in the loss of the peninsula altogether. A positive example of Roman governance of the province, aside from the occasional crisis point, is found in the rebellious governor

Sertorius, who demonstrated, via the employment of adaptive politics, cultural assimilation, and intentional Romanization, the most effective way to govern Hispania.

Sarah Lanier, International Studies

Lauren Poor, mentor

Refugee Education in America: Assessing the System, Identifying Issues, and Suggesting Solutions

This thesis analyzes refugee education in the United States with a specific focus on K-12 education, identifying the largest barriers to education for refugees and suggesting solutions to best address these issues. By analyzing the specific pieces of legislation created to improve refugee education, it becomes evident that there is a gap between the policies created and the policies necessary to help refugees integrate into the U.S. education system. Moreover, by analyzing the successful education policies in place in Sweden and the Netherlands, two countries that successfully integrate refugees with decentralized education systems similar to the United States, possible solutions to the largest issues identified within the U.S. can be found. If implemented, these solutions could strengthen refugee education, helping refugees better integrate into the United States.

Virginia Leidner, Biology and German

Melinda Coogan, mentor

Correlations Between Agriculture, Harmful algal blooms, and Parkinson's Disease: How Anthropogenic Factors Are Contributing to Growth of Toxin-producing Algae

The magnitude and duration of harmful algal blooms (HABs) is increasing, largely due to warmer climates and favorable nutrient concentrations. Cyanobacteria, one type of HAB, have the potential to release cyanotoxins dangerous to human health. This thesis reviews the reasons for the growing problem of HABs as well as what solutions are being researched to reduce the threat. Additionally, statistical analysis is used to determine whether agriculture, cyanobacterial growth, and Parkinson's Disease prevalence in the U.S. are correlated. Finally, Washington state Parkinson's related hospitalizations and microcystin data are analyzed for correlation. Results indicate that from a national perspective, agriculture, cyanobacteria density, and microcystin concentrations were positively correlated, and in Washington, data show microcystin and Parkinson's related hospitalizations to be positively correlated. Further research is needed to better understand the potential association between Parkinson's Disease and cyanobacterial HABs.

Caroline Loop, English

Elizabeth Dell, mentor

Fences

The Southern Gothic literary tradition captures a region haunted by a legacy of civil strife. The genre has become not just a hallmark of American literature but also a tradition which explores human nature as a whole. Author Flannery O'Connor is especially representative of the Southern Gothic. Her work portrays a post-Reconstruction South haunted by race conflict, class tensions, and evangelical piety. Using a grotesque lens, O'Connor explores mortality, race, and religion in an engaging and meaningful manner. In order to write my own Southern Gothic novel as part of this creative thesis, I have read and analyzed some short stories by Flannery O'Connor, as well as her book *Mystery and Manners*, which details her writing process and style. In a review of Flannery O'Connor's writing, I will explore how O'Connor created her rich southern gothic writing world through her use of setting,

characters, and style. Through a creative thesis inspired in part by this tradition, I hope to find my voice as a young aspiring fiction writer from the very southmost tip of Texas in the twenty-first century.

Meredith Marcum, Theatre Performance

Lauren Webe, mentor

Ever Faithfully Yours, an original one-act musical based on the life & work of Elizabeth Barrett Browning

This thesis captures the life, letters, and poetry of Elizabeth Barrett Browning in the form of a one-act musical. The story explores her passionate relationship with poet, Robert Browning and her complex relationship to her father, Edward Moulton Barrett. In developing this musical, I utilized Armstrong Browning Library's extensive collection of extant letters, documents, and books to blend history with fiction to create a dramatized portrayal of Elizabeth's early life and courtship with Robert Browning.

Catherine A. Marple, University Scholar

Sarah-Jane Murray, mentor

A Thomist, a Screenwriter, and a Media Psychologist Walk into a Bar: Cultivating Character through the Attention-Directing Power of Story Structure

Many scholars and storytellers use narratives to help cultivate audiences' character. The unique power of narrative *structure*, however, remains underexplored. To a virtuous person, the morally relevant features of a situation—the correct goal and the best means of pursuing it—stand out. Thus, cultivating virtue requires that we repeatedly identify and attend to such features. Narrative structure consists of characters selecting and pursuing goals; when we engage in a story, we attend to a goal and a means of pursuing it. Insofar as the goals and means are moral, the story directs our attention virtuously. When a child learns to write, the parent guides her hand; so, too, vicarious attention-direction can cultivate our character. Thus, the attention-directing power of narrative structure is a promising tool for moral growth. As such, it should feature more prominently in virtue development research and practice.

Matthew M. Martens, University Scholar

Christina Crenshaw, mentor

Pornography and Trafficking: Exploitation of Women and Children in the Adult Entertainment Industry

The pornography industry upholds illegal and exploitative practices. Due to the illicit nature of pornography, the industry is shrouded in secrecy and anonymity. In this project, I summarize laws of the United States and Canada relevant to internet pornography as well as how those laws have recently been violated, and how those violations have been handled. I also examine the facts concerning the culpability of the pornography industry in the exploitation of women and minors. In this conversation, it is important to consider points of legality surrounding the production and curation of pornography while also being mindful that the pornography industry is a business sector and must abide by the same rules other sectors follow. I hope to provide the reader with knowledge of this issue from the legal, business, and moral perspective in order that they may better form their own opinion on these matters.

Rachel Mason, University Scholar

Eric Rust, mentor

Comparative Military Leadership Styles: Eisenhower, MacArthur, Nimitz

Defining good leadership is difficult. To help clarify what makes a good leader, it appears useful to conduct a historical analysis of previous leaders. In the era of World War II, Dwight Eisenhower, Douglas MacArthur, and Chester Nimitz stood out as formidable battlefield strategists and apt politicians. Studying their lives and careers can help aspiring leaders to understand how they attained their positions, what their most positive attributes were and where their greatest faults lay. One way to understand how each leader ascended to his position and how he led in it is to study how their own motivations and talents, the influence of others on them, and plain luck marked their lives and careers. A comparative analysis of these attributes can help demonstrate how different styles of leadership can be successful and which attributes were most useful in unique circumstances. Taken together, these examinations can inspire the next generation of leaders as they form their own leadership styles while building on the legacy of those before them.

Zachary Miller, University Scholar

T. Michael Parrish, mentor

Strong as a Bull Moose: Donald Trump, Post-Liberalism, and the Progressive Republican Future in Texas

This thesis examines the outcome of the 2016 and 2020 presidential elections in Texas and the way in which they drove and reflect a shift in the Texas electorate, particularly among Hispanics and working-class whites. As a result of Donald Trump's 2016 campaign and subsequent presidency, the political allegiance of Texans shifted in such a way that rendered orthodox Republicanism electorally unviable. Strong as a Bull Moose argues that this will result in the Republican Party rebranding itself in the image of Theodore Roosevelt, abandoning the Reaganist consensus that has defined the party for the last four decades. To do so, I document the rise of post-liberalism in popular discourse, the rising anti-corporate mentality among Republicans, and the way in which this fits the groups that make up the modern Republican Party of Texas and how it will force the party to alter its platform to maintain its dominance of Texas politics.

Akanksha Mishra, University Scholar

Annie Ginty, mentor

Problematic Alcohol Use in College Students and Its Association with Cardiovascular Reactivity and Adaptation

Blunted cardiovascular responses to stress have been associated with alcohol use disorders, but the nature of the relationship remains largely unknown. Literature examining the relationship between cardiovascular reactivity habituation and alcohol use disorders has also been inconclusive. Recent research has noted the inadequacy of singular stress exposures and highlights the need to measure cardiovascular reactivity across multiple stress exposures as to obtain a more comprehensive cardiovascular profile. The present study investigated problematic alcohol consumption's effects on cardiovascular stress reactivity, as well as cardiovascular reactivity over time. Two hundred and twenty healthy, young adults (mean (SD) age = 19.77 (1.59); 60.5% female; 64.1% Caucasian; 17.7% Hispanic) who all reported consuming alcohol on a regular basis, completed a single laboratory visit, which included two identical stress protocols. Blood pressure (BP) and heart rate (HR) were measured during the baseline period and stress tasks, and problematic alcohol use was measured with the College Alcohol Problems Scale—revised (CAPS-r). There was a negative correlation between heart rate and the social subscale of the CAPS-r over the first exposure, while no significant relationship was indicated between any of the cardiovascular variables and

the CAPS-r subscales over both exposures. These results emphasize the necessity of future research incorporating multiple stress exposures within their protocols.(208 words).

Barcenia Morgan, University Scholar

Maria Boccia, mentor

How Parenting Styles Affect Play Partner Choice in Preschool Children

This project looks at whether there is a relationship between a set of parents' parenting style and who their child chooses to play with at school. There were ten participants in the study, part of Piper Child Development Center. I collected observations throughout a semester of which children played with who. I also gave parenting style questionnaires to the parents of the participants to determine how they interacted with their child. These questionnaires yielded numerical values for the parenting style of each parent. Afterwards, I compiled the observational data into matrices and determined the parenting style scores for the parents. It was evident that the children in the study sometimes played with children with similar parenting styles if they were in the same class.

Dani Morgan, Communication Sciences and Disorders

Yang-Soo Yoon, mentor

Spectral Integration on Consonant Perception in Normal Hearing

The following study investigates how normal auditory system detect and integration acoustic information for consonants, processed by each ear. Understating integration mechanism in normal auditory system will allow us to develop clinical fitting procedure for people with hearing loss and hearing devices such as hearing aids and cochlear implants. In this proposed study, as a control study prior to conducting studies with clinical population, we will answer to three specific questions. First question is that how listening condition (i.e., a consonant is presented sequentially or simultaneously to both ears) influences the integrating process. Results from this question will help us to determine whether the integration process depends on informational masking, listening interference when similar auditory information is presented to both ears. For the second question, we will investigate how differently normal auditory systems integrate spectral (i.e., frequency) consonant information across ears. Results from this question will help us to determine if the frequency component of speech acoustics should be more importantly considered in developing a clinical fitting procedure. Finally, we will investigate how our novel signal processing scheme influences the integrating process. The signal processing tool is a software that can identify "target acoustic cues" responsible for consonant enhancement and enhance them and "conflicting acoustic cues" causing consonant confusions. Results from this question will provide technical feasibility to develop the fitting procedure. 14 NH adult subjects participated (11 females and 3 males; average age: 25±8.5), and all had thresholds better than 20 dB HL (hearing level) for both ears at audiometric frequencies from 250 to 8000 Hz. Interaural thresholds were less than 10 dB. The stimuli used were the 14 most frequently used consonants in the English language (/b/, /d/, /g/, /p/, /t/, /k/, /m/, /n/, /f/, /s/, /ʃ/, /v/, /dʒ/, & /z/), which were produced by a female speaker. Each consonant was presented paired with the vowel /a/. The study used the 14-alternative forced-choice-paradigm, so each listener was able to pick the consonant-vowel pair they heard, or pick none of the above. Each consonant was low-pass filtered in the left ear, with four cut-offs: 250, 500, 750, and 1000Hz, and were the independent variable. These same consonants were presented in the right ear with a high-pass filter cut-off of 7000Hz. Each of these consonants was also presented under three conditions: unprocessed, 3DDS w/ conflicting cures, and 3DDS w/o conflicting cues.

Luke Morrison, University Scholar

Deanna Toten Beard, mentor

“Nyle thou sin more after” Forgiveness as Resurrection in Medieval Sermons and Cycle Plays

This thesis explores the Christian concept of forgiveness as presented in a select Medieval sermon and three cycle plays all featuring the same story from the Gospel of John. While this thesis is not meant to argue for any sort of causality between sermons and cycle plays, studying their relationship is important. Examining Medieval sermons and cycle plays written on similar themes reveals similarities between the two forms. Both are didactic types of Medieval literature which are meant to be experienced live and to be embodied. Also, both seek to effect behavior or influence understanding in the audience, even though they differ in authority. Taken together, sermons and cycle plays reveal a breadth of Medieval understanding of the concept of God’s forgiveness as presented in Scripture and in Church teaching and help us consider humanity’s response.

Anne Louise Newton, International Studies

Christina Crenshaw, mentor

An Evaluation of the Rise of Online Sexual Exploitation of Children and Technology: How the Past Three Decades Speak to Future

This thesis analyzes the impact of technological developments from 1987-early 2020 on the growth of online sexual exploitation of children (OSEC). Over the past several decades, the online sexual exploitation of children has exponentially increased to a capacity largely outstepping current legislative structures, law enforcement, and existing countermeasures. In 2018, the National Center for Missing and Exploited Children reported a record high of child sexual exploitation material (CSEM) reports, totaling 18.4 million reports (NCMEC 2019 report, pp. 5-6). In addition to analyzing the impact of specific technologies, this thesis analyzes how CSEM content has evolved, how demographics of OSEC victims and offenders have changed, and what has been done in response. As a result of this evaluation, this study argues that the majority of the onus in future anti-OSEC efforts rests not primarily on the government but on increasing involvement from electronic service providers and further development of CSEM detection technology.

Dexter Nguyen, Neuroscience

Joaquin Lugo, mentor

*Multiple Early-life Seizures Alters Neonatal Communicative Behavior in *Fmr1* Knockout Mice*

Fragile X syndrome (FXS) is the leading monogenic cause of intellectual disability and a significant contributor to Autism spectrum disorder. In addition to autistic-like phenotypes, individuals with FXS are subject to developing numerous comorbidities, one of the most prevalent being seizures. In the present study, we investigated how FMR1 germline mutation impacts neonatal communicative behavior in the FXS mouse model, both with and without early-life seizures (ELs). On postnatal day (PD) 7 through PD11, we administered 3 flurothyl seizures to both *Fmr1* KO and wild-type mice. On PD12, all pups were temporarily isolated from their home cage and USVs were recorded. Significant alterations were found in both spectral and temporal measurements across seizure groups. We found that induction of seizures across PD7–11 resulted in increased frequency of USVs produced ($P < 0.05$), longer duration ($P < 0.05$), and cumulative duration ($P < 0.05$) in both genotypes. Overall, this study provides evidence that magnitude of communication impairment in FXS mice is significantly impacted by seizure frequency load early in development.

Mary Elizabeth Overcash, University Scholar

Jason Whitt, mentor

A Pathology of the Will: Developing an Interdisciplinary Understanding of Addiction

Addiction has historically been understood as a moral failing, but over the past few centuries it has been medicalized and is now viewed as a chronic brain disease. This thesis draws from neurobiology, psychology, philosophy, and theology in order to develop a multi-faceted model of addiction which incorporates insights from each of these disciplines. Neurobiological research supports the disease model of addiction and explains the neural mechanisms underlying addiction. Alternative models from prominent psychologists demonstrate the ways in which the disease model of addiction is insufficient, and they reject the idea that medicalization necessarily leads to destigmatization of addicted persons. The philosophy of Aristotle and the theology of Augustine provide a framework for answering questions of will, freedom, and choice which arise in discussions surrounding addiction. Finally, Alcoholics Anonymous represents an attempt to combine scientific and spiritual perspectives in order to help addicted persons on their path to recovery.

Elijah Daniel Paraiso, Neuroscience

Rizalia Klausmeyer, mentor

An Analysis of the Concerns Regarding the HPV Vaccination

The topic of the HPV vaccination has been one of controversy since its introduction. Although many arguments may be made to reject the vaccination, the most common answer given by most noncompliant patients is that the set is not necessary. In this thesis, I will demonstrate the necessity for the HPV vaccination given the current model of society. Explaining with biological pathways, I will argue that the basis of safe sex or the lack of sex is not a sufficient basis to decline. Moreover, I anticipate offering physicians adequate research to raise the compliance of their clinics. The results show that 26.4% of parents will not accept the HPV vaccination on the basis of four factors: necessity, safety, promotion of sex, and religion.

Kayal Parthiban, University Scholar

Joseph DiLuzio, mentor

The First Hospital: How Christian Charity Revolutionized Healthcare

This thesis will show how Christian charity, because of its focus on *agape*, the self-sacrificial love characteristic of Christ, produced a new kind of healthcare from which the hospital was born. The first chapter will explore Greco-Roman healthcare prior to the Christian Era, focusing on healing cults, Roman military hospitals, and public physicians. The second chapter will compare pagan philanthropy and Christian charity, paying particular attention to medicine and the underlying motives for goodwill toward others and the community. The final chapter will analyze Christian care for non-Christians during the Plague of Cyprian, before looking at Basil the Great's hospital. The so-called *Basileia* is regarded as the first hospital in history and provided the template for later hospitals around the globe and throughout history. The conclusion will consider modern healthcare from the perspective of its Christian origins.

Baylor Payne, Professional Selling and Finance

Mike Wright, mentor

State Farm Consulting Project: Process & Outcome Analysis

This thesis details the results and learnings garnered from my experience working on a consulting project for a local State Farm Insurance agency. Frameworks and processes discussed in *Flawless Consulting, Case and Point*, and other associated concepts addressed in the management consulting course and their application to the project are explored. The paper concludes with a self-reflection on my experience and its significance for my future consulting career.

Chase Perkins, Biochemistry

Rizalia Klausmeyer, mentor

A Systematic Review of Opioids in the United States

The opioid epidemic is a prevalent concern in American society as overdose deaths continue to increase. Heroin, fentanyl, carfentanil, hydrocodone, and krokadil are five of the most dangerous opioids and they are responsible for a significant portion of the opioid overdose cases. These drugs are all hydrophobic due to their chemical structure, allowing them to easily permeate the blood-brain barrier and agonize the mu-opioid receptor. Fentanyl, one of the synthetic opioids, is one of the most dangerous opioids as it is 80 times more potent than morphine. Carfentanil is among the strongest of the fentanyl analogues. Krokadil is one of the newest opioids and is dangerous because it can easily be synthesized using household chemicals. To access opioids, users and dealers will typically utilize the Dark Web. Prescription opioids can be acquired through Pill Mills, and there has not yet been enough effective government legislation to limit prescription pill outbreaks. While addiction treatment has many promising potential treatments in herbal remedies, brain stimulation, and other medications, the most effective treatment for opioid overdoses is still the Naloxone injection. Overall, the opioid epidemic will continue to worsen due to ongoing synthesis of new synthetic opioids, the emergence of novel drugs such as krokadil, and the continuing ingenuity regarding opioid distribution on the internet.

Madeline Elaine Pettit, University Scholar

Jo-Ann Tsang, mentor

Moral Licensing: The Effects of Religious Priming on Moral Behavior

The present study examines the role of religious priming in moral licensing behavior. Previous literature has suggested that, after thinking of a recent moral action they committed, participants were less likely to behave morally in a following task due to moral licensing effects. Furthermore, research has suggested that priming a punishing God concept will produce more moral behavior than priming a loving and forgiving God concept. In this study, we surveyed 585 undergraduate students from a private, religious university. There were four conditions: a control condition, a moral behavior neutral reading condition, a moral behavior punishment condition, and a moral behavior love condition. Participants completed a money allocation task as a measure of moral behavior. Significant effects were found between writing about a previous moral behavior and the money allocation task; however, the direction was opposite of predictions, indicating moral consistency effects rather than moral licensing. Participants in the control condition donated significantly less money than participants in the moral behavior neutral reading and moral behavior punishment conditions. More research is needed to study potential moderating effects on moral behavior. Finally, there is a need for more research on potential contributing factors to moral licensing as opposed to moral consistency effects.

Jack Pflug, Finance and Entrepreneurship

Shane Underwood, mentor

Impactful Thinking: Impact Investors as Agents of Systems Change

The goal of the impact investor is to create both a financial return and a social or environmental impact while doing so. This dual-goal profession puts impact investors in a new seat that those in the financial world seldom find themselves, that of the social problem solver. Unfortunately, the world of addressing complex social problems requires a different mode of thinking than the world of investing most often requires. This thesis argues that linear thinking, similar to reductionist thinking and our most default thinking mode, fails to serve the impact investor's goal of creating net positive impact in their investment portfolios. Linear thinking, and its subsequent linear bias, lead impact investors and social enterprise investees to make poor decisions, often resulting in harmful externalities. This thesis argues that impact investors ought to consider using systems thinking and a systems change investment process in an effort to curb those negative externalities. Through the analysis of research studies, academic papers, subject matter expert opinion, practitioner opinions and books, this thesis dually highlights how linear thinking fails impact investors and how systems thinking empowers impact investors to make optimal investment decisions.

Theresa Pham, Medical Humanities

Tamar Carter, mentor

The Global Implications of H1N1 Pandemic on Pediatric Patients: A Focus on Comorbidity Rates and Hospitalizations

Since the early 2000s, the world has experienced the outbreaks of severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), influenza virus H1N1 (swine flu), and currently coronavirus (COVID-19). This thesis investigates the implications of the 2009 H1N1 pandemic on the pediatric population through reviewing, summarizing, and analyzing retrospective case studies from 24 countries that reported data on H1N1-infected pediatric patients. Extracting data based on median ages, gender, and comorbidity rates from these studies, this thesis comprises statistical association tests to depict trends between the variables and suggest specific comorbidities may correlate with hospitalizations and critical care when contradicting the H1N1 pandemic flu. The thesis will draw on lessons learned from the H1N1 pandemic to inform future pandemics.

Jake Picker, Biochemistry

William G Hoy, mentor

A Conceptualization of Sufjan Stevens's Bereavement Process as Seen in his Album, Carrie, and Lowell Through Several Contemporary Mechanisms for Grief and Bereavement

I am conceptualizing the grief Sufjan Stevens sings about in his album, *Carrie and Lowell* through the lenses of four contemporary mechanisms for grief and bereavement.

Emily Quach, University Scholar

Daniel Romo, mentor

Structure-Based Design, Molecular Docking Studies, Virtual Screening, and Synthesis of a Novel Sulfonamide Derivative of Gracilin A

Mitochondrial permeability transition is the final common pathway before apoptosis and has been tightly linked to neurodegeneration. As the only confirmed regulator of the mitochondrial permeability transition pore, cyclophilin D provides an attractive target for potential neuroprotective drugs. Current cyclophilin D inhibitors are non-selective and bind to other cyclophilin proteins, making them potent immunosuppressors. The natural product gracilin A has been shown to be effective in binding cyclophilins D and A, so this research aims to maximize the neuroprotective quality of gracilin A by increasing cyclophilin D binding affinity and selectivity. In these studies, a series of gracilin A derivatives were modeled based on a previously published derivative, compound 27b. This thesis will examine current literature concerning mitochondrial permeability transition as well as the design and synthesis of a promising potential drug lead, a sulfonamide derivative of compound 27b with increased binding affinity and selectivity for cyclophilin D.

Hannah Elizabeth Reese, Biology

James Marcum, mentor

An analysis of the ethics in the role of government in vaccination distribution and regulation as a response to vaccine refusal resurgence

Vaccinations play a vital role in the health and well-being of communities and individuals alike. With a rise of vaccine refusal in recent decades, societies globally are seeing spikes of disease that had been seemingly eradicated in those areas. This thesis looks at the role that government plays in regulating and implementing vaccinations while also outlining potential methods to discourage vaccine refusal and misinformation about vaccinations. It also discusses the ethical implications of vaccinations, both of governmental mandates and of individuals who choose to forgo vaccination for themselves or make that decision for their child, looking at the public health decisions from philosophical perspectives including utilitarianism, social contract theory, liberal cosmopolitanism, and others. In a pandemic era, vaccines and vaccine mandates continue to have a prevalent role in public health policy and this thesis attempts to address varying angles to navigate the issue.

Grace Remmer, University Scholar

Edward Taylor, mentor

Suite for Antigone

This four-movement musical composition for Pierrot ensemble draws inspiration from Sophocles' play *Antigone* and serves to evoke metaphoric associations between the music and the literary drama. Composed in the modernist twelve-tone system—pioneered by such artists as Arnold Schoenberg and Charles Wuorinen—the work attempts to explore the questions and themes of the play, including safety versus freedom; loyalty to family, the gods, and government, through the lens of contemporary art music, offering a modern perspective on Antigone and its relevance to today's society and culture. The accompanying essay explicates the intersection between the composition and its extra-musical source material.

Ashley Ricciardelli, University Scholar

James Marcum, mentor

The Fourth Industrial Revolution's Impact on Medical Ethics

Starting with the 1947 Nuremberg Code, the field of medical ethics began to rapidly develop, eventually coming to define three core values for ethical treatment and research via the Common Rule: respect, beneficence, and justice. In a new era of big data and precision medicine stemming from the Fourth Industrial Revolution, medical professionals strive to uphold these values, but with innovation comes new challenges. In this thesis, I will discuss the history of medical ethics to provide a foundation for ethical review, define the Fourth Industrial Revolution, and examine respect, beneficence, and justice and their relations to precision medicine to exemplify how recent technological expansion and sophistication has impacted ethical discourse and legislation.

Lauren Roe, University Scholar

Charles McDaniel, mentor

A Disquieting Moral Reality: the responsibility of the modern American university in the moral formation of their students in late-stage capitalism as analyzed through the work of Alasdair MacIntyre and Michele Foucault

This thesis seeks to analyze the role and responsibility of the modern American university in the moral development of their students within late-stage capitalist structures. The transformation of higher education into corporate, privatized businesses and the zeitgeist of American consumerism produces students-as-customer models (SAC-models) that has led to education being perceived as a product rather than an opportunity for personal formation and vocational knowledge. The SAC Model of operation has destroyed the integrity of higher education institutions as locations of genuine, transformational education and moral formation. This transformation has led to widespread moral disparity and emotivism. Where do we proceed from here? Is there hope for reengaging the university as a place of moral formation for the sake of better citizens of a democratic republic and thus a more morally consistent way of interacting with capitalist markets? I also seek in answer to these secondary questions by engaging the works of philosophers Alasdair MacIntyre and Michele Foucault particularly turning towards MacIntyre's *After Virtue* and Foucault's later works which focus on the care of the self, the creating of moral systems, and the use of pleasure. The work of MacIntyre focuses upon community while the work of Foucault looks at the subject (self) as it exists within a community. The work of Foucault and MacIntyre put in conversation allow me to analyze the problem at hand and to synthesize a model of student-teacher relationships that seek to instill a practice of moral formation within the modern university. This thesis aims to contribute to the critical works which analyze the relationship between capitalism and moral formation and the evolution of modern higher education rather than offer a final solution to a problem.

Leonard Rule, Biology

Matthew Andersson, mentor

It Takes Three: Medical Interpreters as Brokers in Patient-Doctor Relationships

The lack of Spanish-Speaking doctors in the U.S. necessitates the use of medical interpreters for many Spanish-speaking patients. The presence of an interpreter facilitates conversation, but also affects several ways in which the doctor can connect with their patient. This thesis analyzed 13 patient-doctor conversations among preferred Spanish-speaking patients: 7 conversations used an interpreter and 6 did not. The sociological concept of brokers was applied to these interviews. The interpreters played a formative role in mediating language, by controlling the exchange of information such as the description of symptoms by the patient or treatments suggested by the doctor. Findings suggest that interpreters may inhibit the formation of the patient-doctor relationship. The medical

interpreters acting as brokers required doctors and patients to communicate within a different structure than the dyadic interaction that they were more used to. The findings in this study have several implications. Medical interpreters as brokers can be further studied through the use of patient surveys to identify how interpreters affect the patient's perspective of their doctor. Also, studies can be done involving interpreters in other languages and cultures to see how interpreters affect those interactions. This information could be used to train interpreters and improve the formation of the patient-doctor relationship in interactions with interpreters.

Danielle Sanchez, History

Samuel P. Perry, mentor

Easy Certainty: George W. Bush and God's Divine Will After September 11th

This thesis analyzes the way President George W. Bush used evangelical rhetoric to justify different aspects of his presidency and the actions he took after the September 11th attacks on American soil. After the terrorist attacks on American soil, Bush used many biblical references and divine justifications for both his presidency, foreign policy, and actions in the Middle East. In addition to analyzing the impact that Bush's rhetoric had on his base, this thesis seeks to view Bush's rhetoric through the lens of different rhetorical narratives including Thomas Aquinas' Just War Theory, colonialism and imperialism, and the Frontier Myth amongst others. This thesis also seeks to analyze some of the policies that Bush enacted that began to breach the church-state divide and align the conservative evangelical base with the Republican party and presidency.

Mikaila Schmidt, University Scholar

Heidi J. Hornik, mentor

Catholic-Reformation Painters of the Baroque: A Study on Why Women in Bologna

This thesis examines the unprecedented rise in female artists in Bologna during the Baroque period. It argues that women in Bologna found success during the 17th century primarily due to their revival of the *maniera devota* style. After the decisions made at the Council of Trent in 1565, religious art was required to reflect the newly unified Catholic Church as well as inspire a deeper sense of religious devotion and connection to faith. Artists such as Caravaggio and Artemisia Gentileschi solidified the emotional intensity of this period through dramatic contrast and religious symbolism. Influenced by Archbishop Paleotti, painters Guido Reni and the Carracci painters, Lavinia Fontana and Elisabetta Sirani combine naturalism and science in a way that inspires devotion and introspection. While many factors contributed to female prosperity, the religious intensity, and emotional connections they establish with the viewer allowed for their popularity in Bologna and across Italy to grow, paving the way for future success by later female painters.

William Paul Vines Sharkey, University Scholar

Edward Taylor, mentor

Portraits of Christ: A Work for String Orchestra

Sound is inherently generative, as exemplified in Genesis 1:3 and John 1:1 when God the Creator speaks the cosmos into existence. I explore this gestalt principle by interweaving Biblical theology and hermeneutics, personal worship, and sound into a five-movement composition for string orchestra. The accompanying essay details its musical content, extra-musical inspiration, and their intersection. The composition is structured around four visions (portraits) of Christ from Scripture and one personal lament: I. Moses and the elders of Israel eat a meal in

God's presence on Sinai (Exodus 24:9–11); II. The coming of the Son of Man (Daniel 7:13–14); III. Lament of a longing heart; IV. The Lamb before the throne (Revelation 5); and V. The wedding feast of the Lamb (Revelation 19:6–9).

Samuel J. Shenoj, Bioinformatics

Erich Baker, mentor

Identification and Analysis of an Improved Animal Model for Behçet's Disease: A Computational Approach

Behçet's disease (BD) is a multi-system inflammatory disease primarily affecting patients along the historical silk road. Current attempts to develop an animal model for BD have proved to be only partially successful; they have been unable to replicate both the phenotypic and genotypic aspects of this complex disease. In order to overcome these limitations, we performed a computational analysis to find an improved animal model for BD. First, we identified phenotypic and genetic factors of BD. Second, we compared these factors to 27 other autoimmune diseases. Finally, we analyzed identified autoimmune diseases animal models in order to determine if they can be used for BD. Using this methodology, we were able to identify 3 potential animal models for the continuation of BD research. These three models may prove useful in the development of novel BD treatments.

Delaney Shiu, Health Science Studies

Christopher Pieper, mentor

Study of Women's Cardiovascular Public Health Initiatives and Program Evaluation

The number one cause of death for women across the United States is cardiovascular disease, a broad term that can encompass many different ailments. Vulnerability and severity of the disease is often made worse by factors such as race, socioeconomic status, and geographic location; this often results in worse outcomes after a diagnosis of heart disease, specifically for poorer women of color. The goal of this project was to research the background about women's heart disease and the factors that influence it to better be able to understand what a successful public health initiative might look like in order to positively influence the women in the community. There are currently initiatives and programs funded by government agencies such as the Centers for Disease Control, as well as privately funded ones, and most have shortcomings such as accessibility, lack of educational resources, or insufficient rates of public engagement. I completed an evaluation of several existing programs, government-funded and non-government funded, in order to find the most common deficiencies or limitations, as well as one in-depth analysis of a program located in southern Florida, the Women's Breast and Heart Institute (WBHI). The WBHI is one of the smaller, more community-oriented programs, but caters to the needs of their immediate community and sees consistently positive results. After analyses of these programs, I developed a proposal for aspects of the WBHI's model to be implemented in already-existing programs in order to reach at-risk women in the most efficient way possible.

Megan Taylor Short, University Scholar

Carson Mencken, mentor

Private Prisons in the United States: Success That Has Yet to Be Seen

Private prisons have been a hot topic of political debate since their official conception in the late-twentieth century in the United States. The intent behind privatizing a field that has historically been regulated by the government was to reduce budgetary expenditures and improve cost efficiency without sacrificing the quality of these

institutions. Since then, private prisons' abilities to meet those goals have been widely questioned and researched. In this thesis, I review the history of prisons and how privatization was established in the United States. I then analyze the large body of research surrounding the quality and cost-effectiveness of the private facilities, and I determine that this research is largely inconclusive regarding the success of private institutions. For private prisons to be useful in the field of crime and punishment, they need to be evidently and undoubtedly superior to their public counterparts. Therefore, I propose that more research needs to be done with greater sample sizes, and this research can only be done if private prisons are legally required to be more forthcoming with their financial records. Until then, it cannot be determined whether private prisons are meeting and/or exceeding their contractual obligations to the government.

Lindsay Sides, Medical Humanities

Michael R. Whenton, mentor

Beyond the Needle: A Technical, Cultural, and Rhetorical Study of Acupuncture versus Dry Needling

This thesis analyzes the ongoing debate over the relationship between acupuncture and dry needling. This thesis first discusses the origins and techniques of acupuncture, followed by the origins and techniques associated with dry needling. I draw together the similarities between the two practices to argue that dry needling is in fact a subcategory of acupuncture, despite the American Physical Therapy Association's insistence that dry needling is not acupuncture. Next, I assess the clinical trials of both acupuncture and dry needling, which indicate that dry needling carries greater risk and less beneficial long-term health outcomes than acupuncture. While the available research suggests the efficacy of acupuncture over dry needling, I recommend further study of both practices in terms of their potential short-term and long-term efficacy. Last, I offer three possibilities for the apparent differences between the outcomes of the two practices: Americans' fear of communism, an unwillingness to reform Western education, and cross-cultural differences between the values undergirding the practices. This thesis advances the ongoing debate over the nature of dry needling vis-à-vis acupuncture by clarifying important cultural and rhetorical factors that may explain the outcome differential between two practices that, at face value, seem nearly equivalent.

Aubrey Simon, University Scholar

Christopher Pieper, mentor

Investigating American Identity and Emotional Attachment

National identity is a complex yet crucial topic. The current study investigated the content of American national identity, first by exploring the predominant scholarly perspectives on the topic. Scholars emphasized several important themes, namely shared ideals, civic participation, and diversity, including diverse ways of belonging to the nation. Diverse ways of belonging to the nation were then explored among individual Americans through survey and interview data. The survey found that while a majority of citizens strongly consider themselves American, a much smaller proportion considers Americanness to be one of the most salient aspects of their identity. Survey respondents also emphasized similar themes to those discussed by scholars as crucial to defining Americanness. Interview participants, too, highlighted these themes, and the interviews also shed light on the diversity of ways of belonging to the country.

Collin Slowey, University Scholar

David Corey, mentor

A Just War Theory for Domestic Politics

In this paper, I address the ethical repercussions of treating domestic politics like war and attempt to formulate a philosophical framework by which to morally evaluate political words and deeds. First, I consider the rise of the metaphor of war in American political discourse and the increasing tendency to think of politics as competitive and conflict-oriented, rather than cooperative and peaceful. I then examine the unique ethical challenges this trend presents. In the main body of the paper, I reason analogically from the just war tradition to create something like a just war theory for domestic politics, applying the distinct requirements of justice before (*jus ad bellum*), during (*jus in bello*), and after (*jus post bellum*) war to concrete ethical problems in today's public square. Most notably, my findings highlight the need to eschew moral realism in partisan battles and stop declaring war on inanimate objects or concepts (e.g., "drugs" or "terror"). They also highlight the importance of prudence and restraint in domestic politics. Hopefully this paper will spur Americans to take the moral dangers of metaphorical war-making seriously and produce some standards to help navigate those dangers.

Jensen Smith, Biochemistry

Mary Moore, mentor

Geriatric Physical and Emotional Abuse and Neglect by Staff Members in Institutional Facilities

This thesis aims to provide an accessible resource for any individual, medical or non-medical, to understand how to recognize elder abuse and provide guidance as to what can help prevent it. The thesis will provide an overview of various institutional facilities for the elderly. Next, the types of healthcare providers involved in elder care at each facility are described. Characterizing the types of elder abuse and identifying the signs of abuse are necessary preventative measures that any individual and healthcare worker can undertake. The physical abuse discussed will include all forms of physical abuse, including sexual abuse and neglect. Through case reports, legal evidence, and facility reporting, the research finds that many healthcare workers lack adequate training, and institutions lack proper resources. Future research should conduct more wide-scale studies and census reporting of elder abuse and neglect in the United States to gather more accurate and current data.

Mapenzi Joy Smith, Public Health

Beth Lanning, mentor

The Relationship between Rhetoric and Public Health: A Case Study of the HIV/AIDS Epidemic in the United States

People living with HIV who perceive high levels of HIV-related stigma are more likely to abstain from testing and treatment for HIV and experience negative feelings towards themselves due to their positive HIV status. The perception of stigma directly impacts their health and wellbeing. The aim of this thesis is to investigate the relationship between rhetoric and health outcomes for those living with HIV to understand better the role that health communication may play in forming and perpetuating stigma for this population. To evaluate this relationship, articles from *The New York Times*, *The New York Native*, *The Washington Post* and excerpts from Randy Shilt's book *And the Band Played On* detailing the HIV/AIDS epidemic in the United States between 1981 and 1990 were assessed as a comprehensive narrative to analyze the portrayal of those infected with or at high-risk for HIV/AIDS. Maurice Charland's theory of Constitutive Rhetoric was used as a rhetorical approach to determine the implications of audience identification on public perception of the virus and public perception of themselves concerning the virus. This analysis uncovered that negatively constituted identities might result in stigmatization, marginalization, and discrimination towards a specific population, which, in turn, may lead to poor health

outcomes. This research provides new insight on the power of scientific narratives and seeks to caution the media on how the construction of scientific narratives, specifically narratives that can constitute identity, may directly impact an individual's health outcomes.

Regan Stigall, Psychology

Thomas Spitzer-Hanks, mentor

The Rhetoric of Psychopathology: An Interdisciplinary Approach to Understanding and Talking About Mental Health

This thesis explores the manner by which psychopathology, the study of "abnormal" cognitions and behaviors based on societal norms, is influenced and changed by language use patterns. There is a historical cycle of abuse against individuals experiencing psychopathology, which I examine through the lens of Foucault's analysis on Europe in the age of the Enlightenment and the rise of asylums in France and Gould's examination on the growth of the hereditarian movement in the United States. These historical abuses, in the contexts of confinement, exploitation, othering, and ostracization, are predicated on the notion that certain diagnostic terms were used invectively, thereby creating a divide between acceptable and unacceptable cognitions and behavior. Utilizing rhetorical theories posited by Burke and Butler, this thesis explores the manner by which certain language can change society's perspective regarding the reality of psychopathology. The modern day exigency for this analysis comes in the form of horror film and digital games, as well as other popular culture platforms like Tumblr and YouTube wherein negative and fear-based narratives of psychopathology are perpetuated as incontrovertible truth. In reality, these accounts linguistically reflect exaggerated or entirely false accounts. Using an example of a podcast published on YouTube and the supportive aspects of the Tumblr platform, this thesis will examine the manner by which positive, empathetic portrayals of psychopathology can change the narrative of the aforementioned false reality. Finally, this thesis will offer potential solutions by which society can presently change the reality of fear and othering that it has instituted in these various platforms. The explored solutions consist of implementing positive, widespread portrayals of psychopathology and establishing quality mental health education for children and teenagers.

Mark Cole Sutton, University Scholar

Barry Harvey, mentor

Learning to See the Signs: How the Incarnation Reveals the Semiotic Nature of Scripture and Reality in Augustine's De Doctrina Christiana

Augustine's treatise on interpreting and teaching Scripture, *De Doctrina Christiana*, in suitably Augustinian fashion, seeks to understand the nature of all reality and how human beings interact with all things, created and divine. Augustine in mapping the structure of Scripture and reality into three categories, things to be used, things to be enjoyed, and things to be used and enjoyed, implicitly reveals his Christocentric understanding of both Scripture and reality. The things to be used are signs. Signs are all things which are not the things to be enjoyed, which is only God. Yet it is not clear how human beings can use those things to enjoy God, unless there is some way in which the things of this world are revealed as sign, and we are shown how to use them. Therefore, the primary argument of this thesis is that the Incarnation of Christ made it possible for humanity to use all things as signs, as "vehicles" for the enjoyment of God. Christ acts as our vehicle, as the path our vehicle follows, and as its destination. He is our model for reading all things as signs toward God. Yet it is through Scripture that we learn to see as Jesus sees, and therefore it is incumbent upon every Christian to be a good interpreter of Scripture so that we may learn to see Scripture and all things as Christ sees them.

Kayla Thompson, Political Science

David Bridge, mentor

The Effect of Gratz and Grutter in Higher Education: Do Affirmative Action Policies Promote Diversity?

This thesis explores the question, “Under what conditions can the Supreme Court produce social change?” By looking at the affirmative action cases *Gratz* and *Grutter*, I determine whether these decisions made by the Court increased diversity. To examine this phenomenon, I conduct a quantitative study that pulls data from fifty higher learning institutions, noting whether each school saw an increase or decrease in Latino and Black student enrollments. If *Gratz and Grutter* made a difference, we would expect a modest increase in Latino and Black enrollment because it seemed like the Court promoted an overall holistic increase in a diverse student body. Schools with a positive *Net Change* showed an overall increase in Latino and Black enrollment, while schools with a negative *Net Change* showed an overall decrease in Latino and Black enrollment. My study aims to add to the conversation on Court efficacy in promoting social change regarding affirmative action policies. Ultimately, I advocate diversity matters, especially in education, so it is vital to find ways to measure the immeasurable.

Lauren Thompson, University Scholar

Peter Campbell, mentor

An Alternate Approach: A Communication Centered Proposal for the United States' Iranian Policy

This thesis proposes a policy of communication with Iran by digital media networks, the United States encourages Iranians to pursue political ideologies contrary to the theocratic authoritarianism. The emergence of the Islamic Republic and consolidation of power under the Ayatollah enabled an ideology that preserved the Supreme Leader's power to decimate throughout Iran. The Islamic revolutionaries forged a new Iranian society that consolidated religious and political authority unto the Ayatollah, enabling the theocratic authoritarian state to endure. However, opposition to the Islamic Republic of Iran persisted since the revolution and encountered moments of widespread support within the state, as evidenced by the 1990s reform movement and the 2009 Green Movement. In light of the internal opposition to the Ayatollah's rule, an avenue presents how the United States may decimate counter-regime information in Iran. Introducing outside media to the Iranian people through established digital communication networks enable individuals to form political ideologies contrary to Iran's religious authoritarian rule. Thus, building upon existing oppositional movements in Iran, the United States may encourage individuals in Iran to forge personal beliefs of government that support freedom, antithetical to the oppressive religious-political rule of the Ayatollah.

Connor Tompkins, University Scholar

Troy Abell, mentor

The Effects of Body Type on Maternal Fat Specialization During Pregnancy

It would be helpful to understand the anthropometric factors that influence fetal growth in order to maximize the number of infants born within the birthweight range that is least associated with morbidity and mortality (2,500-4,000 grams). Existing literature demonstrates that upper body fat tends to fuel fetal growth, while lower body fat is stored to fuel lactation postpartum. However, there is little research into whether this phenomena is consistent across all subgroups of women. This thesis analyzes data from a prospective cohort study that collected anthropometric data on 355 mother infant pairs from the first prenatal visit to after delivery. This data supports the hypothesis that the subgroup of women with large amounts of lower body fat and small amounts of upper body fat is an exception to the general trend. This population was split between a Lower-Fat Only ‘Pear’ group and

a 'Non-Pear' group according to a relative measure of fat distribution. A regression predicting fetal growth was run on these two groups, but BMI was replaced with a measure of lower body adiposity, thigh circumference, and a measure of upper body adiposity, subscapular skinfold. In the 'Pear' subgroup, thigh circumference was significantly associated with fetal growth ($b = 24.18$, $p = 0.0064$) while the subscapular skinfold was not ($b = -19.4$, $p = 0.38$). The opposite relationship was manifested in the 'Non-Pear' group. In the majority of the population, the subscapular skinfold was significantly related to fetal growth ($b = 10.7$, $p = 0.0009$) while the thigh circumference was not ($b = -1.6$, $p = 0.7250$). This adds nuance to the existing body of knowledge. It confirms that upper body adiposity fuels fetal growth in the majority of women, but lower body fat fuels fetal group in the subgroup of women with large lower body fat stores and small upper body fat stores.

Haley Turner, Health Science Studies

Yunsuk Koh, mentor

The Relationship Between Body Composition and Exercise Patterns in College Students Enrolled in a Lifetime Fitness Course

To analyze the relationship between body composition and exercise participation, along with perception towards Lifetime Fitness (LF) courses. METHODS: Thirty-eight students (20 males and 18 females) at Baylor University completed a qualitative survey pertaining their LF course and exercise participation. Additionally, height, weight, waist-to-hip ratio, and body composition [fat free mass (FFM), fat mass (FM), and body fat percentage (BF%)] were assessed. RESULTS: Participants who exercised more than twice a week were associated ($p = 0.021$) with personal wellbeing as their motivation to exercise. Males who exercise less than twice a week were associated ($p = 0.041$) with having lower FFM, whereas females were associated ($p = 0.004, 0.027, 0.001$, respectively) with lower body mass index, FFM, and FM. CONCLUSION: Frequency of exercise was not determined by body composition due to sex differences. Additionally, students who took an LF course because of requirement exhibited a lack of exercise participation.

John Ungarino, University Scholar

Jason Whitt, mentor

For the Cure of the Soul: Basil the Great's Perspectives on Medicine

Much has changed in healthcare since St. Basil the Great founded the first hospital in 373 AD. Still, whether patient or healthcare worker, there is much one can learn from St. Basil and his teachings about how healthcare ought to find its proper place in the Christian life. This thesis aims to analyze the surviving documentation of Basil's commentary on healthcare while illustrating how Basil implemented these beliefs into his own ministry. The first chapter is a survey of the Basileias, Basil's hospital, which will provide context to the following work by depicting the ultimate manifestation of his teachings about healthcare. The second chapter is an exploration of Basil's education and formation as well as his primary teachings as a bishop and social leader. Finally, the third chapter provides an in-depth analysis of Basil's beliefs about the practice and purpose of medical care when conducted alongside Christian virtue.

Diego Valdes, University Scholar

Daniel Romo, mentor

Synthesis of a Derivative of the Immunosuppressive and Neuroprotective Agent Gracilin A

Gracilin A, a natural product derived from the marine sponge, *Spongionella gracilis*, has shown promising neuroprotective and immunosuppressive properties. With the help of the molecular modeling team in the MiniPharma program, certain derivatives that have shown increased binding affinity for cyclophilin D, and increased selectivity between cyclophilins A and D have been identified. The identified derivatives show effects related to cyclosporine A through interaction with cyclophilins A and D, giving the molecules their potential neuroprotective and immunosuppressive effects. The diisobutyrate derivative of Gracilin A is being targeted for synthesis, because we believe that it will have greater stability in serum than previously synthesized derivatives. We propose that by increasing sterics around the ester functionality the rate of hydrolysis will decrease, making the molecule more stable in serum.

Josie Van Divier, Baylor Business Fellows, Economics, Finance, & Mathematics

Zachary Ward, mentor

Wealth Accumulation and Residential Segregation: Second-Generation Immigrants During the First Mass Migration

This paper examines the relationship between residential segregation in childhood and wealth outcomes later in life. I use a new sample of Irish, German, and English children linked from their childhood in 1850 to their adult outcomes in 1870. This paper improves upon the existing literature by using wealth data instead of occupational outcomes. Conditional on childhood characteristics, such as the wealth of the father, I find a small negative association between childhood residential segregation from the US-born in 1850 and an individual's percentile rank of wealth in 1870, suggesting there is little detriment to growing up in an enclave. This association is also weak by sending country and urban status. These results are robust to measuring wealth outcomes as the change in wealth relative to an individual's father in 1850. Overall, the results suggest that fears of nativists during the mid-19th century about immigrant enclaves were unfounded.

Jordan Vanderpool, University Scholar and Spanish

Sarah-Jane Murray, mentor

Life is Found Under Rocks and Hard Places: A Collection of Short Stories

This collection of five short stories explores the depths of human character and the contradictions in contemporary society. My characters traverse the present political and sociological environment, and often find themselves lost, hurt, and wounded. Yet, the depths of depravity which they at times attain serves to expose the deeper level of morality and spirituality that is found when superficiality is peeled back. Following Augustine, the most basic assumption in my thesis is that all iniquity reaches for some good. While my deeply flawed characters often fail, grace nonetheless works upon them. Hope lives.

Paul Vining, Biochemistry

Eric Martin, mentor

The Contract of Existence: Acknowledging Mortality and Medical Futility at the End of Life

Medicine's role in the process of dying has evolved in response to patient demands for highly invasive procedures at the end of life. These demands reflect a larger phenomenon, wherein death's once central position in society has been abdicated. This has led to an unfamiliarity with death, and rather than acknowledging the inevitable nature of finitude, patients often choose herculean treatments over palliative care, utilizing medicine as a means to deny the fleeting nature of their existence. Such decisions arise from the sentiment that pursuing extensive treatment is akin to a noble struggle against the end while palliative care is synonymous with acquiescence. Despite this perception, palliative care offers an environment in which a healthy acknowledgement of death's proximity is encouraged. It is from this acknowledgement that patients in end-of-life scenarios may prioritize the time they have left, thus allowing for commiseration, grief, and catharsis to contribute towards a meaningful death.

Shubhneet Warar, Biochemistry

Touradj Solouki, mentor

Improving Data Analysis using Vacuum Ultraviolet Automated Library Integrated Deconvolution on Gas Chromatography Vacuum Ultraviolet Spectroscopy Data

Gas chromatography (GC) coupled to vacuum ultraviolet (VUV) spectroscopy and mass spectrometry (MS) can provide highly confident chemical identities of volatile organic compounds. Vacuum Ultraviolet Automated Library-Integrated Deconvolution (VALID), a custom-built software package, analyzes and deconvolutes GC-VUV data. This project aims to assess the performance of VALID and discuss methods to improve analysis of GC-VUV data. Real-world complex samples of perfume and frankincense-based essential oil were injected into a tandem GC/VUV-MS instrument and analyzed both manually and automatically (via VALID). VALID successfully identified analytes from convoluted regions of chromatographic data that could not be detected by manual analysis; accuracy of these identifications was confirmed by GC retention index analysis. To address the VUV spectrometer's small dynamic range, injections of varying sample concentration were utilized for complete coverage of the dynamic range. More analytes were successfully identified via the combination of manual VUV analysis, VALID, and GC RI analysis than from the three data analysis approaches alone. To address the limited size (<2,000 compounds) of the available VUV library, VALID and GC-MS library-searching were used in conjunction to yield identifications of unknowns and rapidly populate the VUV library. These data analysis techniques can aid in time-sensitive, cost-effective, and accuracy-focused analyte detection.

Sarah Catherine Weaver, University Scholar

Jason Whitt, mentor

Dignity in Dependency: A Christian Communal Alternative to Physician-Assisted Suicide

Physician-assisted suicide (PAS) is one manner of dying that people may choose when diagnosed with a terminal illness. Many people who pursue PAS do so because they fear the loss of autonomy that accompanies dying and believe that they will also lose their dignity in the vulnerability and dependency of dying. This thesis intends to challenge the notion that dignity is inherently tied to autonomy, a notion that devalues the lives of individuals who are living and dying with diminished autonomy, and will offer an approach toward dying that honors the dignity of the all people. The rhetoric of supporters of PAS relies on an idea of personhood in which a person is only dignified if they are autonomous. This view does not account for the dignity of all people. This thesis will examine the status

of PAS in the United States, focusing on the Death with Dignity Act in Oregon and the supporters of PAS that identify with the 'death with dignity' movement. Next, various accounts of personhood will be discussed, and attention will be paid to their accounts of autonomy and dignity. Lastly, this thesis will propose an approach to end-of-life care based on the medieval Christian literary tradition of *ars moriendi*, or the art of dying. Aspects of the *ars moriendi*, particularly cultivation of virtues for the dying person and imitation of the life and death of Jesus, will be reclaimed to support a Christian approach to dying well within community.

Lauren Wetzel, University Scholar

Maura Jortner, mentor

Magic Runs Red

In the great city of Saint Petersburg, dark magic is lurking. Seventeen-year-old Anya is a Russian socialite with a picture-perfect life: a life of parties, beautiful dresses, and her boyfriend Sevastien planning to propose any day. But when Sevastien gets sick with a mysterious illness, Anya confronts her darkest secret. She is a *koldun*, a person with magical abilities that draw power from blood. When a reunion with her old mentor goes horribly wrong, Anya's life is linked Sevastien and the clock starts ticking before they both perish. Teaming up Kazik, an unlikely ally, Anya quests to break the spell that links her to Sevastien and also to cure him of the disease. But life doesn't always go according to plan, and as Anya grows closer to Kazik she grows farther away from Sevastien. Ultimately, Anya confronts the weight of having dark magical abilities and is able to save Sevastien and herself from death.

Benjamin C. Whisman, Psychology and Political Science

Rebecca McCumbers-Flavin, mentor

Separation of Church and State: Should We Build A Wall?

This thesis will analyze a selection of United States Supreme Court cases involving public aid provided to religious and sectarian organizations. It will begin with why I have come to be interested in this topic, before defining the three competing conceptions of Freedom of Religion: Freedom of Religion, Freedom for Religion, and Freedom from Religion. Each conception will have a dedicated chapter that analyzes the arguments presented in United States' Supreme Court opinions. The final chapter will argue for the adoption of the Whisman Wall and the Lime test, which appear to be the new direction the Roberts Court appears to be taking though there is not enough Supreme Court cases to affirm this as the approach of the Roberts Court.

Zach Whitaker, Business Fellows and Finance

Bradley Beauvais, mentor

Do hospitals that participate in HVBP actually provide better quality care?

Incentives can work wonders in promoting individuals or entities to do something they wouldn't necessarily engage in normally. Hospital Value Based Purchasing (HVBP) is a Pay-4-Performance program that was started by Centers of Medicare and Medicare Services (CMS) and it aims to do just that. The end goal of this program is to provide acute care hospital patients high quality care and to better the overall hospital stay experience for patients. However, few have asked the question of whether these hospitals that participate in HVBP actually provide better quality of care to their patients in comparison to the hospitals that do not participate in this Pay-4-Performance program. In this paper, three response variables will be used in order to assess quality of care: All Cause Hospital-Wide Readmission Rate, Serious Complication Rate, and Median Wait Time In The ED. Through the

use of linear models, the determination of whether participating hospitals provide better quality for care will be finalized.

Alexander B. Williamson

Charles North, mentor

The Economic Efficiency of the Original US Constitution

Since it was ratified, the United States Constitution has been the supreme law of the land for the nation. The legal importance of the Constitution is obvious. Despite this fact, few attempts have been made to determine the impact of the US Constitution on economic efficiency. This thesis investigates the economic efficiency of the US Constitution in its original form. That is, the body of the Constitution and the first ten amendments – often referred to as the Bill of Rights. The thesis looks at the Constitution’s impact civil commerce, private markets, and public activity. A few smaller topic that do not fit well into such labels are also included. Economic efficiency is defined primarily in terms of Pareto Optimality. A few sections also discuss efficiency in terms of Kaldor-Hicks efficiency, but it is a secondary metric.

Elan Wilson, Political Science

David Corey, mentor

Nietzsche: The “Anti-Political” Thinker

Compared to other thinkers in the canon of political philosophy (Hobbes, Mill, Locke, Rousseau), Friedrich Nietzsche is an outlier. His comments on politics are cryptic at times and nearly impossible to organize into an airtight system. This ambiguity has spawned academic dialogues that orbit around the following question: what “flavor” of politics, if any, does Nietzsche’s philosophy promote? From my research, I have discovered four interpretive “camps” that most scholars can fit into: the “Apolitical” camp, the “Aristocratic Distinction” camp, the “Egalitarian” camp, and the “Anti-Political” camp. In this thesis, I will attempt to prove, through both primary and secondary-source evidence, that the Anti-Political camp offers the best lens through which to view Nietzsche’s work. Nietzsche is not concerned with promoting a political paradigm we would recognize (Democracy, Aristocracy, Oligarchy, etc). He is focused on clearing away life-denying iterations of politics to make room for a fresh, life-affirming political reality.

Angelo Wong, Biology

Bessie W. Kebaara, mentor

The effect of copper on growth and the role of PCA1 expression in Saccharomyces cerevisiae cells with and without a functional nonsense-mediated mRNA decay pathway

The nonsense-mediated mRNA decay pathway (NMD) is a conserved physiological process in the majority of eukaryotic organisms for recognizing and degrading natural mRNAs and mRNAs containing premature termination codons. Most importantly, NMD regulates natural mRNAs to control copper concentrations inside the cell. As an essential micronutrient, copper has a role in many biological mechanisms as a cofactor; however, it is also toxic at high concentrations inside the cell. NMD has shown to regulate various mRNAs involved in copper homeostasis such as *PCA1*. These mRNAs are sensitive to different environmental conditions such as high levels of copper. The extent and degree of regulation continues to be investigated, but it is known that NMD is integral to the biological mechanisms as non-functional NMD *S. cerevisiae* cells portray increased rates of growth in the presence of high

copper. Different yeast strains, however, have also been shown to influence copper resistance and mRNA expression in metal homeostatic proteins. To explore the degree of NMD regulation, I sought to examine the changing rate of mRNA expression when *S. cerevisiae* is grown in varying copper conditions with and without a functional NMD pathway. To test this, evaluation of RNA steady-state levels were conducted at various time points after switching from regular growth media to high copper conditions. Through examination of gene expression level, we can gather support for NMD's rate of regulation and more information regarding *S. cerevisiae*'s tolerance to copper.

Peyton Wray, Theatre Performance

Steven Pounders, mentor

A Study on Acting Theory and Performance

This thesis seeks to use the historical context of the evolution of acting, both on stage and through film, as well as the works of acting theorists from around the world to analyze different acting techniques. It discusses the shifts in perspectives of acting throughout the realist movement, which first gained momentum in the works of Konstantin Stanislavsky and was perpetuated as film grew in prominence. Finally, it will take this analysis and apply it to my experience and performance in Baylor University's 2020 production of Qui Nguyen's *She Kills Monsters*, taking a special interest in how adaptations necessary to the play due to COVID-19 restrictions affected the acting styles needed to tell the story.

Jonathan Wu, French

Holly Collins, mentor

Quoi qu'il arrive : Une ode à l'avenir

The road through medical school towards practice in the field of medicine is a long and arduous journey, with plenty of challenges in addition to the burden of the course load. Many studies focused on burnout in medical school have found that many external factors, including the exposure to suffering and the influence of significant life events, contribute heavily to the stress that a medical student faces. Given this limited but growing base of knowledge, the looming figure of medical school is often uncertain, frightening, and exciting as prospective medical students study the prerequisite coursework and participate in various extracurricular activities that will best prepare them for the road ahead. In this novel written in "standard" French, the plot follows a young medical student during his first year of medical school, where he meets another young man by the name of François. The development of their relationship and the consistent revelation of the protagonist's own thoughts throughout the story show conflict and character in the face of what can occur outside of the classroom. As an intellectually inspired, expressive piece, this story examines some of the common hopes and fears experienced by many of the individuals who hope to contribute to the medical field as the next generation of physicians.

Weiling (Lydia) Yan, Economics and Marketing

Jason Aimone, mentor

The Beauty Dictator Game: Perception of Facial Attractiveness and Generosity

With the continuous advancements in technology, people rely on virtual interaction as a prevalent medium for communication and social network. The etiquette of social distancing during the COVID-19 pandemic has further pushed our virtual presence as the dominant social factor, and this behavioral change makes appearance a salient

variable as webcam eliminates online users to facial signals. While previous research has supported the existence of “beauty premium”—more attractive workers receive easier promotions and higher wages in the labor market—this paper focuses on the monetary value of perceivers’ willingness to interact with targets who have a higher level of facial attractiveness. I aim to elicit people’s belief on the beauty premium specifically in relation to the perception of generosity through analyzing the belief’s economic value in a modified dictator game via online surveys.

Reid Yanney, Biochemistry

Michael Muehlenbein, mentor

The Status of One Health Education Among Undergraduate Pre-Health Students

One Health is collaborative, multidisciplinary approach to solving and studying health issues, from the local to global level, with special consideration given to the interdependency of human, animal, and environmental health. This thesis first dives into the history of One health and all the collaborative interactions between human and animal medicine. Then it will explore the data from a survey of Pre-Health students at Baylor University. In this survey, it was found that only 5.8% of students had heard of One Health and that these students seemed more knowledgeable about zoonotic disease. The vast majority of students agreed that One Health concepts would be useful to know in their future careers and expressed a desire to learn more about them. Lastly, this thesis argues the all healthcare professionals should be familiar with One Health concepts because they help provide a broader context for understanding human health, help impart knowledge about zoonotic diseases and how they can affect their patients, and it teaches how to think and work cooperatively with their colleagues and professionals in other fields. Also, undergraduate education is the best place to introduce One Health to students because of the natural collaborative and multidisciplinary environment in college.

Zakariya Yazdani, Biology

Daniel Romo, mentor

Analysis and Synthesis of Gracilin A Derivative with Increased Predicted Affinity to Cyclophilin D

Alzheimer’s Disease (AD) is responsible for the progressive brain degradation of 3 million U.S. citizens annually and is the sixth leading cause of death in America. This disease has no current cure. The end-goal of this project is to synthesize a novel neuroprotective derivative of natural product gracilin A which will act as a potent inhibitor of pathways responsible for oxidative damage to neurons directly precursing the onset of Alzheimer’s Disease. Gracilin A is a unique metabolite derived from the marine sponge *Spongionella gracilis*. Recently, derivatives of gracilin A were synthesized, analyzed, and determined to be potent neuroprotectors and immunosuppressants. These derivatives exhibit such effects by blocking opening of the mitochondrial permeability transition pore (mPTP) and inhibiting Cyclophilin D (CypD) respectively. Computational chemistry has been performed to predict derivatives of gracilin A which would exhibit selectivity in binding to a CypD which blocks the mPTP and enhances neuroprotection over binding to Cyclophilin A (CypA). The compound proposed for total synthesis, is based on a pre-existing derivative of gracilin, compound 29a.

Anna Ye, University Scholar

Holly Shi, mentor

A Survey of Chinese Politeness from Imperial to Modern Times: Kinship Terminologies and Honorifics

This thesis is founded on the understanding that culture and language are mutually influenced by one another. Having a grasp on a culture's linguistic politeness strategies allows seamless navigation within a culture; it is a mark of fluency in a language. This thesis examines the intimate relationships between Confucian teaching, major events within Chinese history, and Chinese politeness. Specifically, it follows the evolution in usage of kinship terminologies and honorifics from imperial to contemporary times in spoken Chinese. The effects of major ideological and political transitions such as the May Fourth Movement, Communist Revolution, and Cultural Revolution on Chinese politeness are discussed. While the usages of kinship terminologies and honorifics have risen and fallen from imperial to contemporary times, they are still an active part of contemporary Chinese politeness. To illustrate different methods of usage in politeness strategies, examples of dialogues from popular Chinese movies and television shows are presented and analyzed.

Benjamin Jack Young, History and Religion

Barry Hankins, mentor

God's Faith-Healing Entrepreneur: Oral Roberts, Charismatic Christianity, and the Rise of the Sunbelt South, 1945-1990

This thesis tracks the development of Oral Roberts's ministry into an evangelical empire, beginning with his move from rural Oklahoma to Tulsa in 1947 and concluding with the collapse of his City of Faith Medical and Research Center in 1989. It will explore how Roberts burst on to the American religious scene in 1947 boasting a businesslike acumen and a distinctive brand of Pentecostal spirituality. It will chronicle the rise of Roberts's faith-healing ministry during the 1950s and his theological debt to classical, primitivist Pentecostalism. This thesis will also examine the connections between Roberts's theology and preexisting traditions of New Thought. With the founding of Oral Roberts University in 1962, Roberts pivoted from barnstorming revivalist to suave televangelist and embraced the affluent Sunbelt ethos of the 1960s and 1970s, a shift in style that fueled his rise to the heights of religious celebrity in the United States. Finally, Roberts's efforts to build and sustain the City of Faith Medical and Research Center will be related with an attentiveness to how his increasingly erratic series of visions undermined his public credibility and triggered the collapse of his ministry. Ultimately, this thesis argues that Oral Roberts entrepreneurially built one of the most influential evangelical ministries of the twentieth century by presenting an evangelical message heavily indebted to his primitivist Pentecostal roots, adapted to wider audiences through the prism of New Thought, and primed for the nouveau riche lifestyle of the emerging suburban South.