

HONORS PROGRAM THESIS ABSTRACTS

SPRING 2005 GRADUATES

Amy Anderson, Neuroscience

Dr. Barry Harvey, mentor

The American Church's Changing Attitude toward the Death Penalty

Capital punishment remains one of America's most controversial subjects. It has been part of our culture since the beginning, as the Puritans, Separationists, and Quakers fled severe persecution, including death, from England and other European countries. Yet, many of these groups brought with them the same thing they were fleeing from, capital punishment. Today, the Church in America still argues over this question: should Christians support the death penalty?

By looking at Biblical commentaries from various points in Christian history, editorials and articles written by pastors and parishioners from early American history, and contemporary authors, I plot where the American Church (and all its denominations) stands on this issue. I also look at the issue of capital punishment through various decrees and stances that specific denominations have passed within the past few decades.

Sarah Branstetter, English

Dr. Joe Fulton, mentor

Linguistic Keys of Oral Performance in Humor of the Old Southwest

My thesis examines the way in which several stylistic aspects of the works of the nineteenth-century humorists also serve important linguistic purposes in these stories. I researched history and criticism of the humor of the Old Southwest, which I summarize in the first chapter. I also looked at recent studies of conversational and performance narrative, as related in the second chapter. I then compared the form and function of linguistic devices in the oral narrative with the stylistic devices in the stories of the nineteenth century humorists. In the third chapter, I analyze the works of three nineteenth century humorists—T.B. Thorpe, George Washington Harris, and Johnson Jones Hooper—in terms of linguistic technique. I conclude that the use of dialect, narrative frame, and repetition, often thought to be simply stylistic aspects of humor of the Old Southwest, were actually pragmatically important in that they established a socio-linguistic frame that enabled the reader to understand and interpret the stories.

Natalie Butler, English

Dr. Francis Beckwith, mentor

The Same-Sex Marriage Debate: Analyzing Goodridge v. Dept. of Health (440 Mass. 309) (2003)

In my thesis, I analyze the same-sex marriage debate by focusing on the Massachusetts Supreme Judicial Court's decision in *Goodridge v. Department of Health* (2003), which legalized same-sex marriage. In the first chapter, I discuss the background issues of the *Goodridge* case and the questions involved in the entire same-sex marriage debate. In the second chapter, I outline the lower-court's opinion in *Goodridge* and the Supreme Judicial Court's opinion. In the third chapter, I utilize research from philosophy, sociology, and psychology to show that extending civil marriage to same-sex couples would be an unwise and harmful state policy. In chapter four, I return to the *Goodridge* case by countering each of the arguments in the opinion through summation of the research presented in the body of the thesis. The overall purpose of the thesis is to show that extending marriage to same-sex couples would undermine the value and purpose of marriage as it has been traditionally understood—one man and one woman faithful to each other for life.

Jessica Chih, Forensic Science
Dr. Mark Long, mentor

Casting out the Beams from the Eyes of the U.S.: Policy Suggestions

The events of 9/11 drastically changed how the world approached the “war against terrorism” and ever since then, the attention of the world has become focused on the dynamics between the U.S. and the Middle East. In the past, the U.S. has played a major role in shaping the dynamics of worldwide affairs; and recently, the legitimacy of many of its policies have been questioned by the global community. Therefore, in order for the U.S. to combat terrorist networks successfully, it must regain confidence and support from the rest of the world. Many other scholars have made policy suggestion in this area; however, this thesis specifically uses the grievances towards the U.S. made by Al Qaida leaders, to further suggest policy changes that could be made to re-establish the rapport of the U.S. with the rest of the world. The first section of the thesis examines how various Muslim leaders have influenced Islamist ideology and how that ideology has transformed throughout history. Then, through the use of primary documents, such as *fatwas* and letters issued by Al Qaida leaders, the grievances towards the U.S. are identified and analyzed for validity. The final section of the thesis presents a series of proposals that will serve to improve the U.S. image and discredit terrorist group allegations against the U.S.

Meagan Cracraft, Religion
Dr. William Brackney, mentor

Wedding, Covenant, and Sacrament: A Historical, Canonical, and Theological Discussion of John 2:1-11

A professor once told me that the story in John 2:1-11 is “just another miracle.” This statement is wrong because there is no such thing; by nature, each miracle is unique and holds significance, and Jesus’ first sign in John, turning water into wine at the wedding at Cana, is historically, canonically, and theologically important. These three critical approaches both allow texts to gain new meaning and encourage an individual’s incorporation of criticisms into a faithful understanding of scripture. This paper seeks to provide an opportunity to incorporate these approaches into the reading of John 2:1-11. Chapter One explores the historical importance of this text by displaying the background of Palestinian wedding customs and of Jesus’ relationship to Mary. Chapter Two investigates the canonical importance and placement of this text by examining the author’s purpose in placing this sign first and by connecting Old Testament covenantal themes to this text. Chapter Three discusses the theological importance of John 2:1-11 by examining the relationship of wedding, covenant, and sacrament within the canon and investigating the importance church fathers assign to this text when exploring the relationship between the wedding at Cana and the Eucharist. Such critical discussions unequivocally add to an individual’s understanding of a text and elicit greater importance from it.

Lauren Dammon, English
Dr. Richard Russell, mentor

An Anti-Cartesian Portrait of the Self: James Joyce’s Portrait of the Artist as a Response to Cartesian Dualism

This paper will explore the ways Joyce uses narrative style and thematic content in *Portrait of the Artist as a Young Man* to expose the artificiality of Cartesian dualism. Joyce’s novel focuses on Stephen Dedalus, a character thoroughly steeped in dualistic tradition, as he matures from young childhood through early adulthood. In each of Joyce’s five chapters, Stephen embraces a different dualistic worldview in pursuit of his artistic destiny, but each worldview only leads him farther away from reality. Joyce uses subtle narrative techniques to underscore the fundamental connections between mind and body, self and others, inner consciousness and external existence, and to critique the dualistic views Stephen adopts. Ultimately, Joyce’s novel suggests that overcoming dualistic tendencies and showing the underlying unity between the binary oppositions posited by Descartes is essential both to become an artist and to become a well-functioning human being.

Phi Doan, Biochemistry/Spanish

Dr. Phillip Johnson, mentor

Women and a Campaign: Factors in the Dictatorship of Juan Manuel de Rosas

No one ever knows why a dictator exists, nor can anyone answer the question as to why and how a man becomes a dictator. Perhaps the root of power lies deep within him, in his guts and blood. If one wants to understand the character of such a man, a man who truly thirsts for power itself, one must look back on his family's history and influence to trace the roots of his character. In the case of Juan Manuel de Rosas, master of dictatorship, heritage yields a wealth of evidence that gives people a microscope to magnify the type of blood running through a dictator. The examination of women in Rosas' formative years, especially his mother and wife, as well as their lasting effect on his path to absolute power is essential in unearthing the man who created so much tyranny in Argentina. All too often, though, the answer is clouded by the prevailing ailments of the world in which he dictates. Rosas' emergence out of a fire that burned hot over the flames of humiliation, cynicism and despair is credited to when Argentina was ablaze politically, economically, and socially. Rosas took action and found a following for his idea of reform. One idea, the Desert Campaign, became the chief factor that catapulted him into power.

Temidayo Fadelu, Biology/Environmental Studies

Dr. Bryan Brooks, mentor

Antidepressants as Emerging Aquatic Contaminants: Individual and Mixture Effects on Select Model Organisms

Selective Serotonin Reuptake Inhibitors (SSRIs), which are widely prescribed antidepressants, have been reported to have antimicrobial properties. The increasingly widespread use of SSRIs has led to an incessant release of these chemicals, through wastewater effluents, to surface waters. Consequently, the responses of aquatic ecosystems exposed to these emerging contaminants must be considered. In this study, the effects of SSRIs are studied on a model microorganism, *Vibrio fischeri*, and on *Daphnia magna*, a model cladoceran. *V. fischeri* and *D. magna* were chosen for study because they are commonly used to monitoring water quality. We hypothesized that interaction effects of emerging contaminants with similar modes of action in vertebrates would exhibit additive mixture toxicity to *V. fischeri* and *D. magna*. Initial characterization of the SSRI's fluoxetine, fluvoxamine and citalopram was performed to determine their individual acute EC₅₀ values. Subsequent studies were performed to examine interaction toxicity of the SSRIs in binary and tertiary mixtures. For *Vibrio fischeri*, average EC₅₀ values following acute 20 minute exposure were estimated at 724µg/L, 1368µg/L and 1371µg/L, respectively; while for *D. magna* average EC₅₀ values following acute 48-hour exposures were estimated at 1300µg/L, 4034µg/L and 4488µg/L, respectively. Studies on binary and tertiary mixture interaction displayed additive toxicological responses in the two model organisms.

Brian Falls, Biology

Dr. Chris Kearney, mentor

Recombinant Expression of the Mitotic Structural Protein, Human Centrin 2, in Tobacco Plants

It was first suggested over 100 years ago that defective centrosomes, cellular sites of microtubule organization, could be involved in the carcinogenesis. Indeed, numerous recent studies confirm that centrosome disorders are present in cases of chromosomal instability and aneuploidy, and therefore, carcinogenesis. A major component of the centrosome, the protein centrin, has consequently received much attention lately. Together with Sfi1p, centrin mediates dynamic changes in centrosome structure and regulates centriole duplication. Little more is known about centrin's roles in the cell cycle, but it is possible that the synthesis of a drug that binds centrin could accordingly stop or reduce the overproduction of centrioles in transformed cells. Cells lacking properly assembled centrosomes fail to complete a true cytokinesis, eventually undergoing apoptosis. To learn more about centrin and its interaction with antimitotic synthetic drugs, relatively large quantities of the protein are desirable. The purpose of this study was to develop a system for the scalable, cost-effective expression of centrin-2. This gene, engineered with 6 histidine codons on the 3' end, was inserted into a tobacco mosaic virus-based vector called pBSG1057. Subsequently, viral RNA produced from this cloned DNA was used to mechanically inoculate Nicotiana benthamiana. Following extraction, the protein's presence was detected by chemiluminescence with antibodies.

Oluwatosin Fatusin, Biochemistry

Dr. Jesse Jones, mentor

Human BAP31 Regulates Delivery of MHC Class I Molecules to the Surface of Mouse Cells

MHC class I molecules deliver peptides originating in the cytosol to the surface, where they are recognized by CD8 T cells. Assembly and peptide loading of MHC class I molecules involves different cofactors including BAP 31, a highly conserved integral protein of the endoplasmic reticulum. Over-expression of human BAP31 specifically increases the amount of human MHC class I molecules on the cell surface. Since BAP31 is highly conserved in evolution, we wanted to know if over-expression of human BAP31 in mouse cells would increase the amount of mouse MHC class I molecules, H2Kk and H2Ld, on the surface of mouse cells. H2Kk molecules bind peptides with high affinity while H2Ld molecules generally bind peptides with lower affinity. We found that transfection of mouse cells with BAP31 increased the amount of H2Ld on the surface but had no effect on the amount of H2Kk. Thus, BAP31 appears to promote delivery of MHC class I molecules that bind peptide relatively poorly and inhibit delivery of MHC class I molecules that bind peptide strongly. This is a surprising result since we might expect that MHC class I binding peptide strongly would be better targets for T effector cells relatively unstable MHC class I binding peptide weakly.

J. Kyle Ferguson, History

Dr. Jeff Hamilton, mentor

The Reign of Henry III: A Personality in Crisis

This paper concerns the political tensions and subsequent crisis that occurred during the reign of King Henry III of England (1216-1272). It starts by examining the political climate when Henry first acceded to the throne as a young boy, right after *Magna Carta*, and tracks the leaders who guided the young king during this period. This is followed by an examination of Henry's personal rule, with specific emphasis on the importance of family. Finally, I take up the rebellion of 1258 and how these events led to revolt against the king. The paper will prove that the king developed personality traits during his minority that directly influenced his actions and the baronial response. I use the major sources of the period, including the "History of William Marshal" and *Chronica Majora* by Matthew Paris. The former dates to the 1220s, while Paris is a continuous chronicle of Henry's reign, with special insight into the royal court and the rebellion in 1258.

Megan Forehand, Classics

Dr. Alden Smith, mentor

The Power of Pedagogy: Education and Motivation in Cicero's Pro Archia

This paper examines the background of scholarship concerning Cicero's motivation in defending Archias, his former teacher and mentor, against a charge of falsely claiming Roman citizenship as well as the historical backgrounds of Cicero and Archias, the political situation surrounding Cicero's defense of Archias, and the details of the case against Archias. It then proceeds to show, contrary to the conclusions of other scholars up to this point, that Cicero's purpose in defending Archias was based on a personal conviction concerning his indebtedness to Archias and a desire to communicate his perception of his own education for the benefit of Archias as well as to publish his views on liberal education for his public audience. Although the theses of other scholars on the subject may not be entirely ill-founded, I believe that their ideas concerning Cicero's purpose and motivation for defending Archias center on secondary incentives while missing the main goal of the oration. Finally, this paper contains a close consideration of Cicero's reflection on his own education as well as his view of an ideal liberal education as expressed in the *Pro Archia*.

Kevin Funderburk, Classics/History

Dr. Jeff Fish, mentor

Religious Extremists Ancient and Modern: The Zealots and the Taliban

The primacy of religious considerations towards revolution is evident in both the revolutionary Fourth Philosophy adherents of Judea and Galilee, and the recent Taliban movement of Afghanistan. Jews of the early first century A.D. experienced the imposition of direct Roman rule and taxation through procurators such as Pontius Pilate, whose jaded and often brutal rule eventually gave great popular support to the revolutionaries of the Jewish Revolt (66-73/4), known best as "Zealots." Their ideas concerning divinely-granted land, zeal for rule by divine law, accompanying social vision, definitions of apostasy, and holy war closely mirror those of the Taliban. So also do their respective situations, wherein a foreign invader (Rome, the Soviet Union) was repulsed by a popularly-backed holy war, yet the coalition that accomplished this feat was itself destroyed by a yet more radical element within that revolution. While the Jewish Revolt failed upon the razing of Jerusalem in 70 A.D. and both the mujahideen jihadists and the Taliban experienced a greater measure of success in their conquests, still the tactics, goals, and amalgamation of religious thought that characterized both the Zealots and the *talibs* make them strikingly similar.

Mary Gajewski, University Scholar

Dr. Perry Glanzer, mentor

Feeding Persistent Vegetative State Patients—The Issues Involved

With the intense public interest in the Terri Schiavo case, the Christian physician has much to consider when a persistent vegetative state (PVS) patient is in their charge. The issues involve not only the clash of classic bioethical values—such as autonomy, beneficence, and nonmaleficence—but also personal concerns and third-party considerations. This thesis argues that the healthcare professional can devise a set of standards in order to treat PVS patients ethically with continual concern for the patient and the community. It first examines acclaimed sources of bioethical teaching and their specific application to artificial nutrition and hydration for the PVS patient. It also critically assesses the character of artificial feeding, the basic religious perceptions of personhood in life, and the interests of outside parties to develop a possible paradigm for the care of the PVS patient.

Eric Green, Engineering (Elect./Comp.)

Dr. B. Randall Jean, mentor

[Successfully defended project in fall 2004; will graduate with dual degree in fall 2005]

*Proposed Method for Non-Invasive Measurement of Blood Glucose Concentration:
Using Microwaves for Data Measurement and Analysis*

Sixteen million people in the United States struggle daily with diabetes, most using traditional glucometers that require painful puncturing of each diabetic's skin. Several alternate and non-invasive techniques are on the horizon, but these are only supplemental and not acceptable replacements for traditional methods. Recent research performed in the Microwave Applied Metrology Lab (MAML) at Baylor University suggests that there may be an easier, non-invasive way to determine glucose concentration. Through a microwave spectral analysis of blood, it may be possible to determine a diabetic's blood-sugar concentration as a function of the electrical characteristics of the blood. This paper explains diabetes, reviews microwave measurement, and recommends a setup for a non-invasive blood glucose meter that relies on the electrical characteristics of *in vivo* glucose.

Ashley Ham, Music

Mr. Stephen Heyde, mentor

Women in Conducting: My Turn to Take the Podium

Conducting, as with most music professions, has traditionally been considered a male-dominated profession. Only within the last fifty years have women begun to take the podium and lead orchestras. This paper contains brief research into a few of the women currently holding professional conducting positions. Asking who these women are and what positions they hold, has been an important and intriguing facet of my research. Research then became practical when I took the podium. This paper outlines my own experiences as I had the opportunity to become a woman conductor.

Jennifer Healy, Biochemistry

Dr. Bob Kane, mentor

Meniscus Bonding with 1,8-Naphthalimides

The bonding of an incision of the meniscus provides a challenge to create a chemical that can bind the bond. Currently, there is no treatment if the meniscus is injured in the nonvascular section other than surgery to remove the injured part. Current research is developing chemicals to crosslink collagen in the injured part of the meniscus, thereby bonding the piece of meniscus that was loose to the injured meniscus.

1,8-Naphthalimides have the potential to be able to photochemically bond the collagen fibers in the meniscus—thus allowing the bond to heal. The compounds are made up of the 4-amino-1,8-naphthalimide and various primary amines, and the amines are attached by a hydrolysis reaction. This reaction has a high percent yield of the desired product.

The compounds are tested to determine which compound has the best potential to be collagen crosslink. Twelve menisci were used for each study to get a statistically sound number. This was done by doing a type-three test using repeated measures analysis.

Joshua Henry, Classics
Dr. John Nordling, mentor

The Institution of the Banquet in the Classical World: How Meals Affected the Early Christian Church

The purpose of this thesis is to show the influence that the classical world had on the first-century church, specifically in reference to banquets. I will study the meals in antiquity which most affected the Eucharist and banquets of early Christians. My main sources are the New Testament, Plato's *Symposium*, and Xenophon's *Symposium*. I study first the classical banquet, and then show how it affected the early Christian meals. Through studying these banquets, we can have a further understanding of one of the central elements that made up the effectiveness of the first-century church.

Amanda Hicks, Business Journalism
Ms. Carol Perry, mentor

Print/Web Integration, Design and Usability: A Comparison of Four University Newspaper Sites

This work focuses on the growing trend of integration of the Internet with existing print newspapers. So far, publishers have haphazardly started Web versions of their publications without fully understanding the differing needs of Web audiences. Using current industry analysis and a Web usability study conducted for *The Baylor Lariat* newspaper Web site, this thesis will advise print journalists how best to harness the full power of the Internet. The analysis covers Web standards, the technical side of site design and Internet writing techniques. After conducting and performing a thorough analysis of a college newspaper usability study, the thesis will make recommendations for improvement using suggestions from the prior chapters. Web designers and writers, after reading this thesis, should more fully understand both the history and the future of Web journalism and design.

Jill Hicks, University Scholar
Dr. Mikeal Parsons, mentor

No Longer Male and Female: A History of Interpretation of Galatians 3:28

The purpose of this project is to explore the history of interpretation of the Pauline text Galatians 3:28 in order to glean an understanding of the development of biblical hermeneutics and their impact on one's understanding of potential social implications for the Christian community, particularly regarding the male-female negation. I examine primary sources in which historical biblical interpreters reveal their specific methods of biblical interpretation and their understanding of Galatians 3:28, including written hermeneutical guides, commentaries, homilies, and letters. My methodology is first to discover the major figures' conceptions of proper biblical interpretation and secondly to discern how their methods are applied specifically to Galatians 3:28. Thirdly, I determine what, if any, social implications the figures derive from the text, particularly in their views concerning women in society, the home, and the church. This project is arranged chronologically by historical era, spanning the Patristic Era, the Middle Ages, the Reformation, the eighteenth century, the nineteenth century, and the twentieth and twenty-first centuries. I have concluded that there has been an historical progression within the Christian community regarding social implications of Galatians 3:28 that has primarily been guided by one's understanding of the Bible as well as the hermeneutical principles that one employs.

Elizabeth Holman, University Scholar
Dr. Paul Armistead, mentor

Civil Liberties from Alien to Patriot

In wartime, the United States government consistently restricts the civil liberties of those with whom it associates the enemy. Many believe that some civil liberties must be sacrificed in order to increase national security, but the two can coexist. In this thesis, I examine the treatment of civil liberties chronologically through the Civil War, WWI, WWII, the Cold War, and the War on Terrorism, including the Supreme Court's influence where applicable. Hindsight has condemned the policies that America employed in these conflicts. I conclude that the Patriot Act follows this flawed historical trend and that two years provide sufficient perspective for its similar evaluation. Though most of the legislation is beneficial, Congress should reassess certain provisions of the Patriot Act now instead of delaying this inevitable action.

Larissa Ickert, Psychology
Dr. Helen Benedict, mentor

Don't Just Medicate, Educate: A Multimodal Treatment Approach to Attention Deficit Hyperactivity Disorder

The purpose of the research is to compile a literature review on empirically validated treatments for attention-deficit hyperactivity disorder, ADHD, and draft a global treatment study proposal to test which treatments are effective for six manifestations of ADHD. Scientific journals and books are the primary sources of the thesis. The thesis summarizes and critically evaluates sources, and provides evidence for the proposed multimodal treatment approach. The thesis is divided into four chapters: the first chapter provides an overview of ADHD by discussing DSM-IV criteria, other difficulties associated with ADHD, etiology, and prevalence. The second chapter deals with stimulant medication, benefits and concerns. The third chapter discusses behavioral and cognitive behavioral treatments for ADHD, and also discusses multimodal treatment approaches. The last chapter lays out the study proposal, which focuses on a multimodal treatment approach for the ADHD-HI with ODD subtype. After an extensive literature review, the thesis shows that the research does not lend full support to a medication-only treatment approach for ADHD because of lack of evidence for long-term benefits and positive effect on social difficulties; thus a multimodal treatment approach combining stimulant medication with either child behavior therapy, parent training, and/or cognitive behavioral techniques is advocated as a treatment plan for ADHD.

Raj Kandavanam, Neuroscience
Dr. Jim Patton, mentor

The Use and Abuse of Androgenic Anabolic Steroids

The use and abuse of Androgenic Anabolic Steroids (AAS) has risen over the past decade and many new possible positive effects of using AAS are being researched. AAS has effects on aggression, competition, memory, and sexual behaviors that need to be researched in fuller detail to truly understand what the effects of AAS on those traits are. The reason for more research to be done immediately is that a greater number of high school and college student athletes are using AAS and they need to be educated about the possible side effects of AAS. Also, AAS use among professional athletes is causing sports reputations to be tarnished, and sports will lose much of its glimmer if AAS continues to hang over its head. Laws and randomized testing can be implemented to help control the use of AAS. Hopefully in the near future, AAS research will be done to find positive effects of the drugs for patients with muscular dystrophy and policies will be placed into effect to help control the spread of AAS abuse.

Matt Kelsey, University Scholar
Dr. Anne-Marie Bowery, mentor

Plato and the Re-reading of Modern Epistemology

A significant portion of modern epistemologists have struggled against increasing detachment from the greater philosophical world due to certain negative tendencies they labor under, tendencies which isolate epistemology from other philosophical sub-disciplines and make it ever more epicyclical and uninteresting. I consider some of these negative tendencies in the work of Plantinga and Zagzebski, illustrating the methods and language of these epistemologists that betray a harmful conception of epistemology. I then examine some central themes of Platonic philosophy for a plausible interpretation of Platonic philosophy that can aid investigation of the problematic instincts of modern epistemologists. Plato's rich metaphorical language and attention to conversationality in philosophy are revealing counterpoints to modern epistemology. Plato's dialogues themselves are a self-sufficient tradition, and, following their example, I suggest how modern epistemologists can correct their harmful instincts and form a genuine philosophical tradition, instead of constantly beginning anew with a stream of counterexample-proofed books.

Cassie Knapp, Biology
Dr. Tamarah Adair, mentor

Considering Animal Enrichment: An Investigation of the Effects of Human Handling on Captive King Snakes

The initial design of this scientific study was based upon an interest in testing the effects of environmental enrichment in captive animals. Over the course of an eight-week period, specifically the effect of human handling on captive king snakes was tested. Tongue flicking counts were used as the primary index measurement of animal stress as experienced by these captive snakes. Through statistical and general analysis of both tongue flick counts and quantified levels of motion, it was determined whether or not consistent human handling reduced or increased the apparent level of captive snake stress. Four juvenile and six adult snakes were used. Subjects were separated into two groups, each experiencing different handling frequencies during weekly sessions. The non-invasive handling involved direct human contact via holding for three-minute trial periods. Analysis of results was primarily inconclusive probably on account of the small sample size. Although trends were seen in support of both snake indifference and substantial response to the handling, further experimentation with a larger sample size must be done in order to confirm any conclusions that human handling has a significant effect on the tongue flicking counts (and consequent stress levels) of captive snakes.

Gigi Kwok, Forensic Science
Dr. Lori Baker, mentor

Validation of the Beckman CEQ Genetic Analyzer for DNA Sex Determination Using the Amelogenin Gene

Determination of sex is the first step in establishing the identity of unrecognizable human remains. Since there are many instances when morphological differences are inadequate for this task, such as when dealing with damaged remains or with adolescent skeletons, molecular genetic analysis has become an indispensable technique in pinpointing the origin of biological substances. Sex determination using the amelogenin gene, which codes for a protein in teeth, is one useful approach. The copy of the gene on the X chromosome is six base pairs shorter than the version on the Y chromosome. Using primers that flank the amelogenin gene and amplifying the DNA with PCR, products are obtained that vary in size: 106 bp for those found on the X chromosome and 112 bp for those found on the Y chromosome. The results can be visualized clearly on a CEQ sequencer with the fragment analysis module that shows two peaks for a male and one peak for a female. The benefit of this method is that relatively low concentrations of DNA, which may also be of low quality, are required. This project validates the use of the amelogenin gene as a sexing procedure with fluorescent labels using the CEQ sequencer.

Jordan LaBouff, Psychology

Dr. Wade Rowatt, mentor

A Bio-Psycho-Social Model of Problem Video Game Playing

While the video game industry is quickly becoming the largest industry in mass entertainment, there is a lack of systematic research in the area—particularly on the effects of “addictive” play styles. The primary goal of this study was to examine the relationship between problem video game playing behavior and physical and psychological health. The secondary goal was to examine the relationship between problem video game playing and relationship satisfaction. Three hundred sixty-three students from Baylor University completed self-report measures of personality variables, problem video game playing behavior, physical and psychological health and satisfaction with relationships. Participants who reported more problem video game playing behavior were more likely to rate themselves higher on the Hopkins Symptom Checklist dimensions of depression and anxiety, and as less agreeable and conscientious on a measure of the five factor model of personality. Also, participants who reported more problem video game playing behavior were more likely to report lower overall satisfaction with life, but had no significant differences in satisfaction with social or romantic relationships. Results demonstrate that while problem video game playing is related to negative health outcomes, lower levels of video game playing were not associated with any health or relationship outcomes.

Kayla Lane, University Scholar

Dr. Barry Hankins, mentor

Punk Culture: Development, Influence, and Integration

In this paper, I will closely examine punk culture, mainly noting what academic research has been missing with its exclusive focus on commercially-successful punk groups. I will develop a thesis regarding the influence of the real underground punk culture. I will first introduce the birth of punk in the 1970s, and define its music, economic motivations, and political expression. I will next argue that the punk movement had a lasting influence which continues to pervade contemporary society, an indefatigable political voice which defines a die-hard subcultural group with nihilistic ideals and a do-it-yourself mantra. I will conclude this paper with a rejection of current trends to integrate punk into popular culture, and I will analyze what we can expect from such a compelling and enduring group in years to come.

Lydia Lee, Music

Dr. Laurel Zeiss, mentor

Eugène Ysaÿe's Solo Violin Sonata, Op. 27, No. 2: A Balance of Tradition and Innovation

This thesis is a comparative study of Eugène Ysaÿe's (1856-1931) Op. 27 Sonata No. 2, Bach's *Preludio* to the Third Partita in E major, BWV 1006, and the medieval melody of *Dies Irae*. It is also a brief evaluation of the development of solo violin repertoire, its form, style, and techniques. By looking into the backgrounds of Bach, Ysaÿe, and solo violin literature, this thesis aims to reveal the presence of history in musical compositions. Moreover, the evolution and the development of unaccompanied violin sonatas can be seen through the compositional procedures as well as the traditional and modern violin techniques reflected in Ysaÿe's Second Sonata.

Laura Loomis, Political Science/International Studies
Dr. Linda Adams, mentor

Strategy and Style: George H.W. Bush, George W. Bush, and Iraq Policy

Using Fred Greenstein's model we identify and compare the type of leadership styles President George H. W. Bush and President George W. Bush display. The type of leader a president is will determine his decision-making style. We use four areas of Greenstein's model, political skills, organizational capacity, vision, and rhetorical skills, in order to compare both presidents. Using their Iraq policies, we compare the two presidents in terms of how leadership style has an impact on the decision and foreign policy making process.

Scott Louis, University Scholar
Dr. James Marcum, mentor

The Contribution of the Works of Eric J. Cassell to the Physician-Patient Relationship

I explore the contribution of the written works of Dr. Eric J. Cassell to the philosophy of medicine. I begin by presenting the problems with modern American medicine as outlined by Cassell. I follow with Cassell's proposed solutions to these problems. For these first chapters, the works of Cassell are used as primary sources. Various secondary are also used to supplement his conclusions. I then present a survey of secondary literature dealing with Cassell's work. Sources include primarily articles in medical journals, as well as texts with references to Cassell. Finally, I conclude with a response to his various critics, and a personal reflection on Cassell's place in the future of medicine in America.

Charlie Malmberg, University Scholar
Dr. Gerald Cleaver, mentor

A Historical and Astronomical Investigation into the Identity of the Star of Bethlehem

This paper seeks to investigate current theories as to the identity of the Star of Bethlehem. First, the intent of the star in the *Gospel of Matthew* will be explored, as well as the physical nature of miracles. Next, using historical sources in addition to the texts of the Gospels, the earliest and latest time boundaries will be established for the appearance of the star. Finally, the most common hypotheses in regards to the star's identity will be scrutinized against the complete description of the star as portrayed in the *Gospel of Matthew*. No single theory adequately satisfies all the necessary criteria for the Star of Bethlehem; thus the star remains unidentified.

Sean McCarther, Music
Dr. James Benninghof, mentor

Songs of Travel: A Theoretical and Interpretive Analysis

In traditional song recitals, most artists favor the great song cycles of the eighteenth and nineteenth century. Since these works are such popular choices for recitals, theorists and performers alike have written numerous books and essays on these cycles. However, these authors have often neglected the song cycles of the early twentieth century. Though not as popular as the "classics," many of these cycles have found a place in the repertoire of both young and experienced singers. One such cycle is Ralph Vaughan Williams' *Songs of Travel*. This setting of nine poems from a collection of Robert Louis Stevenson's poems has become an integral part of the Baritone repertoire. The purpose of this paper is to examine *Songs of Travel* from both theoretical and interpretive perspectives. After brief biographies of Ralph Vaughan Williams and Robert Louis Stevenson, the focus of the paper shifts to potentially unifying elements of song cycles in general, and how these elements specifically apply to *Songs of Travel*. An analysis of each song follows this section with specific emphasis on the relationship between text and music.

Matthew McDaniel, Telecommunications
Dr. Joseph Kickasola, mentor

Movie Remakes: Everything Old Is New Again, but Different

Although creativity is seldom recognized as a hallmark of Hollywood, there has been an outbreak of remakes in recent years. In comparing some of these American hallmarks with their remakes, I ask: what has changed, and more importantly, why did the directors see fit to change it? Furthermore, what goes into the selection of a movie to be remade?

While an overarching and all-encompassing theory is out of scope, there are several interesting conclusions that are gleamed from movies like *The Manchurian Candidate*, *Ocean's Eleven*, *The Nutty Professor*, and others.

Michael Merz, Forensic Science
Dr. Michael Attas, mentor

U.S. Public Health Insurance: A Look at Medicare and the Future of Public Health Insurance

In 1965 Medicare was signed into law by President Johnson as a part what became known as the “Great Society.” Decades of lobbying, hard work, and compromises went into making this momentous occasion happen. A thorough investigation of these events is critical to understand the direction in which Medicare reforms should be headed. Reforms that have been implemented since Medicare’s inception have been beneficial but are patchwork fixes to a system that needs greater changes. Special attention was paid to the new Medicare Advantage plan that was established in the Medicare Modernization Act of 2003. After thorough analysis of the current situation of Medicare, public opinion in the United States, and public health insurance in other countries, I concluded that greater reforms are needed. Some of the efficiencies of a national health insurance seem promising to reduce costs per capita in health care and fix the problem of the 43 million uninsured in the United States. Federally funded experiments of national health insurance in select areas would give a better idea of whether this type of public health insurance would work in the U.S.

Rachael Mulcahy, Economics
Prof. Kay Mueller, mentor

Twentieth-Century Policy Affecting Women and the Reintroduction of the Equal Rights Amendment

Since its founding, the United States has perpetuated significant legal and civil differences among its citizens due to race, class, and gender. Women, amongst others, have endured the painstaking process of fighting for and securing what were dubbed basic human rights in our country’s Constitution and Bill of Rights. During the twentieth century, many events led to the introduction of bills and laws meant to promote better life among women. In order to measure their effects, five categories were observed after certain events: achieved education level, fertility rate, work force participation, wage gap, and quality of life.

Women’s suffrage, gained in 1920, helped elevate women to voter status, which had been lobbied for since 1776. During World War II, women were called to replace their husbands in the workforce “for the war effort” and were permitted to use government funded day cares and subsidies, many of which were terminated at the end of the war in 1945. In the 1960s, both the Civil Rights Act and the Equal Pay Act allowed women legal standing for fighting gender discrimination in hiring practices. *Roe v. Wade*, ruled on in 1972, legalized abortion practices and provided women with much needed healthcare access. The Family Medical Leave Act of 1993 established parental leave, though unpaid, which entitled women to more job security.

Upon study of the above events, a question should be answered: Would the submission and ratification of the much-debated Equal Rights Amendment provide positive externalities for women in the United States?

Kelly Newton, Psychology
Prof. Heidi Marcum, mentor

*Corn Snakes (*Elaphe guttata*), Captivity, and Habitat Preferences*

Captive animals are usually enclosed in an environment that shows little resemblance to their natural habitat. The effects of restricted space, diet, and habitat choice prove physically and psychologically stressful for the captive species. Various forms of enrichment stimulate natural behavior and are beneficial to the species. However, most enrichment occurring in zoos focus on mammalian species because they display obvious stereotypes, unnatural repetitive behaviors, when stressed. Although reptiles do not exhibit many behaviors that indicate stress, enrichment should not be limited to mammals. This experiment hopes to show that reptiles display preferences and should be provided with habitat options within a captive setting. In this experiment, corn snakes (*Elaphe guttata*) would be relocated from small aquariums that contained a hide-box, aspen, and water bowl to larger tanks that also contained vegetation. The purpose was to observe the percentage of recorded observations in each location to find if the snakes displayed habitat preference. We found that many of the snakes spent some time in or under the vegetation and concluded that the option for habitat choice within a captive environment is beneficial to the reptiles.

Elizabeth Norton, Biology
Dr. Kevin Pinney, mentor

Synthesis of a Novel Bi-functional Anti-cancer Agent

In the battle against cancer, the search continues to find the suitable weapon to cure this deadly disease. Two of the newest forms of therapy include vascular targeting and bioreduction. A tumor's survival depends on the blood vessels that feed it with oxygen and nutrients and remove the toxic wastes produced by the cells. Vascular targeting agents (VTAs) target these vessels, working to disrupt them and cause an occlusion in the vessel. One family of VTAs currently in phases two and three of clinical trials is the combretastatins, agents that disrupt the structural protein tubulin, causing a rounding-up of cells in the vessel wall, thus occluding the vessel. Bioreductive drugs can utilize the hypoxic conditions of the tumor vessels to become activated and cause DNA breaks and chromosome aberrations. Tirapazamine (TPZ) is one such drug also currently in phases two and three of clinical trials. The purpose of this project is to build a molecule that combines these two forms of cancer therapy into one molecular unit. Once created, biological testing will show whether it is successful. Also, some unexpected molecules created along the way will be discussed.

Stephanie Nutt, Political Science
Dr. Rosalie Beck, mentor

Why Violence? An Examination of New Religious Movements in America

During the decades leading up to the new millennium, violence became a popular part of the lives of aberrant religious groups in America. With this in mind, the purpose of my thesis is to explore the reasons behind violence in New Religious Movements. My research covers an introduction of New Religious Movements (NRM) in general, and then it examines specific characteristics and features of both the Peoples Temple and Heaven's Gate NRMs. The research of my topic explores seven basic features of each NRM. For instance, I researched the history of the NRM, the leadership, the belief system, the membership, the response to the community around it, the community's response to the group, and the way the NRM conceived the idea of community. I begin my thesis with an explanation of NRMs and the problem of violence in NRMs. Then, I explore the seven features of the NRMs that I believe most influence the decision to commit violence. In the conclusion to my thesis, I deduce that Heaven's Gate and the Peoples Temple committed violence for different reasons; however, suicide became a real option due to the leadership and the social cohesiveness of each NRM.

Kushal Patel, University Scholar
Dr. Daniel McGee, mentor

Death: A Universal Perspective?

Throughout history, from the times of the Neanderthals and *Homo sapiens* to the Black Plague and the Potato Famine, death has been ever present. From the inception of human consciousness, death has been acknowledged in most if not all cultures and races on the globe regardless of human advancement and evolution. However, different cultures have different views on the boundary between life and death. Despite the fact that new discipline of bioethics tries to concretely define death, the knowledge of death is incessantly going to be culturally and ethnically determined. Therefore, in today's world where the subject of death is widespread, it is critical to examine how society views death and revive the original view first found in religion and culture. Two cultures that are vastly different and that would provide good insight on two views of death are the American and South Asian Indian cultures. The view of death in these two societies was examined from both religious and cultural standpoints. The South Asian Indian view of death is drastically different from the American view. They represent opposing ends of a continuum. Exploring these differences reveals that the view of death may influence how a society runs, in particular its medical community, and even could help solve some of the greatest dilemmas with death faced by its medical community.

Sanup Pathak, University Scholar
Dr. Robert Baird, mentor

A Comparative Study of Samkhya and Neo-Confucianism

This thesis is a comparative study of the orthodox Samkhya darshana of Indian thought and the Neoconfucian philosophies of Zhu Xi and Wang Yang Ming. I compare the two ultimate principles of the Samkhya School, *prakriti* and *purusa*, with the concepts of *li*, *qi*, and *liangzhi* in the work of Zhu Xi and Wang Yang Ming. My thesis will focus on the way these two sets of principles function within their respective systems, providing a correlative understanding of the body. I will then apply these philosophical insights to one aspect of the understanding of the body in Ayurvedic and Chinese medicine. I will show how an understanding of Samkhya philosophy, which is the underpinning of traditional Indian Ayurvedic medicine, and Neoconfucian philosophy, which reflects long standing concerns in traditional Chinese understandings of the body, can contribute to a more accurate and illuminating description of traditional Ayurvedic and Chinese conceptions of the body.

Jessie Rhoads, International Studies
Dr. Joan Supplee, mentor

The Protagonista Política and the Changing Face of Gender Politics in Latin America

New trends in Latin American women's political involvement indicate that gender relations are changing. Women are taking on leadership roles in the public sector based on their qualifications and capabilities rather than traditional stereotypes. The new political identity of the Latin American woman highlights her female characteristics while recognizing her essential role in transforming society. This paper is based on personal interviews with female political leaders in Argentina. It outlines the theory of the *protagonista política* as it relates to modern politics.

Matt Richards, History
Dr. Thomas Kidd, mentor

Abraham Lincoln and Christianity: A Reinterpretation

For the last 140 years, the Christian community, particularly evangelicals, have warmly embraced President Abraham Lincoln as one of their own. Pulpiters historically portray him as an ultra-pious president that wrestled the evils of the Civil War with Bible in hand and God at his side. However, the Christian community must reinterpret its view to reflect the historical reality. Although he utilized religious rhetoric for political gain, Lincoln was not privately a pious man. He rarely spoke of God, sporadically attended church, and even printed scathing diatribes of Christianity's evils—prompting those closest to him to label Lincoln a doubter, scoffer, infidel, and even atheist. This thesis demonstrates that far from being an evangelical icon, Lincoln was a doubter that publicly and privately refused or circumvented requests to proclaim himself a Christian.

In order to support this reinterpretation, the thesis will focus on primary source quotations gathered after Lincoln's death by former law partner William Henry Herndon, recollected words from friends collected by Don E. Fehrenbacher, and several of Lincoln's own writings and speeches. Secondary source documentation from modern historians will be cited in the introduction and epilogue to support the project's conclusions.

Angela Schirmer, Biology
Dr. James Henderson, mentor

The Economic State of Healthcare in Texas: The Cost of the Uninsured Population

Texas presents a unique challenge in regards to economic healthcare reform. The excessive spending in the medical field demands a change of structure. Specifically the uninsured population in Texas creates a burden on the system. However, there are various factors that contribute to excessive healthcare spending. This thesis project analyzes the group of uninsured Texans to determine effective reforms to the system. Further, specific costs of health care are defined. Current governmental efforts to control costs alleviate some of the burden, but they leave room for problems. Overall, this project explores what else can be done to fix the financial crisis that is plaguing the healthcare system in Texas today.

Jared Sippel, Political Science
Dr. Victor Hinojosa, mentor

Two-level Games Theory Applied to U.S./Mexican Negotiations on Immigration

This senior thesis essay examines the application of Robert Putnam's two-level games theory to current negotiations between the United States and Mexico on the issue of immigration. Serving as a useful framework for this issue, his theory proposes two levels of negotiation—both domestic and international bargaining levels—that interact to facilitate or impede successful ratification. Using relevant bargaining literature to assess the applicability of two-level games theory to this issue and subsequent research on the domestic dimensions of the United States and Mexico, this essay argues that the negotiations have failed because the win-sets of the two countries—affected by a highly factional society in the United States and a seemingly unappeasable constituency in Mexico—do not overlap in most of the major policy areas. To demonstrate this incompatibility, the thesis begins with a chapter on Putnam's theory followed by two chapters that investigate the status of both win-sets and their recent proposals, all of which culminate into a chapter that compares the previous findings and addresses the project's overall significance.

Kathleen Street, Forensic Science
Dr. Susan Wallace, mentor

Soil Analysis under Decomposed Rats in Simulated Pseudoephedrine Poisoning

The field of forensic science utilizes many chemical and physical methods for determining cause and method of death; however, the analysis of soil for toxic chemical derivatives is vastly under-investigated. To pioneer research in determining if the presence of specific, drug-precursors could be detected in soil, soil samples were obtained from beneath one, shade-sheltered pig and three, sun-exposed decomposing rats, all of which were abdominally-injected with pseudoephedrine. Pseudoephedrine was chosen for study because it is an easily obtainable methamphetamine precursor found in over-the-counter cold medicines. Decomposition was closely monitored and documented daily, and soil samples were obtained twice throughout the study from beneath each subjects' abdomens until each subject was completely skeletonized. TLC confirmed the presence of pseudoephedrine in soil samples taken from beneath the pig.

Elizabeth Terry, Education (EC-4)
Dr. Randy Wood, mentor

The Importance of Families Being Literate: What Successful Programs Entail

My thesis focuses on the topic of family literacy. First, family literacy is explained, defined, and compared to regular literacy programs. Family literacy programs focus on instructing both parents and their children in English, highlighting the importance of reading together and helping one another reach this goal. Regular literacy programs focus specifically on teaching adults how to speak and read English, with no connection to children. In addition to writing about my personal experiences working with both adults and children in a family literacy program that is currently operating in Waco, I also compare and contrast several programs that are active across the United States. There are many reasons people join such classes, such as a desire to communicate with a child's school teacher or because they need to be able to understand instructions in English better in their workplace. Through my research and personal experience, I learned what key components all successful family literacy programs have, such as the type of materials they use, methods of instruction, and the importance of networking with a variety of community organizations.

Alisa Torres, Neuroscience
Dr. Bradley Keele, mentor

Investigation of Aggressive and Anxiety-Related Behaviors in PCPA and Saline Treated Rats

The purpose of this analysis is to view the aggression and anxiety behaviors of a sample of male Sprague-Dawley rats. Half of the sample rodents were treated with para-chlorophenylalanine (PCPA), a serotonin depleting drug, and half were treated with saline. The behaviors of the rodents were observed when in contact with intruder rodents, in an elevated plus maze, and in an open field test. Samples of tissue from the amygdala, hippocampus, and cerebral cortex of each rodent from each group were then taken and assayed for protein concentration. Polyacrylamide Gel Electrophoresis (PAGE) was then used to identify GluR1, an excitatory receptor, in the samples. The behavioral testing showed an inverse relationship between aggression-related behaviors and anxiety-related behaviors. Rodents injected with PCPA were more aggressive in their contacts with intruder rodents and were less anxious in the elevated plus maze and open field tests.

Sarah Trandem, Biology
Dr. Isaac Gusukuma, mentor

Terminal Illness in Children and the Effects on the Family: A Literature Review and a Single Case Study

This report focuses on the emotional, social, and cognitive aspects of family life when a child is diagnosed with a terminal illness. First, the different family relationships (mother/father and child, child and other children, mother and father) that occur in families with terminally ill children are explored with respect to these aspects of family life. This is presented in the literature review. Then, a family who has experienced childhood illness was interviewed. The mother and father of a young boy who died of cancer were interviewed. Since the previous research had not covered death and dying or information about this child's disease, there will be a second literature review about issues specific to this family. These interviews are then analyzed with reference to both literature reviews.

Thomas Warmath, Political Science
Dr. Francis Beckwith, mentor

Isolation of the Individual in Hobbes and the Contemporary Abortion Debate

My thesis aims to show the existence, and even persistence, of Hobbesian individualism in the contemporary abortion debate. It begins with an examination of Hobbes's views of the individual, rights, and government, all which originate in his materialism and culminate in a politics of the solitary individual. From there, I look at abortion in the courts, outlining the history of 'privacy' in abortion decisions. I then examine and critique a 'moral' argument, that of legal philosopher Ronald Dworkin. After laying out the isolation of the individual in Hobbes and in these two spheres of the abortion debate, I spend time elucidating the most explicit connections between Hobbes's political philosophy of the individual and these contemporary accounts of abortion.

Erin Werley, English
Dr. Greg Garrett, mentor

Love and Other Misfortunes: A Collection of Short Stories

As an English major, I chose to pursue a creative writing thesis. As such, my thesis is composed of original short stories that deal mainly with the complicated relationships between men and women. The research I did for this project was intended to help me to understand writing as a craft. I took a creative writing class on prose under Dr. Garrett, my faculty mentor, and studied several books on the art of writing, such as Bird by Bird by Anne Lamott and On Writing: A Memoir of the Craft by Stephen King. This research helped me to hone skills that are essential to the creation of both literary and entertainment fiction, such as the development of characters and plotlines, the ability to narrate with a compelling voice, and the skill of creating realistic dialogue. I also studied more prosaic grammatical necessities, such as when and where to use tags in the text and how to analyze and evaluate the text during the revision process to create a cohesive and realistic story.

Shaun York, Biology
Dr. William Hillis, mentor

Oral Tolerance to Poison Ivy: A Humoral Response?

Hypersensitivity and autoimmune reactions are becoming more frequent in developed nations. Oral tolerance, the practice of orally consuming a given antigen in an effort to gain immunity to that antigen, has promising applications as a potential cure for various hypersensitivities and autoimmunities such as multiple sclerosis, diabetes, and rheumatoid arthritis. According to research papers published in the 1950s and 60s, humans can be rendered hyposensitive to poison ivy by poison ivy ingestion. This immunity must represent some altered immune reaction to the poison ivy. If a humoral response can be detected by specific antibody typing techniques, it would prove that the immune reaction was altered. The normal dermatitis reaction to poison ivy is cellular in nature. A study was conducted using the herbal product Oral Ivy™. Volunteer's blood was screened for anti-poison ivy antibody.

OTHER SPRING 2005 GRADUATES

Whitney Lavo, Marketing
Dr. Marjorie Cooper, mentor

Viet Tran, Bioinformatics
Dr. Michael Attas, mentor

PROSPECTIVE SUMMER AND FALL 2005 GRADUATES

Joe Barnard, University Scholar
Dr. David Jeffrey, mentor

Madison Clark, Entrepreneurship
Dr. Kirk Wakefield, mentor

Joshua Shelton, Computer Science
Dr. David Sturgill, mentor

C. Stephen Maule, Engineering (Elect./Comp.)
Dr. Robert Marks, mentor

Leah Arnold, Forensic Science
Dr. Lori Baker, mentor

April Paris, Classics
Dr. Antony Augoustakis, mentor

Justin Banta, Great Texts
Dr. Greg Garrett, mentor

Merriman Zajac, Psychology
Dr. Charles Weaver, mentor