Undergraduate Research and Creative Activity Symposium

April 25, 2008

Memphis, Tennessee

Rhodes College
—1848—

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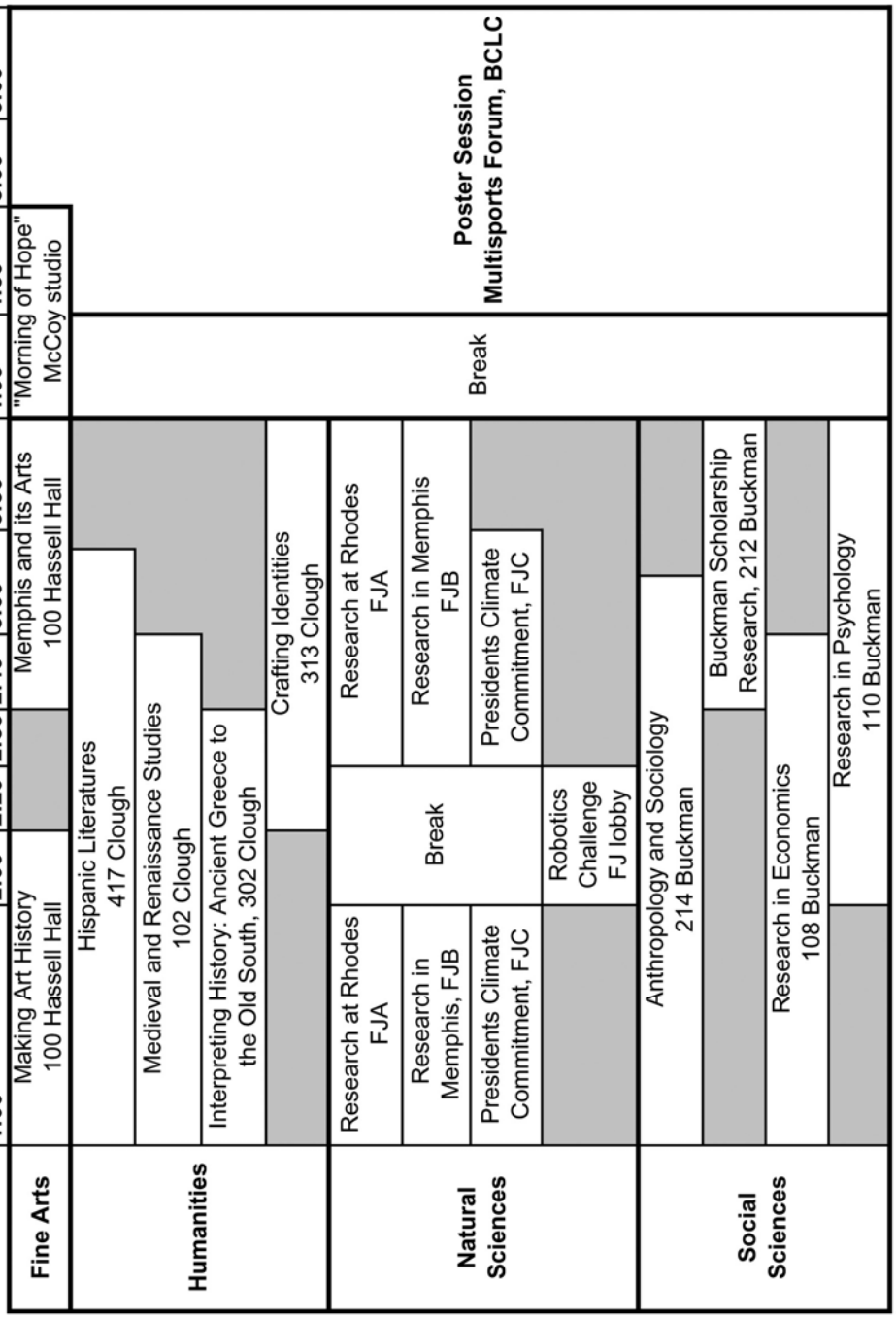
URCAS 2008 Quick Reference Schedule



Special Events

Thursday, April 24 5:30pm McCallum Ballroom

Community **reception** celebrating student research and creative activity. Select students will discuss the impact of these experiences. Refreshments will be served.

Friday, April 25 11:00am Outside Burrow Refectory

Enjoy a **"Ratnic"** lunch with our community of scholars starting at 11:00 outside Burrow Refectory! *(Rain location: inside Burrow Refectory)*

Friday, April 25 4:30pm Multi-sports forum, Bryan Campus Life Center

A **reception** for all participants will be held during the poster session; 4:30-6:30pm in the multi-sports forum of the BCLC. Music by the **Rhodes Jazz Combo**.

Acknowledgments and Special Thanks to the following contributors:

Session Chairs:

Mauricio Cafiero, Assistant Professor of Chemistry
Steve Ceccoli, Associate Professor of International Studies
Jonathan Fitz Gerald, Assistant Professor of Biology
Charles Forbes, Jr., class of 2011
Marshall Gramm, Associate Professor of Economics and Business Administration
Courtenay Harter, Assistant Professor of Music
Eric Henager, Associate Professor of Modern Languages
Tim Huebner, Associate Professor of History
Loretta Jackson-Hayes, Assistant Professor of Chemistry
John Kaltner, Associate Professor of Religious Studies
Susan Kus, Professor of Anthropology & Sociology
Deseree Meyer, Assistant Professor of Physics
Michelle Voss Roberts, Assistant Professor of Religious Studies
Chris Wetzel, Associate Professor of Psychology

2008 Symposium Planning Committee

Courtenay Harter, Assistant Professor of Music (Fine Arts)
Ryan Byrne, Assistant Professor of Religious Studies (Humanities)
Julie Le, Assistant Professor of Chemistry (Natural Sciences)
Sarah Simmons, Assistant Professor of Economics & Business Administration (Social Sciences)
Ann Viano, Associate Professor of Physics (Faculty Fellow for Undergraduate Research)

This event is made possible through the generous support of the

Robert and Ruby Priddy Charitable Trust of Wichita Falls, TX.

Making Art History

100 Hassell Hall, 1:00 pm - 2:20 pm
Session Chairs: Courtenay Harter, Department of Music

1:00-1:20 **It's Your Art/World: Shepard Fairey's Propaganda Campaign**
Julianne Lindner
Faculty Mentor: David McCarthy, Department of Art
In my paper on Shepard Fairey's Obey Icon, I focus on a contemporary hybrid art world created through street art, fine art, and corporate propaganda. Shepard Fairey is on the front lines of an aggressive sticker and graffiti culture that has been demanding mainstream attention for years. As an artist whose work is accepted both in and out of the high art world, Fairey's methods and phenomenological sterile style present a captivating look at what the future of art might hold. It is important that the public analyze and criticize the images broadcast into the world; not only should we strive for some say in the corporate use of publicly owned property, but we are even able to take part in the physical making of street art and changing of our visual landscape. Perhaps one day public space can be used as a forum for expression. Maybe the contemporary art world will simply incorporate the street art style and sensibility in order to grow and progress. Either way, Fairey has put himself and his art out there, and he's started an assertive art trend. Sooner or later, the world will have to respond.

1:20-1:40 **Lorenzo Ghiberti's Gates of Paradise: The Order of Panel Completion**
Sarah Portera
Faculty Mentor: Victor Coonin, Department of Art
Ghiberti's innovative bronze doors are considered some of the most monumental sculptural works of the 15th century. It has always been suggested that the relief panels of these doors were completed separately; however, I am arguing that they were designed and modeled simultaneously. This is supported by Ghiberti's plan to place lower relief panels at the bottom and higher relief panels are the top to enhance the overall appearance of the doors at a particular viewpoint. The notion of simultaneous modeling is supported by Kathryn Bloom's theory of mathematical ratios, existent in almost every panel, separating figure and background into 3 or 4 sections. Ghiberti would have separated the panel into background, middle ground, and foreground, each containing a significant portion of the narrative. This provides a logical way of organizing irregularly shaped objects within a small space. The zoning of the relief supports a method of working on several panel backgrounds at one time, first building up the main background elements, and later adding the refined figuration in the foreground. Using mathematics and stylistic congruencies, which are visually apparent in the panels, greater significance is afforded to each panel, as they are considered equally important in their simultaneous timeframe.

1:40-2:00 **Dialogue Through Mark Making**
Kara Clarke
Faculty Mentor: Erin Harmon, Department of Art
My presentation covers independent research, conducted through paintings that draw on the formal roots of abstract expressionism. My paintings and drawings are formed by initiating a series of formal responses to texture, color and shape. I investigate the self-awareness of marks bracketed inside the context of a piece of paper or wooden panel. Conversations resulting from the placement and nature of various bodies on the page and the marks used to punctuate them have become the main focus of my work. I develop my own role in this process by isolating phrases of color and brush-stroke, and by viewing marks as actors on the space around them, in relation to each other. Currently I am using this dialogue to explore themes of identity through the use of found-materials such as washcloth fabric, plastic bags and sandpaper, in addition to various types of paint. I insert myself back into these curious settings through a combination of figurative and bodily elements, and through the identity of the marks, establishing my role as questioner and witness in the middle of these formal events. The relationships between marks become a means of posing questions and suggesting outcomes. My paintings represent inquiries that remain open.

2:00-2:20 **Tracy Emin's "My Bed"**
Alexandra Carter
Faculty Mentor: David McCarthy, Department of Art
British artist Tracey Emin has produced some of the most provocative contemporary art of the past decade. One of her most famous works is My Bed, an assemblage piece short listed for the 1999 Turner Prize at the Tate Gallery in London. My Bed exemplifies the way her art tests its audience, using social as well as technical elements to communicate. In this presentation I will analyze My Bed's technical approach and construction in light of recent art history to find that it implies a dissolve between male artist and female artist barriers. Because Emin uses herself and her own body as the source of her work's content, it makes inevitable feminist commentary while reminding us of feminism's critical presence in art interpretation. Sex becomes a major player in the subject matter of My Bed, creating a tension among sexual identities of artist and audience while assuming a particularly female experience. In addition to these consistent artist-based subjectivities in My Bed, it suggests varied meanings in collaboration with the viewers' mixed experiences in interpreting it. Emin explores overlapping identities and critical modes to create a productive work of art that speaks to an interdisciplinary audience.

Memphis and its Arts

100 Hassell Hall, 2:40 pm - 4:00 pm
Session Chairs: Courtenay Harter, Department of Music

2:40-3:00 **Women and the Development of Memphis Musical Culture**
Joan Campbell, Students in Music 105: Women in Music
Faculty Mentor: Mona Kreitner, Department of Music
Memphis is one of the major centers of twentieth-century American musical culture, and women have played an integral role in the performance, production, and support of all genres of music in the community. Women who have significantly impacted Memphis music include Estelle Axton, co-founder of the Stax record label, the members of the Beethoven club, a women's group which underwrites area concerts, and blues singer Memphis Minnie. Women continue to play an important role in Memphis music, holding leadership positions in many arts organizations and churches. This project examines the ways in which women have impacted Memphis music in three areas: art music, church music, and popular music. Sources include interviews, archival documents, and local publications. The presentation will include the launch of a website, a collaborative project designed by the students in the Women in Music course.

3:00-3:20 **Storefront Art**
Lauren Kennedy
Mentor: John Weeden, CODA
The Downtown Storefront Art Project is an important collaboration between local artists, urban planning group The Center City Commission and the Center for Outreach in the Developments of the Arts (CODA) in which art was placed in vacant building fronts along the Main St. corridor. The number of vacant buildings that line the street leave the area looking rundown and abandoned, which gives tourists a negative impression of our downtown and negatively affects Memphians who live and work in the area. Beyond the community improvements that drive this project is the desire to support the local artistic community and extend its outreach to the greater Memphis community. By utilizing these vacant spaces as artistic venues, the artist is given the opportunity to encounter a broader and more diverse audience that may not frequent gallery openings or arts events.

3:20-3:40 **The Government's Child: The WPA Band in Memphis**
Lindsey Cloud
Faculty Mentor: Carole Blankenship, Department of Music
The Memphis Works Progress Administration brass band that was created in 1935 comes out of a

long tradition, established in the late nineteenth century, of live brass band music in Memphis. These years in Memphis between 1934 and 1941 are unique in that the Federal Music Project, created and sponsored by the government, paid musicians in Memphis to perform, teach, and conduct, thereby keeping music alive through this pressing time. The government's establishment of the WPA band provided relief to live musicians from the hardships of the Great Depression and also the rise of technology by paying them a living wage that was higher than most other WPA workers. Trough archival newspapers, correspondence of city and governmental officials, official city records, census, and a personal interview, the employees, performances, and significance of the WPA band are revealed. The WPA Band in Memphis was the only representation of a band created by the Federal Music Project in Tennessee. The band was a continuation of a historical music tradition of live bands that was established in the city in the late nineteenth century, while simultaneously appealing to the public's need for hope, patriotism, and optimism in a generation that was suffering.

3:40-4:00 **Standing Room Only: Making the Theatre an Active Part of Learning at Rhodes College**

Andrew Whaley

Mentor: John Weeden, CODA

Part of the Rhodes Vision involves students who learn both inside and outside of the classroom. The college believes that their graduates should possess both knowledge and practical skills when they graduate from Rhodes. I believe that this education also requires students to possess a thorough knowledge of the arts in practical ways. This involves more than meeting a foundation requirement; it involves sustained participation in the arts at Rhodes, gaining new perspectives on what the arts are and how they affect society. Amy senior project for the Center for Outreach in Development of the Arts (CODA), I have created a student-run team which works to engage students in the life of the theatre at Rhodes by making it more accessible. This audience development project looks for ways to engage each student, recognizing that every person comes from a different background in the arts, in theatre, and in life experience. I wish to present the work of this team, Standing Room Only, describing the audience development efforts we put forth for the 2007-2008 school year, the 26th season of the McCoy Theatre.

Morning of Hope by Jazzy Miller

McCoy Studio, 4:00 pm - 5:00 pm

Performers: Caroline Reid, Kelly White and Jazzy Miller

Rhodes senior Jazmin Miller has written and will direct a performance titled "Morning of Hope" with poetry by Maya Angelou, and snippets of speeches by Stokely Carmichael and Dr. Martin Luther King Jr. Miller's intention for the piece is to shed light on the subtleties and hidden forms of racism as well as the hope that remains in breaking down racism. "We find incorrect perceptions, discomfort and even hate of others hidden in our schools, jobs and churches. We find it blatantly and subtly in our peers, professors, parents and friends, and much to our unease, we find it in ourselves," says Miller.

"While scars still remain within us, so does an abundance of hope. There is hope in communication, a two-way street of listening and speaking with honesty and effort. Hope lies in our ability to understand and our constant attempts to be understood."

Hispanic Literatures

417 Clough, 1:00 pm - 3:20 pm
Session chair: Eric Henager

1:00-1:20 **El cuarto de atrás por Carmen Martín Gaite ("The Back Room" by Carmen Martín Gaite)**

Alexa Smith

Faculty Mentor: Ivan Fernandez, Modern Languages & Literatures

This paper explores how the novel El Cuarto de Atrás by Carmen Martín Gaite functions as the author´s autobiography despite the presence of fictional elements. Phillippe Lejeune has defined the genre of autobiography very narrowly by saying it is "retrospective prose narrative written by a real person concerning his own existence, where the focus is his individual life, in particular the story of his personality" he also says that the author and the narrator are the same person. El Cuarto de Atrás violates Lejeune´s definition but this does not exclude it from being autobiography. In interviews, Carmen Martín Gaite has stated that El Cuarto de Atrás is an autobiographical work but it is not for certain that all of the elements of the novel are real. According to Lejeune´s definition it is not an autobiographical work because the author and the narrator are not the same person. The Narrator is a woman who goes by the name of Carmen and has a background very similar to Martín Gaite´s but nonetheless there is a separation between Martín Gaite´s actual life and the events that take place in the novel. El Cuarto de Atrás is an autobiography not in the classical sense but instead it is an autobiography because it is the vehicle that Martín Gaite chose to tell the events of her life, by writing the novel, all the elements of it became real and are essential to the telling of the story of her life.

1:20-1:40 **La Traductora: La Malinche y la identidad cultural (The Translator: La Malinche and Cultural Identity)**

Lucy Mason

Faculty Mentor: Eric Henager, Modern Languages & Literatures

El trabajo de una traductora es significativo porque ocurre precisamente en la frontera entre grupos. La cuestión de la fluidez de la identidad es común en textos que se refieren a La Malinche y su trabajo como traductora. En La verdadera historia de la conquista de la Nueva España por Bernal Díaz del Castillo, el autor crea una de las primeras versiones textuales de la Malinche, y lo hace al traducir eventos actuales a una historia escrita. En El laberinto de la soledad Octavio Paz emplea la figura de la Malinche para explorar la cultura moderna mexicana. En “Never Marry a Mexican” Sandra Cisneros también emplea la Malinche como una traductora que es necesaria en el proceso de entender a la mujer chicana, quien se encuentra también desconectada de las culturas establecidas. Finalmente, Sabina Berman utiliza la figura de la Malinche en su obra de teatro Águila o sol para conectar la realidad teatral e histórica con la realidad del público. La Malinche como traductora es un símbolo literario que, como figura liminal, produce oportunidades para nuevas representaciones de fenómenos culturales que se no caben cómodamente en categorías establecidas de identidad.

(The work of a translator is significant because it occurs on borders between groups. The question of fluidity of identity runs throughout texts that treat La Malinche and position as a translator. En La verdadera historia de la conquista de la Nueva España by Bernal Díaz del Castillo, the author creates one of the first textual versions of La Malinche and does so while purportedly translating real events into written history. En El laberinto de la soledad, Octavio Paz employs the figure of La Malinche to explore modern Mexican culture. In “Never Marry a Mexican”, Sandra Cisneros also paints La Malinch as a translator essential, in this case, for understanding the modern chicana, another woman disconnected from established cultures. Finally, Sabina Berman incorporates the figure of La Malinche in her play Águila o sol to connect theatrical and historical reality to the audience´s reality. La Malinche as translator is a literary symbol that, by virtue of her position as intermediary, creates opportunities for new representations of cultural phenomena that do not fit comfortably in established identity categories.)

1:40-2:00 **Antes que anochezca: La conexión entre la sexualidad y la escritura (Before Night Falls: The Connection between Sexuality and Writing)**

Kelly Wingo

Faculty Mentor: Ivan Fernandez, Modern Languages & Literatures

In this presentation I plan to describe in Spanish how Reinaldo Arenas' autobiography, Antes que anochezca (Before Night Falls), creates a direct link between Arenas' sexuality and his writing. In his book, Arenas describes his life beginning at age two in Cuba up until his suicide in the United States in 1990. The reader learns that Arenas realized his sexuality and homosexuality at an early age. He continues through life actively practicing his homosexuality and is brutally honest about his sexual adventures. Arenas' sexuality and his writing make him a target for Castro's government and he is eventually incarcerated. After his incarceration, he was able to sneak out of the country and live in New York City until his death. Arenas' sexuality and writing are linked because all of his conversions, or important changes, in his life are related either to his sexuality or his writing. Also, they are related because for Arenas the act of writing is a sexual act, because since he is homosexual, his progeny are his writings. Finally, his greatest work, his autobiography, begins when he is unable to actively pursue his sexuality. Instead, his sexuality is funneled into his writing.

2:00-2:20 **Entre la Autobiografia de Reinaldo Arenas (Among the Autobiography of Reinaldo Arenas)**

Frances Kyle

Faculty Mentor: Ivan Fernandez, Modern Languages & Literatures

During the 1960s, many countries received an influx of various styles of writing from Cuba. Many of these writings portray the cruelty and injustice that connected with Fidel Castro's regime. Reinaldo Arenas is one of the most famous Cuban writers because not only did he write novels and poems about his tribulations, but he also wrote an autobiography about his life before, during, and after the Cuban Revolution. Throughout his life, he had endured ridicule, rejection, and prejudice for being a homosexual, especially due to his rather promiscuous social life and writing. This oppression evolved into imprisonment for publicly being homosexual and writing against the Cuban government. Eventually, he was able to escape to Miami, and then to New York, where he began to dictate his autobiography, while battling AIDS. Reinaldo Arenas chooses to write this autobiography about his struggles living as a revolutionary writer, who is also a homosexual, in Cuba during the strict regime of Castro. His preference for writing an autobiography, specifically, serves as an effective way to convey his nostalgia for Cuba and his childhood, while at the same time possessing feelings of rejection and hatred for his native country, his self-legitimization, and his survival. Among the conflicts that have affected Arenas the most are his homosexual tendencies and relationships, the clandestine group of revolutionary writers and its confidentiality, his oppression from Castro's authoritarian government, his experience in prison, his escape and recapture from and to prison, the process of immigrating to the US after prison, his diagnosis of AIDS, and his exile from Cuba, literally, and from the US, socially.

2:20-2:40 **SIDA y mortalidad: Efecto en la escritura de Antes que anochezca (AIDS and Mortality: Their Effect in the Writing of "Before Night Falls")**

Andrea Throne

Faculty Mentor: Ivan Fernandez, Modern Languages & Literatures

Shortly after Reinaldo Arenas completed his autobiographical novel, Antes que ancochezca, he tragically committed suicide in his New York City apartment. Prior to his exile from Cuba, Arenas had secretly published many critically acclaimed short stories, novels and poetry in other countries without the consent of the Cuban government. Arenas faced persecution by the Cuban government due to his sexual orientation, political beliefs and literary voice. When he arrived in the United States, Arenas quickly learned of his HIV status, which would soon developed into AIDS. During his battle with AIDS, Arenas wrote Antes que anochezca, which provides a detailed description of his life up until his final days. In particular, he addresses the poverty of his early childhood, his homoerotic adventures in Havana, the UMAP concentration camps, his exile from Cuba, and his impressions of his final days in the United States. This paper examines the impact of Arenas's

AIDS had how his imminent death affected the way that he describes, narrates and reflects on his life in Antes que anochezca. Overall, the way Arenas utilizes language by exaggerating events and employing provocative wording in the novel demonstrates his love and pride for Cuba, as well as his life.

2:40-3:00 **La familia de Pascual Duarte: Una exploración de la autobiografía como ficción ("The Family of Pascual Duarte:" An Exploration of Autobiography as Fiction)**

Evan Williams

Faculty Mentor: Ivan Fernandez, Modern Languages & Literatures

This work will look into how author Camilo José Cela uses autobiography, through a transcriber, to create a work of fiction and how this affects a reader's perception of the story and the ideas. The very fact that a fictitious transcriber exists for the fictitious character Pascual Duarte (though his life is loosely based off of Cela's life) adds an interesting twist as the reader is forced to think about which writer is saying what, thus creating intricate ideas and notions that are not easily seen on the surface. Pascual Duarte himself struggles to decide whether fate or choice is driving the forces that have led him to a death sentence. He is a brutal character at times, yet his confession is also that of an innocent forced into explainable situations of violence. The complexity of Pascual despite his simple demeanor coupled with the curious way the story is written leads to an insightful look into existential philosophy and mid-20th Spanish politics.

3:00-3:20 **Una colaboración cuestionable en la literatura cubana (A Questionable Collaboration in Cuban Literature)**

Jacob Kleiman

Faculty Mentor: Ivan Fernandez, Modern Languages & Literatures

Miguel Barnet's book, "Biografía de un cimarrón," is the recorded testimony of Esteban Montejo, a slave of African heritage in Cuba during the 19th century. Although written by Barnet in the first person, Montejo takes the reader into the midst of this period of Cuban history as endured and seen through the eyes of a member of its slave society. In regard to Barnet, this work can be seen as the work of an ethnographer because Barnet is relating his study of the culture through the eyes of a member of the slave society. However, this work is not only a tool of historical study, but also the result of an ethnographic study by Barnet. Unfortunately, upon a close analysis, this book is full of problems and lacks credibility with respect to its author, its protagonist, and the validity of factual information offered to the reader. To say that this book is history may not be a true statement. This presentation will discuss the credibility and validity issues created by this book in addition to the possible motives that Esteban Montejo or Miguel Barnet may have had to produce "Biografía de un cimarrón" in the problematic way that they did.

Medieval and Renaissance Studies

102 Clough, 1:00 pm - 3:00 pm
Session Chair: Michelle Voss Roberts

1:00-2:00 **Gender, Religion, and Politics in the Late Middle Ages**

Faculty sponsors: Michelle Voss Roberts, Department of Religious Studies; Susan Uselmann, Department of English; Ivan Fernandez, Modern Languages & Literatures

This interdisciplinary panel explores the intersections of gender, religion, and politics in the fifteenth through seventeenth centuries. Onalee Carson contends that Joan of Arc (fifteenth century) flouts medieval women's conventional use of the humility topos by resorting to more typically masculine tactics such as rhetorical prowess and male clothing. Ginger Thompson and Blair Lehman investigate Catalina de Erauso, the "Lieutenant Nun," a sixteenth/seventeenth-century Spanish transvestite who wrote an account of her exploits in the Americas. Thompson explores the relation between gender and autobiography in this gender-ambiguous setting. Lehman uses the category of identity formation to explicate de Erauso's adherence and deviance with respect to both social and literary conventions. The final two papers will be presented in Spanish.

Joan of Arc: Cross-Dressing Virgin Working both as an Effective Female Author and Threat to the Misogynistic Tradition
Onalee Carson

La conexion entre el genero y la autobiografia en Catalina de Erauso (The Connection between Gender and Autobiography in Catalina de Erauso)
Ginger Thompson

La construcción de una identidad: Un análisis de la búsqueda individual y de un territorio de una identidad por la autobiografía (The Construction of an Identity: An Analysis of the Individual and Territorial Search for an Identity in Autobiography in "The Story of the Lieutenant Nun")
Blair Lehman

Autobiography is an attempt to reach an understanding of one's life through language. Whether a conscious act or the unintended result of telling one's own story, identity formation is a complex process that encompasses positioning the self in relation to society and defining an individual way of life. Catalina de Erauso lived during the 17th century, a time when much of the language for identity development did not yet exist and individualism in the semblance of deviation from social norms was not accepted. Despite the absence of language and differing perspectives on identity, it is possible to discern the process of forming an identity in La historia de la Monja Alférez through adhering to or deviating from both social conventions and literary conventions. The Lieutenant Nun blended gender roles and created a different way to define an individual. The way in which the Lieutenant Nun struggled with finding her own identity within Spanish values of the time mirrors the development of an identity for the Spanish territory in the New World. With her environment in an ambiguous transitional phase, the Lieutenant Nun was given the opportunities to live life her way far from the inflexible gaze of Spanish society.

2:00-3:00 **Religious and Literary Concerns of the Middle Ages and Renaissance**

Faculty Mentor: Michelle Voss Roberts, Department of Religious Studies

This interdisciplinary panel brings together religious and literary concerns of the Middle Ages and Renaissance. Michael Turco's paper on heresy examines how the unique features of the cases of John Wycliffe and Jan Hus illuminate the decadence of the medieval papacy. Jessica Cassidy argues for Margery Kempe's non-traditional authority as a female religious author in terms of Aristotelian standards for auctoritas. Brent Butgereit uses the category of ambition to analyze agency through metaphors of horses and dinner parties in Shakespeare's Macbeth. Intersecting

themes of religion, gender, and text promise a fascinating conversation between the authors.

Papacy and Heresy: Legacies of the Trials of John Wycliffe and Jan Hus
Michael Turco

Margery Kempe as Auctor
Jessica Cassidy

Equestrians and Dinner Parties: The Division of Agency in Macbeth
Brent Butgereit

Interpreting History from Ancient Greece to the Old South

302 Clough, 1:00 pm - 2:40 pm
Session Chair: Tim Huebner

1:00-1:20 **Architectural Emulation and Innovation in the Mausoleum of Hadrian**
Lauren Dill
Faculty Mentor: David Sick, Greek & Roman Studies
The Roman emperor Hadrian was an innovative builder and architectural visionary, as is reflected in his many contributions to the ancient Roman cityscape. Despite such consistent ingenuity, his mausoleum is clearly based on the massive tomb of the first emperor Augustus. I posit that Hadrian made a calculated choice to be the first emperor to model his tomb after Augustus. In the century after Augustus' reign, a sense of dynasty was lost and Hadrian's emulation of the Augustan mausoleum was an effort to reestablish an imperial dynasty. The attitude of the emperor toward the greater empire had also changed since the time of Augustus. During his time as emperor Hadrian gained a much more cosmopolitan outlook from the expansive territory and diverse cultures he ruled. With closer inspection of the details of the mausoleum, certain aspects that deviate from the Augustan model display new architectural metaphors and create a structure that is uniquely a product of Hadrian's reign and its new cosmopolitan perspective. In the presentation I will first examine the Augustan model. I will then compare Hadrian's tomb to its predecessor in consideration of historical context and the tomb's place in the Hadrianic building program at Rome.

1:20-1:40 **Bias in New Testament Translation**
Sara LaPlante
Faculty Mentor: Brian Warren, Greek & Roman Studies
The English New Testament suffers from common problems of ancient translations: difficulties in capturing the full meaning of its original language, difficulties in conveying a message meant for an audience of drastically different social understandings, and difficulties in presenting an ancient text to a modern reader in an accessible yet accurate way. However, the New Testament remains somewhat unique since the history of its translation does not exist apart from doctrinal bias. Few translation projects have included top scholars in classical languages and none of the most used English translations have been produced without the help of religiously affiliated translators. Regardless of intention, these affiliations can provide immense pressure to translate a text more in line with a certain theology, and translation by committee can lead to the need for consensus among scholars who share some similar theological background. Therefore, lexical, grammatical, and gender-related biases make their way into the modern English text of what was once many letters and stories of the ancient Greek world.

1:40-2:00 **Two Sides of the Same Coin: The Role of Evangelical Christianity in Antebellum Slave Law**

Lars Nelson

Faculty Mentor: Tim Huebner, Department of History

By 1820 evangelical Christian sentiment held particular power in the American South, and over the period until the Civil War references to Christianity appeared in judicial decisions dealing with slavery. Religion did not serve as the focal point of any of these cases, but certain judges' opinions expressed the evangelical spirit of the age. Evangelical Christianity played a complex role in antebellum slave law, acting as both a humanizing and an oppressive force. It oppressed as it reinforced the institution of slavery, and it humanized in that it sought to infuse the institution with paternalistic values and recognized slaves as persons made in the image of God. Upon first assessment, these two aspects appear as conflicting ideologies, but to understand one side of this picture is to misunderstand evangelicalism's influence on the law of slavery. Both the humanizing and oppressive aspects are crucial, as they came together to form one theological answer to the question of slavery. This study highlights how seven southern state supreme court judges dealt with slavery cases and concludes that, in the hands of judges, evangelicalism supported the existence of slavery while it also sought to improve the lot of slaves.

2:00-2:20 **Uniquely Liberal: The Decisions of the Texas Supreme Court, 1847-1856**

Dougal Cameron

Faculty Mentor: Tim Huebner, Department of History

Despite the rising sectional tensions between the North and the South during the 1840s and 1850s, the Texas Supreme Court remained devoted to a distinctly liberal mindset when ruling on slave manumission cases. Texas, while similar to the states of the Deep South in regard to its rapidly growing slave institution, was judicially antithetical to those same states. Instead, the Texas judiciary more closely resembles traditionally liberal states such as Tennessee or North Carolina. The Texas Supreme Court cases—Jones v. Laney, Guess v. Lubbock, Purvis v. Sherrod, and Moore v. Minerva—characterize a court dedicated to upholding liberal values when ruling upon politically sensitive issues such as the interstate comity of slave manumission, the right of a slave to own property, and a master's right to emancipate his slave. From 1847 until 1860 the Supreme Court of Texas always ruled in favor of a slave's emancipation as long as the will called for the manumitted slave to leave the state. During the same time-period, other Southern supreme courts restricted opportunities for manumission in order to quell popular unrest among whites over the growth of their free black populations.

2:20-2:40 **Conditional Submission and Limited Power: How North Carolina Judge William Gaston Dared to Challenge the Power of a Master and the Duty of a Slave**

Lucy Coolidge

Faculty Mentor: Tim Huebner, Department of History

In my paper, "Conditional Submission and Limited Power: How North Carolina Judge William Gaston Dared to Challenge the Power of a Master and the Duty of a Slave", I researched an 1834 North Carolina State Supreme Court case, State v. Will. The case, involving a slave on trial for the murder of his overseer, was particularly unusual in the Antebellum South in that it was one of the few instances in which a slave, charged with first degree murder, had his sentence reduced to murder in self-defense. I tried to examine the variety of conditions which might explain why this case was so unique, as well as how it came to effect subsequent slave cases. The exceptional legal foresight of Judge William Gaston, changing race demographics in North Carolina, and a uniquely advantageous position of the slave Will, all become the foundation for my thesis. In total, my findings lead me to hypothesize that this case – with its incredibly progressive verdict – could not have come about in any other state, with any other judge, but in time came to revolutionize slave trails throughout the South.

Crafting Identities: Perceptions of the Self and the Other

313 Clough, 2:20 pm - 4:00 pm
Session Chair: John Kaltner

2:20-2:40 **Violence and the Concept of Group Identity in Israel**

Benjamin Church

Faculty Mentor: John Kaltner, Department of Religious Studies

Since its formation, the state of Israel has suffered from virtually unending violence, related in part to conflict among religious groups. While the underlying reasons for these clashes encompass a complex interplay of factors, one significant explanatory issue is the concept of group identity as portrayed in the Bible. In The Curse of Cain, Regina Schwartz declares that the very process of establishing boundaries to form a group represents "the most frequent and fundamental act of violence we commit" (5). Biblical portrayals of group conflict center on several key elements, including scarcity of blessings or resources, the definition and dehumanization of an opposing "other," and land as an element of identity. Some theologians suggest that a literal reading of the Bible justifies violence between groups, while a symbolic interpretation may prevent group conflict. This project examines rhetoric surrounding Israeli conflict in recent years to determine how leaders' dialogue reflects, directly or indirectly, these elements of biblical group identity. To compare the group identity of the geographic nation of Israel to biblical group concepts, the paper focuses on key actors' invocation of the concepts of scarcity, the opposing "other," and land as identity.

2:40-3:00 **Prisoners as Organ Donors: Is it Ethical? Is it Worth It?**

Michael Millis, Mary Simmerling, J. Michael Mills

Faculty Mentor: Gordon Bigelow, Department of English

With the kidney waiting list approaching 75,000, additional avenues need to be explored for the procurement of organs. Prisoners have been excluded from donation because of ethical and infectious disease concerns. As medical technology advances, altering previous ethical debate, the question arises as to whether or not such a practice of restriction is supported by society. This paper will address the ethical objections offered by adversaries of prisoner donation, as well as provide a plan that would successfully resolve disease transmission concerns. If successful, such a plan holds the prospect of providing 21,000 kidneys (assuming a 1% participation rate among the 2.2 million U.S. prisoners), essentially solving the yearly deficit of kidneys. This plan offers a solution to one of society's greatest needs, and subsequently questions the current interaction of society, law, and medicine in protecting social values and individual well-being.

3:00-3:20 **The Rhetoric of Scientific Racism in British Literature and Culture**

Daniel Williford

Faculty Mentor: Michael Leslie, Department of English

Taking into consideration the works of Edward Long, Charles White, John Beddoe, Johann Blumenbach, Carolus Linnaeus, and George Orwell, I will attempt to characterize the rhetorical style adopted by British writers for the dehumanization of other races based on subjective science. I will also touch briefly on the political uses and social implications of this type of language.

3:20-3:40 **The Illuminated Identity: Gabriel Conroy in Joyce's "The Dead"**

Andrew Miller

Faculty Mentor: Michael Leslie, Department of English

James Joyce's Dubliners is widely renowned for the manner in which the stories that comprise it illustrate the titular city and its inhabitants. The collection's final story, "The Dead," is particularly noteworthy for the way in which it incorporates Joyce's own person in the character of Gabriel Conroy. In "The Dead," Joyce reveals a great deal about the divisions of politics, language, religion, and national identity so salient in his own life, making Gabriel less of an assessment of Ireland and more of an autobiographical expression. Joyce's personal letters and speeches reveal

this visceral link between author and character, and in this light the text's apparent attempt to craft a cultural and moral identity becomes a compelling look at Joyce's own struggles and misgivings. This connection is what makes "The Dead" the ideal capstone for Dubliners, and it is invaluable to a synchronous assessment of the motives and actions of Gabriel Conroy and, more importantly, James Joyce.

3:40-4:00 **Assent in Pediatric Oncology and Theatre of the Oppressed**

Robert Leonard

Faculty Mentor: Patrick Shade, Department of Philosophy

My ethics research in the summer plus program at St. Jude is centered around the issues involved in minors giving assent for cancer treatment. Essentially, we are concerned with developing methods to help protect vulnerable subjects in extreme cases where it is unclear whether the child's, physician's or parent's perspective is most important to making a decision that is in the best interest of the child. I use Gareth Matthew's book "Philosophy of Childhood" to examine the philosophical and ethical underpinnings of our assumptions about children's rights and abilities. In agreement with his thinking, I conclude that the research we generally base our assumptions on is not sensitive to the peculiar experiences of young cancer patients and this should be taken into account when writing policies on assent. In addition to this, as a proposal for a method of communication for the decision-making process, I develop an application of Augusto Boal's Theatre of the Oppressed that involves the patient, physician, and family in an interactive dialogue where each is able to act out fears, hopes, and opinions creatively.

Science Research at Rhodes

Frasier Jelke A, 1:00 pm - 4:00 pm

Session Chairs – Deseree Meyer, Mauricio Cafiero

1:00-1:15 **Binary Orbital Motion of Electrically Charged Spheres in Weightlessness**

Lulu Li, Gavin Franks, Jennifer Thompson, Chase Sliger, Joshua Fuchs, Brad Atkins, Ben Rice

Faculty Mentor: Brent Hoffmeister and Deseree Meyer, Department of Physics

The similar mathematical forms of Coulomb's Law of Electrostatics and Newton's Law of Gravitation predict that two oppositely charged spheres should be able to move in a binary orbit about their center of mass using only the electric force as the force of attraction. To test this prediction, we will attempt to achieve a binary orbit between oppositely charged graphite coated Styrofoam spheres in weightlessness. We will conduct the experiment in July 2008 aboard a specialized NASA aircraft (the "Weightless Wonder") that can simulate conditions of weightlessness. Our presentation is organized in three parts: 1) an introduction to the NASA Microgravity University program and a brief description of the application process and the flight preparations, 2) a description of the apparatus that we are constructing for the experiment, and 3) educational outreach activities associated with our experiment.

1:15-1:30 **The Investigation of Blast Mitigating Materials for Aircraft Hardening**

Jennifer Thompson

Faculty Mentor: Ann Viano, Department of Physics

The purpose of this study is to investigate materials used to protect an aircraft during an onboard explosion. Protective layers were mounted to a frame and panel replicating the internal structure of an aircraft. The test panels were then depressurized to simulate altitude and a C-4 charge was detonated 6 inches from the panel. Two combinations of test materials were successful: a sheet of aluminum 2024-T3 coated on one side with a thermoplastic elastomer, and a fiber-metal laminate backed with a Kevlar reinforced elastomer. The aluminum and the fiber-metal laminate were by themselves ineffective in preventing panel rupture, indicating that a stiff layer coupled with an elastic backing allows the protective panel to fracture while preventing rupture of the fuselage skin.

1:30-1:45 **Finding an Appropriate Sample Size of Ultrasonic Backscatter Measurements**

Chase Sliger

Faculty Mentor: Brent Hoffmeister, Department of Physics

Ultrasonic backscatter measurements show a great deal of promise as a diagnostic tool in the fight against bone disease-especially osteoporosis. However, the site to site variation in a biological specimen can make the average ultrasound values difficult to obtain. By using a statistical method to determine an appropriate sample size for a given scan, a value can be found that is within a given level of confidence with the actual mean. Thus standard scanning procedures could potentially be benefited by these findings.

1:45-2:00 **Wear particle production in artificial joint materials**

Justin Hugon, Stein Lee

Faculty Mentor: Ann Viano, Department of Physics

Ultra High Molecular Weight Polyethylene (UHMWPE) is the most prominent polymer used in artificial joints. It serves as the bearing surface between moving metallic components, and thus experiences significant wear. Wear particles are known to promote osteolysis in vivo, which usually results in implant failure. Large wear particles have been well-characterized, and their production correlated with different material treatments. Current techniques, however, do not investigate particles below 1 micron in size. It is very possible that submicron particles exist in quantities significant enough to adversely affect the biological environment. To address this, we developed techniques to produce and analyze UHMWPE particles in multiple size regimes, including those below 0.3microns. A joint simulator was constructed and used to create wear particles by simulating the motion of a metallic implant on UHMWPE. The particle-containing fluid was collected and filtered to separate the particles by size. These particles were visualized by electron microscopy, and images were analyzed to determined particle number and shape. Particles smaller than 0.1micron were found in significant quantities. This suggests that current industrial standards of material treatments, which are based only on analysis of particles greater than 1micron in size, are insufficient.

2:00-2:30 **Break**

2:30-2:45 **Using an Interferometer to build an Optical Nose for the Detection of Mysterious Sources**

Travis Rasor, Shubho Bannerjee, Ajit Bannerjee

Faculty Mentor: Shubho Bannerjee, Department of Physics

Interferometers are instruments that use the interference of two beams of light for measurement purposes. There are two types of interferometers, one that analyzes light from an unknown source to determine the make-up of the source, and one that uses light of known wavelength to measure external influences to the two beams. Our research involved building a brand new design of the first type of interferometer. This new interferometer is an improvement over previous designs and has several specific advantages which will be discussed.

2:45-3:00 **Bomb Detection Technology: Making the World a Safer Place**

Michael Towle, Brent Hoffmeister, Shubho Bannerjee, Jon Russ

Faculty Mentor: Brent Hoffmeister, Department of Physics

In order to undermine terrorist attacks, the United States has to remain on the cutting edge of bomb detection technology. DNT is an explosive that indicates the presence of TNT, one of the most used explosives in terrorist bombs. Our mission was to detect and identify the presence of DNT using a system of chemical detection called Gas Chromatography (GC) and Solid Phase Micro Extraction (SPME). To test our detection capabilities, we exposed a sample of DNT to our

detection system inside of a wind tunnel, where the wind would blow the sample past the SPME detection device. My project for the summer was to characterize how the speed of the wind in the wind tunnel and the temperature of the DNT sample affected our ability to detect DNT. The knowledge this project provides will help protect the lives of troops in Iraq, bolster the security of airports, as well as secure countless other life-saving scenarios.

3:00-3:15 **Novel Density Functional Theory Methods for Describing Dispersion Interactions**

Lori Culberson
Faculty Mentor: Mauricio Cafiero, Department of Chemistry

We are developing a novel density functional theory (DFT) method, LMC DFT, designed to describe dispersion forces, especially those between proteins and ligands. In the interest of modeling large-scale biological systems, a robust DFT method which can accurately describe dispersion is needed. Our method, LMC DFT, based on the Boys' trans-correlated approach, uses Hartee-Fock exchange and two electron densities in the correlation energy functional. It is both non-local and variational. We have tested it on two-, three-, and four-electron systems, benchmarking it on dispersion bound H2—H and the helium dimer. Our results show that this method is capable of reproducing dynamical correlation fairly well, and is promising for application to larger systems.

3:15-3:30 **A novel connection between the Nuclear Pore Complex and the Cell Division Cycle of Saccharomyces cerevisiae: Nucleoporins Nup84 and Nup188 are significant to the activity of Cln3, while Nup2 is not.**

Tyler Cullender
Faculty Mentor: Mary E. Miller, Department of Biology

In Saccharomyces cerevisiae, commitment to cell division during G1 is regulated by the G1 cyclin Cln3. To function, Cln3 must achieve nuclear localization via the Cln3 nuclear localization signal (NLS). The exact mechanism of this nucleocytoplasmic transport is not understood. The Nup84, Nup188, and Nup2 components of the nuclear pore complex were identified as important for Cln3 NLS activity. To determine the physiological relevance of these genes in the process of cell division, viability assays were used to determine the ability of Cln3 to function in the absence of these genes. Cln3 activity was reduced in the absence of Nup84 and Nup188, but not in the absence of Nup2. The absence of Nup188 increases the relative frequency of unbudded cells, which suggests that the lack of this NPC component delays passage through the G1 phase of the division cycle. The absence of Nup84 does not increase the frequency of unbudded cells, but rather increases the frequency of cells with aberrant morphologies. The investigation concludes that Nup188 is significant to the functionality of Cln3, while Nup2 is not. Data suggests that Nup84 assists in Cln3 function, but further investigation is required to establish the affect this has on cell cycle progression.

3:30-3:45 **Morphological and Molecular Analysis of an Invasive Species, Corbicula**

Stephanie Juchs
Faculty Mentor: David Kesler, Department of Biology

Freshwater clams of the genus Corbicula include several invasive species, as also called Asiatic clams. Spread across the continent since initial introduction in 1924, many of these Asiatic species have been identified through strictly morphologic study. Genetic analysis of the mitochondrial cytochrome c oxidase subunit I gene (COI), however, allows for more exact and consistent differentiation of the species within the Corbicula genus. Populations of Corbicula from two Wolf River (Fayette County, TN) locations were analyzed morphologically and genetically for identification as either C. fluminea or the closely related C. fluminalis. Morphological analysis included investigating the ratio of three morphometric variables, while the genetic data relied on restriction fragment length polymorphism analysis through the digestion of the mitochondrial sequences of the COI gene. While morphological measurements were inconclusive for identifying samples as C. fluminea or C. fluminalis, genetic data strongly suggests individuals from the Wolf River to be C. fluminea.

3:45-4:00 **Distance Perception in Virtual Environments**

Lucy Shores and Derek Johnson

Faculty Mentor: Betsy Williams, Department of Computer Science

Virtual environments provide people with the opportunity to experience places and situations remote from their actual physical surroundings. They potentially allow people to learn about an environment which for reasons of time, distance, safety, and expense, would not otherwise be available. Much recent work (Thompson et al. 2004; Bodenheimer 2007) has studied the issue of similarities and differences in human distance estimation in virtual environments and the real world. This work has found that participants systematically underestimate distances in virtual environments. The precise reasons for this are unknown. The purpose of this work is to determine relationship between actual physical distance and perceived distance when the virtual environment is viewed through a head-mounted display (HMD). More specifically, we would like to find a function that relates perceived distance to actual distance. If an exact relationship can be determined, virtual environments can easily be designed to compensate for human misjudgments, thus, eradicating distance misperceptions and allowing for more authentic experience of the environment. When users typically experience a virtual environment, they do not see their own body in the environment. Thus, we also examine whether the perception of feet in the virtual environment aids in distance perception.

Science Research in Memphis

Frasier Jelke B, 1:00 pm - 4:00 pm

Session Chairs – Loretta Jackson-Hayes, Jonathan Fitzgerald

1:00-1:15 **Carbon Storage and Sequestration in Overton Park**

Tara Daniel, Rosanna Cappellato

Faculty Mentor: Rosanna Cappellato, Department of Biology

Urban greenspace provides an often overlooked but potentially significant sink for carbon. This study derived a STELLA model to calculate the annual carbon storage and sequestration of an old-growth forest located in midtown Memphis, Tennessee, compiling data from field studies of the nearly 70 hectare park. This model simulates the various processes contributing to carbon storage, sequestration, and flux in a terrestrial ecosystem, calculating the carbon storage within tree biomass based upon Leaf-Area Indexes and employing soil respiration measures both specific to this greenspace. Inputs were designed to vary over an annual timescale coinciding with growth cycles, thus constructing a functionally realistic model of carbon flux in a small, open system. The value of this model lies in its applicability for demonstrating the multifaceted dynamics of carbon flux on a scale able to be visualized, its adaptability to other greenspaces or old-growth forests of the southeast, and its estimation of one ecosystem service provided by an urban greenspace.

1:15-1:30 **PMA and AD 198: Functional Differences Due to Localization**

Whitney Barham, Leonard Lothstein

Faculty Mentor: Loretta Jackson-Hayes, Department of Chemistry

Protein kinase C (PKC) is a family of serine/threonine kinases involved in numerous cell signaling pathways including the regulation of cell proliferation, differentiation and apoptosis. Because of this, the PKC family is a very attractive target for anti-cancer therapeutic drugs. In this project, two PKC binding agents were analyzed: the phorbol ester PMA (12-O-tetradecanoylphorbol-13-acetate) and the anthracycline N-benzyladraimycin-14-valerate (AD 198). PMA and AD 198 are similar in their binding site to PKC (the C1b domain), their cardio protective properties, and their ability to induce apoptosis in several mammalian cell lines when administered at certain doses. The two agents differ in their localization, among other things. PMA is found throughout the cell, whereas AD 198 is confined to the cytoplasm and can not enter the nucleus due to its lengthy valerate substituent. PMA promotes differentiation in chronic myeloid leukemia K562 cells when administered at non-cytotoxic doses. Results indicate that AD 198 does not induce differentiation

as PMA does due to its inability to translocate PKC å to the nuclear membrane. By localizing the drug to the cytoplasm, we have effectively limited its function, and thereby created a more targeted agent with more useful properties in drug therapy.

1:30-1:45 **Neural Systems for Reading in Medulloblastoma Survivors**

Gayatri Patel, Robert Ogg, Ping Zou, Fred Laningham, Heather Conklin
Faculty Mentor: Darlene Loprete, Department of Biology

Medulloblastoma is the most common childhood central nervous system tumor. Although survival rate approaches 80%, there are deleterious cognitive effects including a decrease in reading competency as measured by neuropsychological tests. We are using functional magnetic resonance imaging (fMRI) to evaluate the neural systems required for reading in medulloblastoma patients. Subjects were given a previously validated implicit reading task involving recognition of tall letters/characters within real words and false-font strings. Patients were evaluated at three time points during therapy and one time point during follow-up. Performance on a post-hoc word/string recognition test administered after imaging confirmed implicit reading. Detection of tall letters in words and false-font strings had lower accuracy and longest response reaction time after radiation therapy, but changes were not statistically significant. During the course of the treatment, there were changes in patterns of regional brain activity, including a decline in activation of the Broca's area, a critical brain region for language processing. The behavioral and imaging results suggests that radiation therapy disrupts the normal neural networks for reading.

1:45-2:00 **Benzil Based Inhibitors for Carboxylesterases**

Elizabeth Parkinson, Phil Potter, Janice Hyatt, Lyudmila Tsurkan, Latorya Hicks
Faculty Mentor: Loretta Jackson-Hayes, Department of Chemistry

Carboxylesterase enzymes (CE) are ubiquitous enzymes found in both human and animal tissues and are responsible for the hydrolysis of carboxylic esters into their respective alcohol and carboxylic acid. Some of these carboxylic esters include pesticides, nerve gases, and many clinically used drugs including cancer chemotherapy agents. One of the chemotherapy agents which CEs metabolize is the anticancer drug irinotecan (CPT-11). When hydrolyzed, CPT-11 is converted into its active metabolite (SN-38) which is responsible for killing tumor cells. However, because high levels of CEs are expressed in the intestine, high concentrations of SN-38 are produced in this tissue, resulting in diarrhea, which is the dose limiting toxicity of CPT-11. Therefore, identifying specific CE inhibitors which could be used to ameliorate the delayed diarrhea may have clinical utility. In past studies, benzil was found to be a potent inhibitor of CEs both in vitro and in mammalian cells. In this study, we have synthesized and determined the ability of benzil derivatives to inhibit carboxylesterase enzymes (CE). By inserting different atoms between the benzene ring and the 1,2-dione, it was determined that the inhibitory power of these benzil derivatives depends upon both the hydrophobicity of the inserted atom and its polarity.

2:00-2:30 **Break**

2:30-2:45 **Bone Density Deficits in Survivors of Pediatric Hodgkin Lymphoma (HL)**

Anum Minhas, Sue C. Kaste, Monika L. Metzger, Zang Xiong, Shesh N. Rai
Faculty Mentor: Alan Jaslow, Department of Biology

Childhood cancer treatment can lead to low bone mineral density (BMD), a precursor for later development of osteoporosis. We hypothesized that HL survivors would have treatment-associated BMD deficits as shown in survivors of other pediatric cancers. We retrospectively analyzed the effect of Hodgkin's Lymphoma treatment on QCT-determined BMD among 109 survivors treated at St. Jude. We correlated Z-scores with patient characteristics (age, sex, gender, lifestyle factors, and treatment protocol) to find risks for BMD deficits. Though we found no overall decrease in BMD, the proportion of patients with severe bone loss and very severe bone loss was higher than in the general population. We found that the risk for males and those with normal and low weight of developing SBL was higher. There was no association between age at diagnosis, age at time of QCT, and length of time between diagnosis and QCT with BMD below -1.5. Histology and risk

categories were also not factors. We found no association between radiation therapy and BMD, nor with specific chemotherapy drugs, though there may have been an effect due to the compounding effect of the drugs. Survivors of childhood HL do not suffer from significant BMD deficits.

2:45-3:00 **The Impact of Huntington's Disease on the Correlation of Cortical and Striatal Muntant Neurons of R6/2 Chimera Mice**

Natasha Jain, Anton Reiner, Yun-Ping Den

Faculty Mentor: Gary Lindquester, Department of Biology

Huntington's disease (HD) is a hereditary neurodegenerative disease that is carried by a dominant gene. Both an expanded and unstable repeat of the CAG gene encodes the protein huntington (Ht), leading to the cause of the disease through a mutation of Ht, which is widespread, along with mRNA, throughout the central nervous system and tissues of the body. This fatal disease is characterized by progressive cognitive and motor decline caused by the loss of neurons in the brain. The major areas of neuronal loss associated with HD are the cortex and striatum. Within the striatum, both projection neurons and parvalbuminergic interneurons are severely affected by HD. In the cortex, only selective degeneration of pyramidal cells in layers III, V, AND VI happens late in the disease. Unfortunately, it is unknown how these two areas affect each other as a result of HD: whether degeneration of cortical neurons directly cause the loss of striatal neurons or vice versa. Thus, a study was conducted to evaluate the impact and correlation of neuronal intranuclear inclusions (NIIs), or mutant neurons, of the striatum and cortex from HD. Results of this study will be presented.

3:00-3:15 **Dosimetric Correlation of Pneumonitis in Pediatric Sarcoma and Hodgkin's Lymphoma Patients Receiving Radiation Therapy**

Kelly Hoth, Matthew Krasin, Chia-ho Hua

Faculty Mentor: Julie Le, Department of Chemistry

Pediatric sarcoma and Hodgkin's lymphoma patients often receive radiation therapy for local tumor control. Unfortunately, radiation can be deleterious to the healthy tissues adjacent to the target volume, leading to acute effects including radiation pneumonitis. Characterized by a cough, fever, and shortness of breath, radiation pneumonitis or inflammation of the lung develops in 5% to 15% of patients receiving thoracic irradiation. In this study, clinical complication data on radiation pneumonitis and dose volume histograms (DVHs) for the total lung were reviewed for 40 patients with Hodgkin's lymphoma and 23 patients with thoracic sarcomas. Three of the Hodgkin's lymphoma patients and one of the sarcoma patients developed radiation pneumonitis within six months of radiotherapy. Only one patient from each tumor type required the use of steroids (CTC grade 2) for the management of radiation pneumonitis. Of the three patients with Hodgkin's lymphoma who developed radiation pneumonitis, two received 8 Gy to their entire right lung. Patients presenting with grade 2 pneumonitis had higher total lung DVHs, a V20>35%, and a mean lung dose above 16 Gy. Findings suggest that irradiated volume and delivered dose may be used in the clinical setting to predict patients at risk for development of pneumonitis. Early intervention in this group of patients may help reduce or eliminate radiation-induced lung side effects.

3:15-3:30 **Gestational Drug Exposure Alters VTA GABAergic Response to Nicotine**

Joel Chasan, Shannon G. Matta

Faculty Mentor: Jay Blundon, Department of Biology

Rats exposed to both nicotine and alcohol (Nic+EtOH) throughout gestation show enhanced acquisition of nicotine self-administration compared to pair-fed (PF) controls. We first analyzed gender-related hyperactivity responses in a novel environment to determine if these could predict nicotine-seeking behavior, as has been shown for amphetamines. However, activity differences between cohorts and sexes were eliminated by late adolescence and, therefore, would not be a factor in adult offspring drug-seeking behavior. Since the neurochemical basis for the enhanced acquisition behavior is unknown, we then performed in vivo microdialysis in adult offspring to explore potential differences in the mesocorticolimbic reward pathway, specifically in nicotine-induced gamma aminobutyric acid (GABA) release in the ventral tegmental area (VTA) and

subsequent dopamine (DA) release in the nucleus accumbens (NAcc). We hypothesized that enhanced accumbal DA release due to reduced VTA GABA levels would underlie enhanced acquisition. Analysis of the microdialysis samples using HPLC with electrochemical detection showed that nicotine-induced, dose-dependent reduction in VTA GABA was greater in Nic+EtOH offspring, and accumbal DA levels were elevated, compared to PF. Therefore, enhanced acquisition of nicotine self-administration in offspring with co-morbid gestational drug exposure is due, at least in part, to lowered inhibition of VTA DA neurons projecting to accumbens.

3:30-3:45 **Using Semi-Quantitative PCR to Measure Murine Gammaherpesvirus Viral Load in Splenocytes as a Model for Epstein-Barr Virus**

James Davis, Audrey Marsidi, Gary Lindquester

Faculty Mentor: Gary Lindquester, Department of Biology

The Epstein-Barr virus (EBV), a member of the herpesvirus family, is one of the most common viruses infecting humans. It is known to cause infectious mononucleosis and is potentially oncogenic. EBV possesses a homologue to human interleukin 10 (IL-10). Human IL-10 helps regulate immune response by inhibiting cytokine production by T-cells. EBV's limited host range makes in vivo studies difficult; therefore, the lab has turned to a small animal model. In previous studies, the viral IL-10 gene was isolated and inserted into a murine gammaherpesvirus (MHV) so that its pathogenesis could be studied in vivo. Mice were infected with the virus in order to evaluate splenomegaly (enlargement of the spleen) based on splenocyte counts, quantity of infectious virus in the spleen and lungs, and quantity of latent virus in the spleen (using a reactivation assay). In this study, we optimized a semi-quantitative PCR assay to directly measure the viral DNA to quantify latent virus in the splenocytes.

3:45-4:00 **T-cell Recognition of a Myelin Peptide Responsible for Autoimmune Encephalomyelitis**

Lesley Baker, Terrence Geiger, Rajshekhar Alli

Faculty Mentor: Gary Lindquester, Department of Biology

Multiple Sclerosis is an autoimmune disease that can be modeled by Experimental Autoimmune Encephalomyelitis (EAE). T-cell recognition and activation of the myelin peptide MOG leads to EAE. To better characterize the interaction between the T-cell receptors (TCR) and MOG35-55, mutations were made in a construct of MOG35-55 tethered to MHC. Results from stimulating T-cells with the mutated constructs show that the construct does not stimulate as well as peptide. The amino acids of MOG35-55 expected to directly associate with the TCR are required for stimulation. Also, amino acids outside the expected binding region seem to be important for stimulation.

Presidents Climate Commitment

Frasier Jelke C, 1:00 pm - 3:15 pm

Session Chair – Charles Forbes, Jr.

On August 23, 2007 President Troutt signed the Presidents Climate Commitment making Rhodes College one of the Charter Signatory Members of the Commitment. The purpose of the Commitment is to reduce our carbon footprint in pursuit of climate neutrality. The Rhodes Environmental Planning Cooperative has been placed in charge of overseeing the steps required by the Commitment. Students in Environmental Geology 214 and the Environmental Residents Program have been collecting data on present practices at the college, and investigating future practices, such as the use of solar power, for achieving sustainability. This session will bring together the data for the Carbon Footprint calculation, and will present a summary of the next steps that must be taken.

1:00-1:15 **Rhodes Signs the Presidents Climate Commitment**

William Liebner, Jeff Nueller, Josh McMurray

Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

The Presidents Climate Commitment, PCC, is an instrumental document to bring about environmental awareness and conservation amongst America's college campuses. When President Troutt signed the PCC last summer, the college became bound to the challenge of minimizing

emissions, conserving energy, and focusing on sustainability. Our class project has been to determine how Rhodes College is performing today with respect to the PCC by creating an baseline inventory. Our individual group has undertaken the task of unearthing the institutional data at Rhodes concerning these aforementioned goals. By contacting Richard Huddleston, Brian Foshee and the Admissions Department, we were able to find accurate data on the student population on campus, the square footage of building space on campus, and the overall endowment (as well as the funding placed to different educational and campus-centered needs on campus. Our data is complete for 2008 and we are working to build up both previous years and planned values for the future.

1:15-1:30 **Energy Use at Rhodes and Other Peer Institutions**

Lily Elfrink, Daniel Jacobs, Adeeti Amin

Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

This project will present the amount of energy consumed by Rhodes Campus in recent years. The project will address both energy purchased from Memphis Light and Gas Works and stationary sources, such as propane, coal and natural gas. In addition, in order to place energy use at Rhodes in context, the presentation will include data on energy use at other schools in the Associated Colleges of the South consortium. We will explain how the inventory data being collected with be used in the Clean Air Cool Planet Calculator to determine the present carbon footprint of the college.

1:30-1:45 **Driving Habits of Rhodes Students**

Joshua Anderson, Maria Cartagena

Faculty Mentor: Christopher Seaton, Mathematics and Computer Science

The Presidents Climate Commitment, PCC, is an instrumental document to bring about environmental awareness and conservation amongst America's college campuses. When President Troutt signed the PCC last summer, the college became bound to the challenge of minimizing emissions, conserving energy, and focusing on sustainability. Our class project has been to determine how Rhodes College is performing today with respect to the PCC by creating an baseline inventory. Our individual group has undertaken the task of unearthing the institutional data at Rhodes concerning these aforementioned goals. By contacting Richard Huddleston, Brian Foshee and the Admissions Department, we were able to find accurate data on the student population on campus, the square footage of building space on campus, and the overall endowment (as well as the funding placed to different educational and campus-centered needs on campus. Our data is complete for 2008 and we are working to build up both previous years and planned values for the future.

1:45-2:00 **Rhodes College Faculty/Staff Transportation Study"**

Eric Friederichsen

Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

In accordance with the Presidential Climate Commitment, signed by President Trout in 2007, the Environment Planning Cooperative has undertaken the difficult task of calculating the College’s Carbon Footprint. Due to the complexity of the task, our geology class has divided the various aspects and will be addressing them through group projects. Our group's project will focus on the transportation habits of the Rhodes College faculty and staff. In doing so, we will submit a questionnaire via Survey Monkey in order to collect the raw data needed to conduct our survey. The questionnaire will ask the respondent to offer information regarding their to-and-from work transportation habits such as the mode of transportation they use (car, bus, bike, walking etc.), the approximate number of trips per day, the approximate number of days per week to Rhodes, the distance traveled, the fuel economy of their vehicle (if they drive themselves or carpool), and whether or not they would be open to an alternative, more eco-friendly, mode of transportation. The point of our project is not only to raise awareness of the transportation issue itself, but to determine the feasibility of obtaining the necessary carbon footprint that has been put forth by the President's Climate Commitment.

2:00-2:30 **Break**

2:30-2:45 **The Power of Solar Energy**

Charles Forbes, Jr., Stephanie Juchs, Katherine Ross

Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

Our project, "The Power of Solar Energy" will develop an educational demonstration of solar energy for the Rhodes Campus and the surrounding Memphis community. Photovoltaic cells will be installed on the roof of the physics building to power a showcase in the lobby. The showcase will feature an interactive display that compares the energy used from an 11 watt CFL bulb and the equivalent 40 watt tungsten bulb. There will be a switch to turn the bulbs on and off, and each will be hooked to power meters to show the difference in the amount of power each bulb is using and the energy and dollar savings provided by the CFL. In addition, power from both a stationary PV panel and a panel mounted on a heliostat to follow the sun will be compared. The project is a collaborative effort by two geology classes, the physics club, and Rhodes Physical Plant. This demonstration will be accompanied by the development of a lab to teach students how to build their own solar iPod charger. The lab will demonstrate how students can incorporate the use of renewable energy sources into their daily lives.

2:45-3:00 **Power of Solar Energy Display Case**

Emilia Norman, Bri Slater, Zach Glover

Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

Our role in the solar panel project of our environmental geology class is to raise environmental awareness throughout the Rhodes College campus by broadcasting the work that Charlie Forbes has done in his "Power of Solar Energy" project. We are creating a display in which we compare the effectiveness with which solar energy will power two light bulbs, one incandescent and one fluorescent. In so doing, we are demonstrating the feasibility of solar power as an alternate energy source on campus. In light of the signing of the President's Climate Commitment, our project would also present an option for the college's commitment to reducing its carbon footprint. To create a greater understanding of the utility of solar power, we will also include in our display general information about solar power as well as other information which may cover but is not limited to data from other solar projects in Tennessee and comparisons of our region's solar advances to those of other regions in the U.S

3:00-3:15 **Getting Out the Word**

Maura Mohler, Lucy Ward, Whitney Ranson, Madeleine Palmer

Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

Our main objective is to inform the Rhodes community, as well as the Memphis Community at large, about the Solar Energy Project taking place on the Rhodes campus. In order to educate the general public about Solar Energy and more specifically the display being installed in Rhodes Tower, we are planning to publish a brochure, generate a website and distribute flyers. The brochure and website will include an overview of the function and different aspects of the display as well as an in depth explanation regarding the process of solar energy. Flyers will be made in order to generate interest and push people to visit the Solar Energy display. We will contact with head Rhodes Diplomats, the editors of the southwestern and alumni magazine, Daney Kepple, Christina Huntington and representative from Memphis City Schools. These contacts will aid to better advertise the importance and uniqueness of the Solar Project taking place on Rhodes Campus.

Robotics Challenge

Frasier Jelke lobby, 2:00 pm - 2:30 pm

The Robotics Program is an outgrowth of the 2006-6007 NASA STARS grant and the Cypress and Snowden Middle School students week at Space Camp at Huntsville AL.

Stephen Rintoul
Faculty Mentor: Carol Ekstrom, Department of Physics (geology)
During the fall and spring semesters, several Rhodes volunteers worked twice a week with groups of sixth graders at Snowden and Cypress middle schools. Our goals were to expose the students to advanced software and hardware concepts, to stimulate creative thinking about technology, and to develop teamwork skills, all outside a traditional classroom setting. The students encountered many types of challenges when building and programming their robots: technical challenges, conceptual challenges, and challenges in cooperation. Even in the face of these challenges, the students were able to create some very remarkable robots. At this session, we will invite between 4 and 6 student groups to briefly present their robotic projects and discuss the challenges they faced. The students will also demonstrate the robots by having them autonomously navigate an obstacle course.

Snowden Middle School participants:
Jessica-Nicole Richardson
Paris Byrd
Reagan Dickson
Shelby Tate
John Wirls
Zach Johnson
Renardo Baker
Adrian Sanders-Suggs
Mikhail Payne
George Michael
Ronesha Hill
Bree Reed
Alysabeth Watkins
Jessica Harris

Research in Anthropology and Sociology

214 Buckman, 1:00 pm - 3:00 pm
Session Chair – Susan Kus

1:00-1:15 **From the Attic to the Internet: An Unraveling Story Behind a Patriotic Thrift Store**

Molly Bombardi-Mount

Faculty Mentor: Susan Kus, Department of Anthropology/Sociology

Living in a continuously evolving world offers an infinite number of exciting opportunities that will always be unique if one agrees that ethnographies should be read and interpreted considering its placement in the past. During this measure of time, participant observation is often key in the attempt to fully understanding what otherwise may remain as misconstrued cultural values or norms. This was my understanding while engaged in participant observation at my cultural scene. Throughout my time spent in the Disabled Veterans of Vietnam thrift store on Summer Avenue I have explored the underlining inner-gears managing a non-profit organization that shares the claim to being stereotyped by two-dimensional generalizing stigmas. Having noted the common impressions that second-hand stores are "charity offers" or full of "aimless homeless folk", my study explores the structured inner-scene operating among the seemingly chaotic events that take place in between the aisles.

1:15-1:30 **Issues of Authority in a Grassroots Organization**

Leslie Elmore

Faculty Mentor: Susan Kus, Department of Anthropology/Sociology

My Anthropological Research Methods class has been conducting ethnographic fieldwork throughout the semester. Each student has been required to use participant observation as a research method, allowing them to study a particular cultural scene in Memphis first-hand. Ethnographic research aims to present the diversity of life so that readers will be able to learn alternative ways of living and solving problems so that they can make conscious decisions about how they wish to live their own lives. Since January 25, 2008 I have been documenting my experiences as a volunteer for the Mid-South Peace and Justice Center. As a grassroots organization, the Center aims to "educate ourselves and our communities about our present violent practices, and propose non-violent alternatives to them". As a result, many projects undertaken by the Center are controversial requiring all members to interact with authority figures. While many people blindly follow authority figures as proven in the Stanley-Milgram Experiment, my study aims to offer an alternative approach to authority as exhibited by the Center, not only outside their organization but also within it.

1:30-1:45 **Seeking a Higher Ground: An Ethnographic Study of the Independent Coffee Bar Otherlands.**

Emily Wheelwright

Faculty Mentor: Susan Kus, Department of Anthropology/Sociology

The ethnographic method is the cornerstone of Anthropology, as it emphasizes the importance of active participation and observation of a culture, which is critical to gaining the most inclusive and accurate perception of it. This semester I used the method of participant-observation to closely study and contribute in the independent coffee bar Otherlands. Cafés are becoming increasingly mainstream and commercial, with chains like Starbucks and Caribou Coffee present in thousands of cities nation-wide, and hundreds of countries. Nonetheless, independent coffee house culture differs drastically from more mainstream companies, and often provides a solace from the increasing commercialization of American. In fact, independent coffee house culture is often central in communities for local groups and activism. Whereas many commercial chains live by the mantra 'the customer is always right,' independent cafés like Otherlands are not forced to pander to their customers. Through my study of Otherlands, I explore how local coffee bars like Otherlands provide honest service, and encourage individuality and authenticity in both employees and clients.

1:45-2:00 **King Me!: An Ethnographic Study of Black Men at the Springdale Checkers Club**

Cordarius Mclean

Faculty Mentor: Susan Kus, Department of Anthropology/Sociology

Ethnographic fieldwork provides anthropologists the opportunity to cross presumed cultural boundaries with the intent of engaging a culture other than their own and then relaying their experiences and insights to readers. As a means to pose questions, encourage interaction, and promote awareness and eventually understanding between various global and even local cultures, ethnographies are most certainly necessary. This semester I employed the participant-observation method essential to ethnographic work in my research at the Springdale Checkers Club in the Midtown North community just north of campus. This small residential duplex and meeting place for men interested in competitive Checkers hosts numerous bouts every day. Every man in the clubhouse—whether competing at a Checkers board or occupying the periphery—is involved in the cultural scene; no man is "just there." My study challenges two-dimensional ideas of Checkers, which I have learned—via introduction to multiple styles of competitive play and complex training techniques—is more than just a game to occupy playtime for kids. My work also brings to focus an alternative, positive view of social groupings of Black men who are otherwise portrayed as social failures in local media.

2:00-2:15 **Superheros on Skates**

Katherine Preston

Faculty Mentor: Susan Kus, Department of Anthropology/Sociology

Roller Derby is one of the fastest growing sports in the nation and it is almost exclusively played by women. Its popularity is easily attributed to the fast paced nature of the game, the bawdy costumes, racy names, and the playful and often mischievous showmanship of the participants. However, beneath their sexually charged nick names and attire you find mothers, financial analysts, and house keepers, in short, you find women who lead regular lives by day and train as superheroes by night. As one member asserts, Memphis Roller Derby is "a sorority with a gang mentality." They have the sisterhood, the organization, and the nick names, however it all centers around a physical competition that at moments can seem akin to a street fight. Their daytime and nighttime lives, like their derby and non-derby names, enhance one another. Each "derby girl" develops her own persona within the league that culminates in her name choice. Like Superman and Clark Kent their names are separate, yet indivisible. Derby offers these women a chance for sisterhood, support and athleticism that they argue strengthen their character on and off the track.

2:15-2:30 **Come Together: Can Heterosexual Pornography Be Feminist?**

Jessica Lotz

Faculty Mentor: Carla Shirley, Department of Anthropology/Sociology

Contemporary feminist analysis of pornographic materials has focused predominantly on critiquing mainstream heterosexual pornography as misogynistic, exploitative, and degrading towards women. Yet, to label all pornography as "degrading" begs the question, is it the genre of pornography itself (defined as sexually explicit media) or the content we are most familiar with (media featuring exploitative and/or violent forms of sexual interaction) that is to blame for helping perpetuate a destructive sexual patriarchy? The emergence of a self-identified "feminist pornography" market suggests that there is much still to be explored in the genre beyond the misogynistic content we tend to associate with pornography. Rather, this alternative realm may open up new avenues to depicting more egalitarian sexual interactions and portraying female pleasure in a substantial, affirmative way. In my research, I will survey heterosexual female college students' attitudes towards pornography before and after viewing the award-winning feminist pornographic film Matt and Khym. My purpose with this research is to assess how heterosexual female students' exposure to feminist pornography influences their attitudes towards this alternative realm of erotic entertainment and towards alternative cultural depictions of sexual agency, heterosexual relationships and sexuality in general.

2:30-2:45 **Who Cares?: A Sociological Analysis of Cultural Competence in Women's Health Educators**

Kelly San Miguel

Faculty Mentor: Carla Shirley, Department of Anthropology/Sociology

Cultural competence is a set of similar behaviors, attitudes, and policies that enables health care providers and institutions to deliver effective services to culturally diverse populations. Health professionals and educators can enhance their diagnostic capability if they recognize the links between women's health issues and the social environments in which they live. The main purpose of this project is to see how organizations in the Memphis area prepare and support their educators to address cultural factors when they speak to female patients about sexuality and reproductive health issues. I will conduct in-depth interviews with educators from five local organizations in order to examine how cultural competency is integrated in their training, their job responsibilities, and their purpose in the organization. I also will examine the written information that educators provide to women. Overall, the most successful health care services define culture broadly, value client's cultural beliefs, recognize complexity in language interpretation, facilitate learning between providers and communities, involve the community in defining and addressing service needs, collaborate with other agencies, professionalize staff hiring and training, and institutionalize cultural competence.

2:45-3:00 **A 'Stash' of Yarns: An Ethnographic Portrayal of a Locally Owned Knit Shop**

Mary Ellen Dumas

Faculty Mentor: Susan Kus, Anthropology/Sociology

The dawn of the new millennium brought a revival of the craft of knitting. Celebrity endorsers as well as broader availability of patterns and yarn through the internet have helped increase the appeal to a more diverse population. Knitting offers an outlet in this age of commercial machine production for those who would like to create something on their own. In order to enrich my understanding of the art of knitting and go beyond popular stereotypes of knitting being a past time for only an older generation of females, I decided to perform ethnographic research at a local knit shop called 'Stash' in the Cooper-Young district. This method involves not only observing a cultural scene from a distance but it allows one to become actively engaged through participant observation. Spending time in this yarn shop and attending knitting classes has allowed me the opportunity to build relationships with the owner, workers, and regular customers that I might not otherwise have had if I had not been an active participant in the cultural scene. Through my time at 'Stash,' I was able to gain a greater understanding of the art of knitting itself as well as who is drawn to it.

3:00-3:15 **Pathways to a Career: How Life Course affects the Career Paths of Grief Counselors and their Practices**

Katie Preston

Faculty Mentor: Carla Shirley, Department of Anthropology and Sociology

Grief is a complex emotion to cope with, yet there are a growing number of counselors who choose to specialize in bereavement care. These practitioners deal with the grief of others and help them cope on a daily basis. It takes a well-trained, devoted professional and person to handle this emotionally strenuous position, and thus, among those in this profession there are commonly required traits such as dedication and resilience, which may take lifetimes to develop. As such, there is reason to believe that there may be common factors among the life courses of those who select grief counseling as an area of study and practice. Semi-structured interviews regarding life course as it relates to career choice were conducted with grief counselors in Memphis, Tennessee and New Hampshire. Respondents were acquired through referral and snowball sampling. Results of interviews were coded for past grief experiences and aptitude for interpersonal communication prior to career choice and training. Career choices demonstrate how socially bound experiences, such as education and training, manifest as individual choices. During a cultural time in our history when mental health awareness is ever increasing, my research examines the experiences, interpersonal skills, demographics and social values

commonly identified by the respondents as contributors to their life course that led them to a career in grief counseling.

Research in Economics

108 Buckman, 1:00 pm - 3:00 pm
Session Chair – Marshall Gramm

1:00-1:15 **Pre-enrollment factors affecting retention at Rhodes College**

Caleb Standafer

Faculty Mentors: Marshall Gramm and Nick McKinney, Department of Economics and Business Administration

This paper seeks to use both the theoretical and empirical techniques of economics to build upon the literature of the factors responsible for retention at colleges and universities, and apply it specifically to an area that has not been examined in the literature so far, a small, highly-selective liberal arts college. Rhodes College is the target institution, with the data coming from its extensive databases on student characteristics and biographical and demographic information. Using both an institutional research theoretical model specific to college retention that is seen in much of the literature on the subject, a signaling model from economic literature is added to provide a framework under which incentives can be structured so that certain pre-enrollment characteristics show an increased propensity to stay at Rhodes College beyond a student's freshman year. A probit model is then used to estimate the exact characteristics that identify the increased propensity for a retained outcome, including both academic and social factors. In light of the results, specific policy implications are discussed.

1:15-1:30 **Rhodes AP Policy: A Quantitative Approach**

Jillian Carr

Faculty Mentor: Nick McKinney, Department of Economics and Business Administration

With the transition to the new curriculum, Rhodes College has been faced with numerous questions as to the role of Advanced Placement (AP) credit in the new Foundations Curriculum. The aim of this project is to use quantitative analysis to assess the claim that students entering Rhodes with AP credit generally perform better than their peers without this credit, and to determine the effect of having this credit on students' collegiate academic performance. Ordinary least-squares regression analysis, controlling for student quality variables such as SAT score and high school GPA, shows that not only having AP credit, but also how much AP credit students have is significant for their performance at Rhodes. Also, subject-specific comparisons of students with AP credit and students who took introductory Rhodes courses demonstrated that students who took introductory courses at Rhodes, rather than testing out, did not have a significant advantage in upper level classes for most subjects.

1:30-1:45 **Calculating the Marginal Revenue Product of NBA Players and Interpreting the Impact on Salaries and Trades**

Justin Long

Faculty Mentor: Marshall Gramm, Department of Economics and Business Administration

This paper focuses on finding the marginal revenue product of individual players in the NBA and uses the data to assess the fairness of player compensation and trades. The first part of the analysis calculates the marginal product, representing the number of wins a player produces in a season. In order to do this, a regression is run on statistics measuring player performance, tempo, and defensive prowess. Following this, a second regression is run to find the marginal revenue which is interpreted as the dollar amount of revenue a team receives for a win. Multiplying these results together, the MRP of each player can be calculated and compared to the player's salary for a given

season. Using five years of data that spans from the 2002-03 to the 2006-07 season, the results are varied in terms of evaluating whether a player is underpaid or overpaid. With trades, MRP can be used in the comparison of players, but these transactions often involve future draft picks that can be problematic to quantify. Overall, MRP can be somewhat beneficial measure of the value of a player, but it will remain flawed do to its inability to account for intangible elements of the game.

1:45-2:00 **Housing Price Gradients in Memphis, Tennessee**

Hallie Rawls
Faculty Mentor: Marshall Gramm, Department of Economics and Business Administration

Hedonic models have been used in the prediction of housing prices and have recently introduced the concept of distance from a central business district (CBD) and any subcenters as a variable that also affects the price. In looking at real estate transactions for Shelby County, Tennessee, data was drawn from the 2007 Shelby County Tax Assessors information. The information was further divided by zip codes. Zip codes with less than 1000 real estate transactions were not considered. The remaining homes were divided by bedrooms, bathrooms and square footage into two categories: starter homes and family homes. The CBD for Shelby County is AutoZone Park, located at 200 Union Avenue and the subcenter is Regions, located at 6200 Poplar. Distances to the CBD and subcenter are determined by travel time from the centralized post office in each zip code examined. Housing characteristics such as year built, total number of rooms, bedrooms, bathrooms, interior and exterior square footage, and distance from CBD and subcenter were regressed against prices to determine the affect of these variables on price and whether or not distance affected price.

2:00-2:15 **An Empirical Examination at the Municipal Bond Insurance Market. Given historical trading spreads, is it possible to effectively project future spreads?**

Joshua McCoy
Faculty Mentor: Marshall Gramm, Department of Economics and Business Administration

In August of 2007 the United States witnessed many financial crises due to the sub-prime mortgage crisis. One such industry was the municipal bond insurers. As the municipal insurance industry became more competitive at the turn of the century insurers entered into the realm of insuring mortgage securities for banks. With this exposure all but two insurers have either been downgraded or put on negative credit watch by at least one of the big three rating agencies (Moodys, SandP, or Fitch). This paper attempts to address two questions. The first being: historically, how have the trading spreads differed between the insurers? And secondly, can we use these historical trading spreads to project future spreads between the insurers? Or has there been too much change within the market? My data consists of insured, tax-exempt municipal bond deals that have traded from February 2008 to January 2000 and that have been insured by one of the major insurers within the industry. Given the data we can see that it is possible to historically map these trading spreads; however time will tell whether or not the empirical models will be able to effectively predict future trading spreads.

2:15-2:30 **Geopraphic Crime Displacement and Prevention by Law Enforcement Officers in Los Angeles**

Edward Morris
Faculty Mentor: Marshall Gramm, Department of Economics and Business Administration

This paper looks at crime patterns across 18 Los Angeles precincts from 2000 to 2005. The paper investigates the relationship between precinct expenditures and number of crimes as well as number, type, and pay grade of law enforcement officers employed by each precinct and how a marginal officer affects crime levels. Furthermore the paper attempts to calculate the price elasticity of different crimes as well as the displacement of crime between precincts.

2:30-2:45 **The Evolution of the Premier Athlete: What Major League Baseball Records Show**

Christopher Chugden
Faculty Mentor: Marshall Gramm, Department of Economics and Business Administration

Following the 1988 World Series of Major League Baseball, the first mention of illegal

performance enhancing drugs surfaced in a newspaper article. 20 years later, the issue has not only exploded in legal and societal controversy but also has become the primary component in explaining the evolution of the professional athlete over the past two decades. Using a fixed effects regression model roughly based off of Ray Fair's model in his discussion paper, "Estimated Age Effects in Baseball" (2007), the life cycle with respect to performance for both position players and pitchers can be mapped. The sample criterion requires that players fit the following condition: having played 10 "full" seasons in his career between 1921 and 2007. The model maps out a quadratic increase in production to a certain "peak-performance age" followed by a quadratic decline thereafter. Results suggest that peak performance age has increased since 1988 implying that there have been performance altering tactics employed in Major League Baseball over the last 20 years. When assuming changes in competitive balance and natural improvements, however, statistically significant changes in MLB performance are questionable.

2:45-3:00 **The Rich Man's Burden: An Insight into the Ethics of Capitalism and the Power of Ethical Ideology**

Michael Hathorn
Faculty Mentor: Art Carden, Department of Economics and Business Administration

The emergence of capitalism in the Western world has bred levels of wealth previously unknown to mankind. This economic system has allowed individuals to divert their focus from the basic necessities of finding food and shelter and given them the capacity to redirect their attention to other endeavors, like making smaller and more powerful iPods. This seems to be an unambiguously positive change for the better; however, any study of history will show that individuals have not always agreed on this point, nor have they always agreed that capitalism is even capable of yielding the aforementioned levels of wealth. If we are to act ethically according to our moral obligations, how should our economy and society be structured? This essay will examine the intellectual debate over the legitimacy of capitalism, exploring various defenses and critiques of capitalism from an ethical perspective. It will then seek to analyze the effect of overall economic freedom on charitable giving, attempting to answer the question of whether a more economically free—and thereby more capitalistic—society gives more to charity. In evaluating the causal factors of eleemosynary activity, the study will also examine what, if any, specific ethical ideological motivations undergird charitable giving.

Research in Psychology

110 Buckman, 2:00 pm - 4:00 pm
Session Chair – Chris Wetzel

2:00-2:15 **Assessing middle school students' perceptions and attitudes towards college: Participatory Action Research at an inner-city middle school**

Alexandra Figari, Janet Panter, Emily Linden, Megan Etz, James Worles, Alexias Moore, Marysha Standifer, Tamara Tate, Martavius Coleman,
Faculty Mentor: Janet Panter, Department of Psychology

This participatory action research project involved three Rhodes students and five seventh and eighth grade students from Cypress Middle School. We collaborated to develop and administer a survey to better understand middle school students' attitudes towards college. Briefly, our results show that over 90% of the 78 middle school respondents believe they will attend college and nearly all believe they have support from their parents to do so. Furthermore, they think their parents expect them to attend. In contrast, several of the students do not believe their friends will attend college or even graduate from high school, indicating that they hold themselves to a higher standard than the standard they set for their friends. Only half of the students report that their friends encourage them to go to college. When asked about their values, the majority of respondents indicated that their parents' and teachers' opinions are important to them, while their peers' are less important. These results, especially in light of the collaborative nature of this project provide considerable insight into the values and thinking of inner city middle schoolers regarding higher education.

2:15-4:00 **Becoming aware of advantage: race, gender, able-bodied, beauty and class privilege**

Faculty Sponsor: Christopher Wetzel, Department of Psychology

Most of us are born with some characteristic that convey advantages to us. These advantages, some subtle/covert, others blatant/overt, are unearned privileges in that we did not work to gain them, nor did we deserve them through our virtue. We will examine how gender, racial, social class, beauty, heterosexual and able-bodied privileges advantage people, how they go largely unacknowledged, and how becoming aware of them changes one's world view and possibly one's identity.

Gender

Lauren Kimbrough and Laura Reilly

We will examine the question of whether men are more privileged than women in today's society.

Social class

Meredith Spencer and Emily Sadtler

We examine how social class affects education, starting with elementary school and ending with the transition to college or work.

Racial

Justin Sealand and Ryan Dutton

Although slavery, explicit segregation, and Jim Crow laws are all part of America's ugly past, racial privilege still permeates nearly every aspect of American culture, from the health care and educational systems to judicial proceedings and our economy. We will discuss how racial privilege creates social inequality in these domains.

Able-bodied
Daniel Sturtevant and Kevin Kilpatrick
We will discuss the effects of stigma on people with disabilities. Able-bodied privilege partially reflects the disadvantages of stigma, but it also reflects the reduction in social capital, and the marginalization of those with disabilities.

Beauty
Emily Jackson and Courtney Lippoff
We will address how beauty privilege manifests itself in different social institutions, for example, education, employment, and personal relationships people have with one another.

Heterosexual
Logan Jones
I will discuss how heterosexual privilege advantages people on a college campus.

Awareness consequences
Jessica Copeland
Increasing awareness about privilege can threaten self-identity and increase in prejudice as a way of justifying privilege. I will discuss ways in which privilege is most positively taught and the possible consequences of different approaches to increasing awareness

Buckman Scholarship Research

212 Buckman, 2:40 pm - 4:00 pm
Session Chair – Steve Ceccoli

2:40-3:00 **Social Class in Botswana**
Ellie Hahn
Faculty Mentor: Stephen Ceccoli, Department of International Studies
Botswana is a nation that has maintained one of the world's highest economic growth rates over the past three decades. As a result of wealth generated from diamond mining, coupled with fiscal discipline and sound management, Botswana has transformed itself from one of the poorest countries in the world to a middle-income country with a per capita GDP of more than $11,000 in 2006. However, despite economic success the country continues to experience high rates of unemployment and poverty. Botswana's identification as a middle-income country coupled with the high unemployment rate and continued struggle to promote legitimate development nationwide creates a unique foundation for the structure of social class. In order to better understand the construction of social class in Botswana and how members of different social classes relate and interact with one another, this study focuses on four primary areas and is based on a series of interviews with Batswana and residents of Botswana focusing on these issues. The primary focus of this study draws on the conclusions from these interviews and is centered on the conclusion that the structure of social class is static and is experiencing great change presently in Botswana.

3:00-3:20 **The Batwa of Southwest Uganda**
Heather Houser
Faculty Mentor: Stephen Ceccoli, Department of International Studies
This presentation will present a case study of development in Uganda. It will examine the Batwa culture and lifestyle, and how they have been impacted by the country's development. It will then seek to draw some conclusions about how and why mainstream development processes have not helped the Batwa, but rather have marginalized and impoverished them, and will end by looking at the future prospects for the Batwa in Uganda's development.

3:20-3:40 **Travels in East Africa: An Overview of Ecological Perspectives within Northern Tanzania**

Dustin Long
Faculty Mentors: David Kesler, Department of Biology; Stephen Ceccoli, Department of International Studies

As a Buckman Scholarship recipient, I spent June to December of 2007 living in Tanzania. I lived in periurban and Maasai communities in order to learn Kiswahili and to gain exposure to Tanzanian culture. Field study was also undertaken in the Tanzanian National Parks, namely the Ngorongoro Crater (one of the Seven Natural Wonders of the World) and the Serengeti-Mara ecosystems. The causes of the wildebeest migration in the Serengeti such as nutrient gradients and rainfall were examined in respect to a natural resource management and tourism perspective. The woodland/grassland dynamics of the Serengeti-Mara ecosystem are a delicate interplay between elephant damage, grazers, and fire. Land use was examined within the Serengeti-Mara ecosystem and the Ngorongoro Conservation Area with respect to anthropogenic factors and governmental interactions with the surrounding Maasai. The impact of tourism and management schemes was also studied in other ecosystems, such as montane rainforests and coastal regions.

3:40-4:00 **The Many Hats of Vladimir Putin**

Demetria Worley
Faculty mentor: Stephen Ceccoli, Department of International Studies

This presentation will examine the place and use of the personality cult in the politics of the modern Russian Federation. I plan to briefly introduce the history of the personality cult in politics and culture of the Romanov Empire and the Soviet Union; however, the majority of the presentation will focus on personality politics – particularly those of Vladimir Putin and his party Edinaya Rossiya – in the recent elections in the Russian Federation. The leaflets and pamphlets distributed by several political parties in Saint Petersburg last fall will be the basis for my analysis.

Poster Session and Reception

4:30-6:30pm, multi-sports forum of the Bryan Campus Life Center

Music provided by the Rhodes Jazz Combo

poster set-up: 10:00 am - noon

poster tear-down: 6:30 pm - 7:00 pm

authors present at poster:

even numbered posters: 4:30 pm - 5:30 pm

odd numbered posters: 5:30 pm - 6:30 pm

Rhodes Community Connections

#1 Developing Minds, Cultivating Friends: The Cypress Middle School Chess Club

Luke Archer, Paul Burmenko

Faculty Mentor: Carol Ekstrom , Department of Physics (geology)

The Cypress Middle School Chess Club was created with the hope of helping members think critically in a positive learning environment. Since it was founded in the spring of 2005, the program has not only helped dozens of students learn how to play chess but has also taught them good sportsmanship and provided them with close friendships. Participants of the program have also gone on to get involved in the local chess community, such as playing casually in local chess hotspots and even entering tournaments. . In addition to the crucial participation of the club volunteers and Mrs. Ford, the school librarian, the Memphis community has been very supportive during the past several years, giving several chess camp scholarships to the most committed chess club members. The club meets twice a week for an hour and a half, with six to eight young men usually attending.

#2 New Strip-Commercial Development in Inner-City Neighborhoods

Dana Bartolomei

Faculty Mentor: Michael Kirby, Department of Political Science

There are new areas of strip commercial development in inner-city areas. For example, there is a new development at the corner of Tutwiler Avenue and McLean Street, and a new development on the corner of Overton Park Avenue and Cleveland Avenue. These new developments are small, usually with three to four storefronts and have a wide range of business types. The focus of this study is to identify what conditions or characteristics of these inner-city neighborhoods made them attractive to the owners of these new strip commercial developments. A survey was developed and administered to the owners of new strip-commercial developments. Themes for the questions include: market factors, locations, personal factors, neighborhood conditions, and financial considerations. The wide variety of question categories was designed to determine whether there are particular neighborhood conditions or characteristics that attracted the owners, or influenced their decisions to locate in the area. In addition the responses from the survey helped determine what weight other factors, not directly related to the neighborhood, had in the owners' decisions to locate in the area.

#3 Using Survey Analysis to Identify the Care Needs of People Living with HIV/AIDS in the Memphis Metropolitan Area

Wesley Campbell, Mary Ellen Dumas, Ruthanne Harlow, Kathryn Sella, Kim Brodziak

Faculty Mentor: Tom McGowan, Department of Anthropology/Sociology

The Ryan White HIV/AIDS Treatment Modernization Act of 2006 requires that regional HIV/AIDS care needs assessments include the administration of a comprehensive survey to people living with HIV/AIDS (PLWHA). The 2008 Memphis Comprehensive HIV/AIDS Needs Assessment Interview Survey was administered during a four week period to 164 consumers when they presented to receive food at a local food pantry. The survey received IRB approval from Rhodes College and was administered by students enrolled in Anthropology/Sociology 261 (Research Methods). Participation in the survey was voluntary and informed consent was secured from each interview subject prior to the interviews. Interviews were conducted in private rooms and subjects were assured

that their identities would remain confidential. The survey team 1) created a data set to define the variables using the SPSS Data Editor, 2) manually coded the data from the surveys, 3) entered the coded data into the data set, and 4) analyzed and summarized the data. The survey information will be used by a planning committee and the Memphis/Shelby County Health Department to identify and address unmet HIV/AIDS service needs in our area.

#4 Springdale Chess Club

Trey Carson, Brian Yuan, Jenkin Chan
Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

This fall, with encouragement from the principal, we restarted the Springdale Chess Club, which had not met for two years. Our purpose is to teach 4th and 5th graders the rules of chess and how to strategize and plan ahead. It has been a challenging and fun endeavor, with a steep learning curve. We began by hoping to turn the students into young Bobby Fishers. However, we have modified our goals and are working on basics, such as names of the chess pieces, how they move, and the meaning of check and checkmate. The students have also learned how to use a chess clock We have developed fun, simple games to help them understand the rules better and to learn good chess piece positioning. As first year students, this has been our first opportunity to engage with the community beyond the Rhodes campus.

#5 Perception of Crime in Memphis Neighborhoods

Carl Cook
Faculty Mentor: Michael Kirby, Department of Political Science

Crime is one of the most hotly debated topics and concerns for Memphis residents. Memphis has one of the highest crime rates in the nation and some perceive the problem as getting worse. There are many things that can sway personal perceptions of crime including the media and personal experiences. This research project surveyed residents from various Mid-town neighborhoods composed of different demographics to identify their perceptions of crime in the area. I compared these findings with actual crime statistics in public record to determine if the public perception and actual crime statistics were consistent. I was also able to conclude whether specific demographics of a neighborhood affect the perception of crime.

#6 The Outcome of Cleaning Up Vacant Lots

Drew Davis
Faculty Mentor: Michael Kirby, Department of Political Science

One of the major problems in the Hollywood Springdale area is the conditions of the many vacant lots. They contribute to the negative image of the area because of the dumping, litter, and high weeds. I spent considerable time cleaning up these vacant lots, through my personal effort, working with a contractor, and assisting groups in their community cleanup events. My focus was to examine the perceptions of those involved in the clean up efforts—the reason they were involved, their views on the work being done, and their expectations about long-term improvements in the area.

#7 Using Content Analysis of Focus Group Discussions to Identify the Care Needs of People Living with HIV/AIDS in the Memphis Metropolitan Area.

Lesley Elmore, Emily Beaubouef, Mia Norman, Lindsay Chaisson
Faculty Mentor: Tom McGowan, Department of Anthropology/Sociology

The Ryan White HIV/AIDS Treatment Modernization Act of 2006 requires that regional HIV/AIDS care needs assessments include focus group discussions involving consumers (people living with HIV/AIDS who presently receive medical and supportive services). Four focus groups involving consumers representing four high-risk population subgroups were conducted by Professor McGowan during March and April, 2008. The focus group discussions covered topics and questions recommended by the Human Resources Services Administration (HRSA) with ethical oversight provided by the Ryan White Planning Committee of the Memphis and Shelby County Health Department. The student research team 1) transcribed the tape-recorded focus group discussions, 2) followed an inductive approach to create coding categories of transcript content and 3) coded the content of the transcripts according to the established coding categories. Coding categories and transcript content were coded independently by all four research team members, who then deliberated collectively to make final coding decisions in order to achieve coding reliability. Summative conclusions for each focus group were prepared and conclusions specific to each group were compared. Finally, recommendations regarding care service needs, barriers to accessing services,

and gaps in existing services were made based on the content analysis findings.

#8 A Survey Based Study of HIV/AIDS Provider Capacity in the Memphis Metropolitan Area

Marcus Falion, Larry Hurd, Carl Cook, Joshua Peace
Faculty Mentor: Tom McGowan, Department of Anthropology/Sociology

The Ryan White HIV/AIDS Treatment Modernization Act mandates that regional HIV/AIDS care needs assessments include a study of the capacity of medical and supportive service providers to meet the care needs people living with HIV/AIDS PLWHA). A provider capacity study was conducted by sending a mailed, self-administered, survey to more than 65 medical and social service provider agencies in the Memphis Metropolitan Area. The survey was developed by the needs assessment committee of the Memphis AIDS Coalition, which also provided ethical oversight for its administration. The student research team 1) prepared a cover letter and identified the appropriate agency representatives to receive the survey, 3) telephoned non-responding agencies to encourage participation, 4) coded and entered survey data into an SPSS file, 5) conducted statistical analysis of the survey data and 6) prepared a report of findings and recommendations in support of the local Ryan White grant planning process. Key findings include the identification of service gaps pertaining to 1) mental health, 2) housing and 3) transportation.

#9 Causes of and Opportunities for Vacant House

Marcus Falion
Faculty Mentor: Michael Kirby, Department of Political Science

Memphis has one of the highest housing vacancy rates in the United States. These houses, when left untended slowly begin to become dilapidated due to vandalism and lack of upkeep, and are thus called problem properties. In the Mid-Town North neighborhood, problem properties can be found on almost every street and these properties are viewed as an eyesore by the community members. My research investigated the causes and opportunity for these problem properties in Mid-Town North. My project surveyed residents who live in close proximity to a vacant house, asking questions about their perceptions of the problem properties around them, and what they might like to see done with these properties. This survey resulted in conclusions about the next step for these properties and the neighborhood perception on these properties (something that has yet to be studied by other researchers here in Memphis and also around the U.S.).

#10 Improving the Vollintine-Evergreen Newsletter

Nancy Fall
Faculty Mentor: Michael Kirby, Department of Political Science

The Vollintine Evergreen Newsletter is a neighborhood publication that has been distributed for 38 years. Even with the years of history passing through each monthly issue, there are some fundamental problems with community communications. I worked to improve the existing newsletter by making it more aesthetically appealing to the eye. In addition, I helped the manner of distribution so that the valuable information is made available to each person in the neighborhood. To better inform and represent the neighborhood, I asked the newspaper distributors their perceptions of the format of the newsletter and heard their input on how they wanted the newsletter improved. In addition, I wrote an article which indicated how the newsletter impacts the perceptions of the neighborhood. The latter information helped me judge the impact of the newsletter on the neighborhood.

#11 Personal Factors in Consumer Bankruptcy

Megan Flatt
Faculty Mentor: Michael Kirby, Department of Political Science

I worked on the Consumer Bankruptcy Study sponsored by the RISE Foundation. The study is being used to devise community strategies for dealing with bankruptcies in Memphis. It was conducted by administering approximately 1000 surveys to bankruptcy filers. I was involved in collecting the data, coding it, and doing some analysis. My analysis examines one part of the larger survey, which is the personal factors that influenced the individuals in seeking bankruptcy. My study compared the questionnaire results with some of the more poignant personal comments.

#12 Creating an Education Center in Hollywood-Springdale

Erin Foster

Faculty Mentor: Michael Kirby, Department of Political Science

A New Beginning Community Organization was donated an apartment complex located in the Hollywood-Springdale area. A New Beginning is a nonprofit founded by Cathedral of Faith Church with growing support from the surrounding community. However, the apartment complex, formerly known as Howell Gardens and now called A New Place, was in great disrepair. A New Beginning renovated the apartments into clean, affordable, crime free, and drug free homes for low income families in a community setting. A grant from Velsicol Chemical Corporation resulted in space at the apartments that could be used for a resource center to provide GED classes. Rhodes student Erin Foster and Executive Director, Rev. Calvin Booker are working together to open an education center for both residents and adjacent neighbors. The program will first focus on preparing participants for the GED and will provide employment readiness seminars. It is expected that once the center opens, it will eventually help many residents complete their GEDs and they will be more employable. The study discusses the expected outcomes of this program.

#13 Campaign Assessment of a Memphis Municipal Election

Beau Gambold

Faculty Mentor: Michael Kirby, Department of Political Science

While both political scientists and political practitioners speculate about what makes an effective political campaign, there is only limited conclusive research on this topic. The purpose of this project was to study the relationships between campaign tactics and voter choice in the 2007 election for Memphis City Council, District 9 Position 3. This was a service learning project that provided extensive information about the campaigns. The study found that the most effective campaign tactics use candidate name recognition. This study showed that the effective campaigns were able to utilize an assortment of techniques that appealed to voters. In addition, the study found the following factors were important: demographics of the electorate, the number and political orientation of other candidates running, the ability to get important endorsements, and the ability to effectively raise funds.

#14 The Impact of Affordable Housing Homeowners on Neighborhood Stability

Alexander Gates

Faculty Mentor: Michael Kirby, Department of Political Science

The benefits of homeownership on neighborhood stability has been a widely written about topic. Conventional wisdom holds that homeownership is a key factor in community redevelopment. This project examines whether or not affordable housing plays as significant a role in community change. Affordable housing offers subsidies for low-income residents who are interested in owning homes. It is often very beneficial to low-income residents, but affordable homes can also become harmful to a community. The theory of this practice is that it will allow for residents to become more involved citizens. I collected information on the differences between affordable housing and standard homeownership. In order to determine the impact of these two different types of homes, a survey was administered examining the roles that regular affordable homeowners play in the community, especially in community involvement. The physical upkeep of regular owned homes versus affordable housing provided further documentation about the level of concern for their neighborhood. The VECA neighborhood was my area of study and the results will be shared with the neighborhood organization.

#15 Can Hollywood-Springdale Support a Farmer's Market?

Ruthanne Harlow

Faculty Mentor: Michael Kirby, Department of Political Science

Studies show that low-income areas experience a lack of full-service supermarkets. This grocery store gap severely limits access of inner-city residents to fresh, quality fruits and vegetables. The Hollywood-Springdale neighborhood is no exception to this trend. The dominant food options in the neighborhood are corner convenience stores, which offer a narrow selection of overpriced foods that are low in nutritional value. The problem is intensified by the lack of car ownership in the neighborhood, so that residents cannot drive to grocery stores located in other neighborhoods. The implementation of a farmer's market in the neighborhood could address many of the fundamental problems of food access. Surveys evaluated interest from the community to support a farmer's market. Interviews with local growers revealed gardening activity in the area. A visible and convenient potential site for the market has been located. This research has been conducted with the goal of designing a farmer's market that is tailored to the needs and character of the neighborhood.

#16 Problems and Opportunities on the Memphis Riverfront

Elizabeth Holladay

Faculty Mentor: Michael Kirby, Department of Political Science

Friends for Our Riverfront, a community group, would like to see the parks along Memphis' downtown riverfront connected by trails and signs that make the parks more inviting to visitors. We worked with this group by examining problems in the condition of Confederate Park located on Front Street overlooking the Mississippi River. We discussed thoughtful, but benign strategies for improving the park without large scale construction which might obstruct the view of the river. As an example, we developed a helpful brochure that can be used to raise awareness about the park's historical significance as well as its usefulness to the surrounding community.

#17 Cypress and Snowden Robotics Club

Kelsey Knipshild, Stephen Rintoul

Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

Rhodes College has formed Robotics club at Snowden Elementary School and Cypress Middle School. The clubs meet twice a week and progressively work on robots in groups throughout the semester. Over the past few years, students at both Snowden and Cypress have been introduced to technology, mechanics, and software. The skills taught hope to inspire students to learn and grasp electronics in and outside of the classroom. In today's growing electronically-based world, these skills are becoming increasingly important. Cypress and Snowden students use Legos sets along with computer programs to build the robots. The Cypress and Snowden students construct motorized cars to eventually compete in the Robot Challenge during URCAS in the spring.

#18 Tutoring for Better Understanding

Kelsey Knipshild, Betsy Parkinson

Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

The purpose of the Rhodes College-Springdale Elementary/Cypress Middle School liaison is to bring together college students and elementary and middle school students. This connection is intended to inspire the younger students to excel in academics and in life, and to help college students to better understand the community in which they live and the school system of Memphis. In this program, Rhodes students are trained by Our Children Our Future and then become either one-on-one tutors or classroom assistants. The one-on-one tutors each work with two students a week in either math or reading. The classroom assistants help teachers by doing a variety of tasks from playing games with the students, working with small groups on specific projects, or assisting students who need additional assistance with certain projects. In addition to the weekly tutoring, Rhodes students are also involved in other projects with Springdale Elementary and Cypress Middle School students. A few of the most memorable projects from this year include the Martin Luther King project and the Spooky Science night/PTA Math and Science Night. These extra projects and the weekly tutoring encourage the younger students to succeed and help college students to recognize both the strengths of the public school system and the areas in which they can help to improve the schools.

#19 Great Strides

Claire Litherlaind

Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

Great Strides began as a fitness program for the young ladies of Cypress Middle school and has, in the past few years, continued to evolve to include not only sports and fitness but also arts and music. These past two semesters the Cypress girls have had opportunities to become more aware and involved in the Rhodes community by weekly visits to Rhodes campus and we, the Rhodes volunteers, have benefited from getting to know the girls better with our twice a week sessions. The girls have participated in sports programs such as relay races and sports clinics and arts programs such as practicing with the women's a cappella group, Lipstick on your Collar, and various arts and crafts projects. Throughout our time spent with these wonderful young women, it becomes more and more clear the value of the time we spend building relationships with them.

#20 City Condemnations and House Structural Conditions

Alexander Liu
Faculty Mentor: Michael Kirby, Department of Political Science

The City of Memphis code enforcement office receives complaints about houses that do not meet the city's housing code. When these houses are vacant, the operating procedure of the agency is to condemn the property and after a time demolish the structure. This outreach project identified the condemned houses in the VECA neighborhood and assessed the condition of the houses to determine if they should be torn down. The project also examined strategies that could be used in working with this community group to address some of the houses that were in habitable shape and should not be torn down.

#21 Foreclosure Patterns in the Vollintine-Evergreen Neighborhood

Casey Mohan
Faculty Mentor: Michael Kirby, Department of Political Science

The current declining economy is the result, in part, of problems in the real estate market. Over the past two years, a record number of properties have fallen to foreclosure. This project concentrates on the specific foreclosures in the Vollintine-Evergreen neighborhood. The project examined foreclosure patterns using location, home-ownership history, surrounding lots, and owner income. By tracking and researching foreclosures from the beginning of 2008 and subsequently compiling the information through Geographic Information Systems (GIS), the research has pinpointed various possibilities of cause for the specific area. The results will be presented to community group that represents the neighborhood in hopes of creating public programs to prevent future foreclosures.

#22 Joint Agency Task Force

James Mudd
Faculty Mentor: Michael Kirby, Department of Political Science

The Joint Agency Task Force meets once a month to deal with a variety of issues in the Hollywood-Springdale neighborhood. The stakeholders represented at the meetings are Rhodes College faculty, staff, and students, the Memphis Police Department, Shelby County Sheriff, Memphis City Code Enforcement, the Health Department, Shelby County Code Enforcement, residents, business owners, and other concerned citizens. This group is essential to dealing with community issues including crime and code violations. Most problems are complicated in nature and need a variety of organizations working together in order to make real progress. This research/outreach project describes specific actions that were taken by this group and shows some of the results of their work.

#23 Activities and Attitudes around Cypress Creek

Mia Norman
Faculty Mentor: Michael Kirby, Department of Political Science

Cypress Creek has experienced considerable activity over the past decade. Cypress Creek has attained media coverage, the involvement of the state, school programs, and grants. With all of this activity one may assume that change has occurred in the knowledge and attitudes of community members. I used the findings of a previous study done by a Rhodes College student in January of 1999. Her findings played an essential role by acting as a basis for comparison of the knowledge and attitudes concerning the creek. I administered a survey in the Vollintine-Evergreen neighborhood, repeating some of the core questions. Once I knew the current attitudes and knowledge of some of the residents surrounding Cypress Creek, I compared my findings to the knowledge and attitude of residents about ten years ago. This allowed me to evaluate the effect of the activity around Cypress Creek on the attitudes of adjacent residents.

#24 Science Saturday: Springdale Elementary parents and students learning together

Marianne Olson
Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

Science Saturday is a Rhodes College Learning Corridor program that collaborates with Springdale Elementary, a Title I Memphis City School. Students and a family member participate in interactive science-related field-trips twice a semester. The program goals are to involve community, home and school to enhance learning opportunities of students, to promote parental involvement in children's education, and to provide students with field exploration opportunities. These goals were accomplished through trips to the Memphis Zoo, Overton Park, and the Pink

Palace Museum, where thirty-one students and their parents spent time together learning about science.

#25 Learning Corridor Enrichment

Pamela Palmer

Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

The Learning Corridor offers a variety of events designed to strengthen Rhodes ties to the community. Cypress *Homecoming* at Rhodes invites students and their families to enjoy the football game on Rhode's field. *Open Gym* welcomes Cypress students to a Saturday morning filled with activities at the BCLC, and an opportunity to develop positive relationships with Rhodes volunteers, and instructors from the neighborhood. Activities include tennis, swimming, basketball, dance, tag football, racquetball, and volleyball depending on the season. *Big Brothers Big Sisters* program pairs Rhodes students with elementary students at Springdale and other nearby schools. *Meet the Neighborhood* is a tour, via a Yellow School Bus, for Rhodes students in service learning classes to acquaint them with the Hollywood Springdale Neighborhood and the schools where they will be working. All of the Learning Corridor enrichment activities encourage interaction between the community and the college in order to build greater understanding.

#26 The St. Jude Connection

Pamela Palmer

Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

The St. Jude Connection is a program that allows students from Central High School to experience research first hand and encourage them to consider careers in the biomedical field guided by St. Jude's young postdoctoral fellows. Researchers from St. Jude Children's Research Hospital, Rhodes College faculty, and Central High School science teachers create a partnership among their three institutions that encourages students to experience biology in a professional environment and challenges them to work independently as they discover the opportunity for other career possibilities in the medical field. The program met two Tuesdays each month in September, October, and November. The students enjoyed both the lab demos at Central and the tours at St. Jude. They had a new understanding of science and accomplishing tasks independently. When they began their projects they were very shy about using equipment and following procedures on their own, but by the end of the program, they became junior scientists, sometimes finishing their projects early and performing with skill.

#27 Assessment of District 8 Municipal Election

Rachel Thompson

Faculty Mentor: Michael Kirby, Department of Political Science

Former Councilmember Rickey Peete resigned from his position as representative of Super district 8, Position 2 in the summer of 2007. City Council then appointed Henry Hooper to carry out the remainder of Peete's term. In October 2007 Janis Fullilove, radio personality and repeat candidate in municipal elections, ran against Hooper for the seat. Though other candidates entered the race, Fullilove won the district with a majority. I evaluated the issues and demographics of this district by looking at election data and doing a survey of District 8 voters to understand the reasons behind Fullilove's victory.

#28 Voting Turnout in Memphis Elections: Voices of African-American Citizens

Nicholas Threlkeld

Faculty Mentor: Michael Kirby, Department of Political Science

My research focused on the determining factors related to voter turnout in the Hollywood-Springdale area with emphasis on the recent mayoral election of 2007. I felt that by emphasizing the issue of voting the community would become more aware about the benefits of voting and take an active stance in future elections. I was able to survey members of selected communities in a successful attempt to fully identify the reasons why people decided to vote or not vote. My research shows that inner-city African Americans today are voting at lower levels compared to previous elections such as the mayoral election of 1991 which changed the political dynamics of the city with the election of Mayor Willie Herenton. Two churches in the Hollywood Springdale area were used as my field research sample.

#29 An Epidemiological Profile of HIV/IDS Incidence and Prevalence in the Memphis Metropolitan Area

Amanda Venezia, Joy-Katherine Martin, Thomas McGowan
Faculty Mentor: Tom McGowan, Department of Anthropology/Sociology

The Ryan White HIV/AIDS Treatment Modernization Act of 2006 requires that regional HIV/AIDS care needs assessments include an epidemiological profile of HIV/AIDS incidence and prevalence. Epidemiology is the study of the distribution of disease (and disease related risk factors) across a population. An epidemiological profile of HIV/AIDS in the Memphis Metropolitan Area was prepared using data for the 2007 calendar year provided to the research team by the Tennessee Department of Health. The profile presents summary statistics on HIV/AIDS incidence for 2007 (all newly reported cases for 2007) and prevalence (total of all cases reported since reporting began) and analyzes patterns according to race/ethnicity, gender and age. Special effort was made to present the data in a visually effective and accessible manner so that they would be understandable to a wide audience of readers, including people from different educational backgrounds. Additional considerations such as exposure risk, co-morbidity, mortality and population size of people living with HIV/AIDS (PLWHA) are also analyzed and presented. Implications for care and prevention needs are discussed and recommendations in support of the Ryan White grant making and planning process are provided.

#30 Breaking Barriers

Victoria Liao
Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

Breaking Down Barriers at Shasta and Brewster. Midtown, North Memphis and surrounding areas have a wide range of assets and challenges that often play out in the local schools. As a participant in the Rhodes Learning Corridor I have been engaged in working with students at Shasta Central and Brewster Elementary schools. In the process, I have witnessed people being more open and receptive to learning new things, as well as accepting of people. This presentation will highlight how I managed to break down the walls and enter into the lives of both children and adults. Additionally, I will discuss the immediate and long term impact of the program from the students - how they have developed a healthier concept of their world and how they are able to take what was learned in the past and transfer it to their present situation.

Natural Sciences

#31 Identification of a gene affecting hyphal development in Aspergillus Nidulans

Jacqueline Ward
Faculty Mentor: Darlene Loprete, Department of Chemistry

Fungi have beneficial and deleterious effects on the environment, industry and human economy. Fungi grow as long filamentous cells, called hyphae, and contain a cell wall which is essential for the growth and maintenance of the organism. The goal of this lab is to identify genes and proteins governing cell wall metabolism in the fungus Aspergillus nidulans. R-457 is a temperature-sensitive, cell wall mutant strain that exhibits an altered phenotype at 42°C. R457 has reduced interseptal distance, wider irregularly shaped hyphae, and a tendency for hyphal tips to rupture. The goal was to identify the gene responsible for this mutation. The fungus was transformed with two different genomic DNA plasmid libraries, and five plasmids were isolated from the rescued strain. R457 was retransformed with each plasmid, but no rescue was found. R457 was then transformed with all five plasmids in combination which rescued the phenotype. Each plasmid was sequenced but the data were inconclusive due to the oddity of the genomic insert. The current work focuses on PCR amplifying the inserts and cloning them into pGem4Z for sequence analysis. The genes responsible for the rescue then can be determined.

#32 Can DFT dissolve CO_2 in water?

Jessica Cross, Katie Morgan
Faculty Mentor: Mauricio Cafiero, Department of Chemistry

CO_2 solvation is of particular interest to marine scientists and oceanographer studying the "sink" qualities of bodies of water and atmospheric deposition. Additionally, the atmosphere-ocean interface and subsequent modeling is not well understood. By determining a precise mechanism for aqueous CO_2 solvation we obtain a theoretical standard for atmospheric deposition of inorganic carbon. Our goal is to obtain a DFT method that will model the kinetics of this solvation process as well as an ab-intio standard. The stretched electron densities of transition states are not typically well-represented by DFT and our group's efforts in design of novel DFT methods will be applied to this problem. We present results of CO_2 solvation with explicit and implicit solvents, and with varying numbers of solvent molecules, at ab initio and DFT levels of theory. We show that current DFT methods are insufficient to model reaction kinetics and application of a novel two-electron DFT may be necessary.

#33 Roles of two GDP-Mannose Transporter Genes in the Filamentous Fungus Aspergillus nidulans

Barbara Gordon, Loretta Jackson-Hayes, Ravi Patel
Faculty mentor: Loretta Jackson-Hayes, Department of Chemistry

In order to identify genes affecting cell wall integrity, we have generated mutant strains of the filamentous fungus Aspergillus nidulans. We have identified two distinct genes (designated GmtA and GmtB) in A. nidulans that show homology to the yeast GDP-mannose transporter genes. GDP-mannose transporters carry nucleotide sugars from the cytosol across the Golgi apparatus membrane in various eukaryotic organisms including plants and a variety of fungi. Cloned GmtA and GmtB complement hypersensitivity to the chitin binding agent calcofluor white in mutant strain R205, as well as hyper-branching and septation abnormalities R205 displays under normal growth conditions. We have observed a punctate pattern of fluorescence of a GmtA-GFP fusion protein, consistent with Golgi localization in A. nidulans. GmtA in R205 contains a genetic mutation that causes an A315P amino acid substitution, and the amino acid sequence of GmtB in R205 is identical to wild type. However, both GmtA and GmtB appear to be essential. These findings suggest that GmtA and GmtB are involved in cell wall maintenance in A. nidulans.

#34 Glucose, a Novel Therapy for Gaucher Disease?

Griffin Morrisson
Faculty Mentor Julie Le, Department of Chemistry

Gaucher disease is a lipid storage disorder that results from deficiency of a lysosomal hydrolase and a glucocerebrosidase. Severity of the disease varies widely; some patients will not survive past the age of two, while others will not see symptoms of Gaucher disease until their 80's. The disease is inherited through an autosomal recessive gene and is commonly found in people of Ashkenazi Jewish decent. Splenomegaly, hepatomegaly, Erlenmeyer flask deformity of the femur, and a number of blood disorders are a few of the manifestations of Gaucher disease. Current treatment calls for Enzyme Replacement Therapy (ERT), which has to be administered three times a week. However, this is an expensive treatment regimen that cost $200,000 per year for the rest of the patient's life. In this study, a series of reactions were used to transform a simple sugar, d-glucose, into a derivative of conduramine B-1, which inhibits the enzyme that produces the compound that causes the manifestations of Gaucher. This compound will allow for a more economic treatment of Gaucher disease.

#35 Evaluating Various SPMEs for Extracting Explosive Vapors from Air Using GC-ECD

Joseph Phelps, Tyler Fraser, Sydney Milton
Faculty Mentor: Jon Russ, Department of Chemistry

We measured the effectiveness of four commercially available solid phase micro-extractors (SPMEs) for extracting explosive compound vapors from air at ambient conditions. The SPMEs tested were Polydimethylsiloxane/Divinylbenzene (PDMS/DVB), Polyacrylate (PA), Polyethylene Glycol (PEG), and Carbowax/Divinylbenzene, selected due to their affinity to polar compounds. The experiments were carried out inside a 2.5 m PVC tube (30 cm diameter) with a variable fan attached at one end and the other end extending into a laboratory fume hood. The target analyte used for the measurement was 2,4-dinitrotoluene (DNT) since this compound is the primary TNT degradation byproduct. We produced DNT vapors in front of the fan set for a 1.8 m/s wind-speed by heating 6.0 g of a 1 % DNT/sand mixture to 36°C for 2.0 minutes. The SPMEs were engaged at the opposite end of the tube where the DNT was absorbed on the polymer fiber for a specified time, either 10, 20 or 30 s. After the extraction the SPMEs were injected into a Varian CP3800 GC with an electron capture detector (GC-ECD). The injector port temperature was set 20°C below the recommended conditioning temperature for each SPME, and the GC parameters set for a 3.50 min analysis time. Elution of the DNT occurred at 2.16 min for all analyses. The results demonstrate that the mass of DNT absorbed was directly proportional to the exposure time for all SPMEs, and Polyacrylate was the most effective for extracting DNT vapor from air.

#36 Exploring the Synthesis of Febrifugine and Derivatives: Potential for Anti-Malarial Drugs

Xue-Lin Wang, Lane Lovett
Faculty Mentor: Julie Le, Department of Chemistry

Malaria is an infectious disease caused by the parasite, plasmodium, transmitted by the bites of mosquitoes. According to the WHO records, approximately 40% of the world's population is at the risk of malaria, especially in the impoverished area. Its symptoms are anemia, fever nausea; in severe cases, coma or even death. Over the years, the parasite becomes resistant to the current antimalarial drugs. Thus, discovery of an effective and affordable alternative antimalarial drugs is crucial. Febriugine, an extract from the leaves of the hydrangea plant, has 100 times more effective antimalarial activity than quinine. In this study, the progress towards the synthesis of febrifugine and its derivative will be discussed.

#37 The Vanuxem Mineral and Fossil Collection

Nathan Corbitt
Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

The Lardner Vanuxem Mineral and Fossil Collection holds great historical importance to Rhodes College. Reported as the largest mineral and fossil collection in the country in 1860, only a small part of an extensive collection remains. We are currently archiving the collection and placing it on dspace to make it available to the wider scientific community. During the past year I have been able to expanded upon previous research

about Vanuxem through the use of modern aids such as the National Archives online databases, the Library of Congress' American Memory Project, and Rhodes' ever-growing list of subscription databases including JSTOR, America's Historical Newspapers, and the American National Biography. Google's scanning project, Google Books, has also proven extensively helpful in gaining access to tomes once hidden away in permanent collections of libraries across the country. All of my findings have confirmed the significance of Lardner Vanuxem as a person: his extensive family background as contributing members to the American Revolution, mentioned in the letters of men such as Alexander Hamilton, his relationships amongst some of the greatest minds of science, and his publications as a scientist.

#38 Cloning of the SepH allele and its effect on development of a calA mutant strain of Aspergillus nidulans

Crystal Phelps

Faculty Mentors: Darlene Loprete, Department of Chemistry; Terry Hill, Department of Biology

Fungal cell walls are an important area of study because they are a good target for antifungal drugs. This lab uses mutants of the model organism, Aspergillus nidulans to determine the genes and proteins that govern cell wall metabolism. One mutant strain, R274, exhibits an altered phenotype when exposed to the chitin-binding agent, Calcofluor white (CFW) at 42C. Under these conditions R274's hyphae are pencil-thin, have a tendency to rupture at the tip, and lack cross-walls (septa). This phenotype has also been observed in the SepH mutant, which can be rescued by AN4574. We have determined that the broken gene is closely linked to the ArgB locus and the SepH gene is in that same region. Therefore, AN4574 was PCR amplified and ligated to pRG3. This construct was used to transform R274 and check for its rescuability by growing the transformants in the presence of CFW. Unfortunately AN4574 did not rescue the phenotype. However, we could not transform the SepH strain to test for the integrity of the PCR amplified gene we are cloning AN4574 from the mutant strain for sequencing. If there is a mutation in the AN4574 gene then the SepH gene is most likely broken in R274.

#39 GFP tagging of a membrane protein affecting cell wall integrity in Aspergillus nidulans

Mary Huddleston

Faculty Mentors: Terry Hill, Department of Biology; Darlene Loprete, Departmen t of Chemistry

The cell wall serves a variety of roles pertinent to fungal growth and differentiation. However, the details of cell wall assembly and metabolism in fungi are incompletely understood. We have identified cell wall mutants in the fungus Aspergillus nidulans by their reduced growth in the presence of the chitin synthase binding chemical , Calcofluor white (CFW). The strain R191, which carries a mutation designated calF, has been successfully complemented by the hypothetical gene, AN2880. Analysis of its structure reveals a transmembrane protein with 11 membrane-spanning predicted domains. However, the protein is not homologous to any known protein; therefore its function remains elusive. In order to gain insight into AN2880's role in the fungus we are tagging the protein with a fluorescent protein, GFP, to determine its location in the fungal cell. We have employed a new technique called fusion PCR to generate the chimeric protein and are currently transforming an A. nidulans strain, ku, for visualization of the tagged protein.

#40 Determination of mutant loci affecting CFW sensitivity in Aspergillus nidulens

Michael Pluta, Chris Pan, Brittany Chavez, Terry Hill

Faculty Mentor: Terry Hill, Department of Biology

The study of fungal cell metabolism is of interest because of the importance of walls to fungal growth. Two mutant strains of the fungus Aspergillus nidulans (1-49 with mutant allele calF7, and 2-217 with mutant allele calG5) show poor wall integrity through their hypersensitivity to the wall-stressing agent Calcofluor white (CFW). Separate genes located close together on Chromosome VI are able to complement the strains' respective CFW hypersensitivities, leading to the hypothesis that these genes represent the mutant loci. We investigated this hypothesis by examining the recombination frequencies between each mutation and two other mutant loci in the same region: argA1 and lysA1, producing arginine and lysine auxotrophies, respectively. Recombination frequencies between calF7 and these two loci were not statistically different from a random

pattern, indicating that calF7 is not in fact located in the predicted region of Chromosome VI. Recombination frequency between calG5 and lysA1 demonstrated statistically significant linkage (19.6% recombination frequency, based on examination of 189 progeny). Recombination frequency between calG5 and lysA1 demonstrated marginally statistically significant linkage (37.7% recombination frequency, based on examination of 138 progeny). To further clarify the apparent linkage between calG5 and argA1 and between cal G5 and lysA1, more offspring are being tested.

#41 Characterization of septation mutants in Aspergillus nidulans

Frances Benoist, Sara Gremillion, Darlene Loprete, Terry Hill
Faculty Mentor: Sara Gremillion, Department of Biology

We have identified a series of six mutant strains of the fungus Aspergillus nidulans, which lack crosswalls (septa) when grown at the restrictive temperature of 42C and which exhibit elevated sensitivity to the cell wall compromising agent Calcofluor White (CFW). Under these conditions, germlings fail to grow beyond the germ tube stage of development, due to rupture of hyphal tips and uncontrolled spillage of cytoplasm. We conducted allelism tests of these mutations in order to identify how many mutant loci are involved. Results showed that the mutation in strain RCH-49 occurs in the same locus as the mutation in strain R-274. The mutations in strains RCH-2, RCH-59, RCH-66 and RCH-83 occur at independent loci. Thus, five independent loci were found to be mutated in six strains tested. This result indicates that this screening strategy for septation mutants is not yet fully saturated.

#42 Genetic interactions between the G1 cyclin CLN3 and THI73 may link the endoplasmic reticulum to regulated cell division

Jacquelyn Hancock, Mary E. Miller
Faculty Mentor: Mary E. Miller, Department of Biology

The G1 cyclin, Cln3, is a regulatory protein that coordinates cell division by binding to and activating the cyclin-dependent kinase, Cdc28. In order for the Cln3/Cdc28 complex to regulate commitment to cell division, it must move into the nucleus. Cln3 activity is thought to be inhibited by its association with the endoplasmic reticulum (ER). Once released from the ER it is able to move into the nucleus and trigger transcription important for cell cycle progression. This pathway is functionally homologous to the Retinoblastoma tumor suppressor pathway in human cells. To understand how Cln3 is moved into the nucleus, a genetic screen utilizing a reporter consisting of the Cln3 nuclear localization signal fused to two copies of Green Fluorescent Protein (Cln3NLS-GFP) identified THI73 as important for Cln3NLS function. While the function of THI73 is unknown, it is localized to the ER and induced under low Vitamin B conditions. We find that Cln3-dependent viability is reduced in the absence of THI73 most likely due to a defect in localization of Cln3. To address this possibility and understand the mechanism that links Thi73 and Cln3 function, a high-copy suppression analysis of the Cln3-dependent growth defect in a Thi73 deletion strain was carried out.

#43 Carbon Storage of Memphis Urban Parks

Jacqueline Gentry, Rosanna Cappellato
Faculty Mentor: Rosanna Cappellato, Department of Biology

Based on 2002 Earth Day Network data, the city of Memphis, TN, releases an estimated 64 million tons of anthropogenic CO_2. This study aimed to observe the amount of carbon sequestered in Memphis parks and to compare this value to the amount of carbon dioxide emitted by Memphis. We collected data from 35 urban parks, covering 690 ha of treed area. We measured tree area coverage in parks with Google Earth Pro and used the results of a recent study done in a Memphis park, to calculate the total value of carbon stored and sequestered. We estimated that parks store 407 MtC and sequester 6% of the CO_2 annually released by Memphis. However, because an aerial coverage map does not provide an accurate measurement of the tree biomass and may not reflect the most recent changes in the parks, we additionally surveyed two parks to determine the degree of difference between the actual treed areas and those inferred from the aerial image. These measurements indicated that values based on aerial images underestimated the amount of carbon stored and sequestered by urban parks, further underscoring the ecological relevance of Memphis parks as contributing to the reduction of anthropogenic CO_2.

#44 The effects of English ivy on the biodiversity and mean DBH of tree species in Overton Park: Implications for Park Maintenance

Jennifer Lambeth

Faculty Mentor: Rosanna Cappellato, Department of Biology

Studying the effects of exotic species on natives provides information that may lead to the removal of such species and the maintenance of a healthy, native ecosystem. The effects of English ivy (Hedera helix) on native species composition and tree diameter were studied in four test patches in Overton Park in Memphis, TN. The genus or common name and the diameter at breast height (hereafter referred to as DBH) of each living tree in each test patch was recorded. Graphical analysis of the results showed very different species compositions in patches with ivy versus patches without ivy, and furthermore, calculations of Simpson's Diversity indices were different between patches with ivy and patches without ivy. This difference suggests that English ivy may affect the species diversity of an area. Graphical analysis also showed a drastic decrease in the DBH of trees in patches without ivy when compared to the DBH of trees in patches with ivy, suggesting that ivy may prevent seedlings from taking root, thereby suppressing regeneration of the forest. A t-test of the DBH data showed that the sizes of trees were statistically different between plots with and without ivy. These results indicate the need for further research of the ivy's impact on the biodiversity of Overton Park.

#45 The Impact of Huntington's Disease on the Correlation of Cortical and Striatal Mutant Neurons of R6/2 Chimera Mice

Natasha Jain, Anton Reiner, Yun-Ping Den

Faculty Mentor: Gary Lindquester, Department of Biology

Huntington's disease (HD) is a hereditary neurodegenerative disease that is carried by a dominant gene. Both an expanded and unstable repeat of the CAG gene encodes the protein huntington (Ht), leading to the cause of the disease through a mutation of Ht, which is widespread, along with mRNA, throughout the central nervous system and tissues of the body. This fatal disease is characterized by progressive cognitive and motor decline caused by the loss of neurons in the brain. The major areas of neuronal loss associated with HD are the cortex and striatum. Within the striatum, both projection neurons and parvalbuminergic interneurons are severely affected by HD. In the cortex, only selective degeneration of pyramidal cells in layers III, V, AND VI happens late in the disease. Unfortunately, it is unknown how these two areas affect each other as a result of HD: whether degeneration of cortical neurons directly cause the loss of striatal neurons or vice versa. Thus, a study was conducted to evaluate the impact and correlation of neuronal intranuclear inclusions (NIIs), or mutant neurons, of the striatum and cortex from HD. Results of this study will be presented.

#46 Using Semi-Quantitative PCR to Measure Murine Gammaherpesvirus Viral Load in Splenocytes as a Model for Epstein - Barr virus

Audrey Marsidi, Gary Lindquester, Chris Davis

Faculty Mentor: Gary Lindquester, Department of Biology

The Epstein-Barr virus (EBV), a member of the herpesvirus family, is one of the most common viruses infecting humans. It is known to cause infectious mononucleosis and is potentially oncogenic. EBV possesses a homologue to human interleukin 10 (IL-10). Human IL-10 helps regulate immune response by inhibiting cytokine production by T-cells. EBV's limited host range makes in vivo studies difficult; therefore, the lab has turned to a small animal model. In previous studies, the viral IL-10 gene was isolated and inserted into a murine gammaherpesvirus (MHV) so that its pathogenesis could be studied in vivo. Mice were infected with the virus in order to evaluate splenomegaly (enlargement of the spleen) based on splenocyte counts, quantity of infectious virus in the spleen and lungs, and quantity of latent virus in the spleen (using a reactivation assay). In this study, we optimized a semi-quantitative PCR assay to directly measure the viral DNA to quantify latent virus in the splenocytes.

#54 Gamma-Ray Spectroscopy of ^{101}Pd

Justin LeBlanc,
Research Advisor: Deseree Meyer, Department of Physics

Nuclear shape is commonly described as a function of nucleon number. The closer a nucleus approaches to a closed shell, the more likely the nucleus is to be spherical. A simple way to describe changes in the shape of a specific nucleus is as a function of its angular momentum using the E-Gamma Over Spin (E-GOS) method. We performed an experiment using the ESTU tandem Van de Graff particle accelerator at the Wright Nuclear Structure Laboratory at Yale University. In the experiment, many nuclei in the mass one hundred region were synthesized. A plethora of data was acquired as a result of this experiment, and I have undertaken the task of the analysis process. I will discuss the E-GOS method, which is the framework within which my research is being performed. I will also give a simple introduction into the analysis that is utilized in the process of gamma-ray spectroscopy, provide a summary of preliminary results obtained thus far, as well as offer an itinerary of future directions for this work. This work was supported by DOE Grant DE-FG-91ER-40609 and Rhodes CARES.

Biology 141 Laboratory Projects: Crayfish Behavior

Faculty Mentors: David Kesler, Carolyn Jaslow, Tony Becker, Rosanna Cappellato, Department of Biology

#58 Do Male and Female Crayfish, *Procambarus clarkii*, Show a Preference for Darker Substrates?
Kelly Prak, Matthew McCullough, Caitlin Smith

#59 Blue or red? The Truth Behind the Relationship of Color and Behavior
Carsen Bahn, Ashley Juenger, Erinn Ogburn, Anne Schaumburg

#60 The Effect of the Opposite Sex on Aggressive Behavior in Male Crayfish
Emily Burford, Evan Tyler, Evan Day, Jason Ballard

#61 The Effects of Gender on Crayfish Aggression
Bethany Morris, Mark Harris, Stephen Cohen

#62 The Effects of Water Salinity on Crayfish Interaction
Allison Graham, Laura Jensen, Cindy Bitters, Katherine Bandoroff, Kayla McCrury

#63 The Effect of Prior Residency on the Success of Male Crayfish Bouts
Sonia John, Ward McClellan, Betsy Parkinson, Mandi Waits

#64 The Effect of Various Extrinsic Factors on the Agonistic Behavior of Crayfish
Charlie Forbes, Jr., Jessica Fawer, Elizabeth Jeans, Griffin Salzer

#65 Effects of Crowding on Crayfish Habitat Preference
Noelle Smith, Britt Corbisiero, Alyssa Nucaro

#66 The Effects of Shelter on Crayfish Behavior
Khang Dang, Arpita Dirghangi, Stephen Powell, Zach Ramsey

#67 The Effects of the Addition of Multiple Male Crayfish on Dominance in the Presence of a Female Crayfish
Sarah Allen, Brittany Chavez, George Pugh, David Strossner

#68 Crayfish Behavior: Substrate Coloration Preference"
Cody Burrum, Sallye Hartman, Freda Lindsey, Molly Martin, Townley Trautmann

#69 Comparison of Agonistic Behavior in Male and Female Crayfish
Josh Anderson, Allison Conn, Kim Hall, Anna Kolobova

#70 The Effects of Habitat Size on Crayfish Agonistic Behavior
Becky Atnip, Lee Bryant, Dani Fincher, Matt Gilbert

#71 Dominance Hierarchies in Crayfish
Rina Ishii, Stephanie Parazak, Caroline Porter, Leah Singh

#72 Crayfish Response to Predator Simulation by Moving Dappled Shade
Allison Price, Ben Waller, Micaela Moen, Lauren Foster

#73 The Effect of Temperature on Aggression
Sean Devoy, Yuriy Brodskiy, Anne Tufton, Hoang-Vu Tran

#74 Differences in Agonistic Behavior between Male and Female Crayfish
Rachel Chassan, Lauren Turner, Marrissa Scales, Nicole Jones

#75 Competitive Aggression and Intrasexual Selection in Crayfish
Alice Hilgart, Sandy Henin, Curyona Pritchard, Gustavo Huerta

#76 The effects on agonistic behaviors caused by music stimulation in crayfish
Kyle Pipkin, Jordy Feldman, Amber Owens, Blake Copeland

#77 Territoriality of Crayfish: The effect of sex on aggressive behaviors
Anna Moak, Kalli Glenn, Lydia Lancaster, Maia Henkin

#78 Is Crayfish Dominance Dependent on Gender?
Cory Smith, Jessica Thompson, Rob Koehler, Smith Scarborough

#79 Color Dependence of Crayfish Behavior
Erin Atmar, Andy Holt, Marian Howorth

#80 Do Crayfish Care?
Greg Palm, Josh Arant, Chris Pan, Konika Nahar

#81 Aggressive Behavior Patterns in Crayfish in Same and Opposite Gender Environments
Emily Bach, Andrew Campbell, Priyanka Chatterjee, Martha Rotzoll

#82 Female Crayfish Show no Preference for Dominant or Submissive Males
Jonathan Johnson, Shadana Bracy, Melissa Porter

#83 Light Sensitivities in Affecting Crayfish Agnostic Behaviors
Guy Handley, John Jackson, Wei Yu

Psychology and Neuroscience

#47 The Effect of the Type of Victimization on Punitive Justice Seeking

Anna Boureiko, Justin Sealand, Kevin Kilpatrick, Anne Bradshaw
Faculty Mentor: Julie Steel, Department of Psychology

Past research indicates that individuals are more upset and retaliate more severely when they are discriminated against for something they cannot control (such as their gender) as compared to when they are discriminated against for something within their control (such as their political beliefs) (Cota-Mckinley, Woody & Bell, 2001). Much of the past research, however, assesses reactions to a hypothetical injustice, therefore, the current student assessed participants who were personally ostracized from a group based on their gender (controllable group association), Greek status (uncontrollable), or political affiliation (uncontrollable). Following their ostracism, they read about a series of campus injustices, one of which was similar to their own recent ostracism. The researchers hypothesized that desired revenge would be greatest when the alienation was 1) based on a characteristic outside the participants' control and 2) when the injustice suffered matched the injustice in a scenario they read. Although these two hypotheses were not explicitly substantiated, additional findings regarding emotionality offer indirect support for the predictions. Females were angrier than males when reading the gender ostracism scenario. Interestingly, after being ostracized for one's Greek status, anger was much higher after reading the gender-injustice scenario (no-choice) than after reading the Greek status-injustice and political affiliation-injustice scenarios. In essence, participants elicited more anger when they were excluded from a group based on a quality they could not control (gender) than when excluded for something they could change (Greek status and political affiliation). Findings point toward future research into the important interaction between emotions and actions in justice seeking behavior.

#48 Examining the quality of classroom conversations about race and ethnicity: What is the role of the professor?

Francesca Davis, Kasharah King
Faculty Mentor: Anita Davis, Department of Psychology

Over the past twenty years, record numbers of minorities are enrolling in institutions of higher education. As a result, the need for multicultural education on college campuses has increased. Previous research suggests that the not only the quantity but also the quality of classroom interactions between peers of different racial and ethnic backgrounds play a major role in positive learning outcomes. In addition, the professor has an influence on the quality of these interactions and is instrumental to producing an environment that is conducive to such interactions. The present research sought to examine the following: (1) Are conversations about racial and ethnic diversity occurring in the classroom? (2) Do classroom interactions between students of different racial and ethnic backgrounds lead to positive learning outcomes such as growth and understanding? (3) Does the role of the professor promote or impede conversations about racial diversity in the classroom? Qualitative and quantitative data were collected at a small, liberal arts college in the south with a campus climate survey to address these questions. Results will be presented based on data collected in 2005 and 2006. Implications and suggestions for further research concerning multicultural education are discussed.

#49 Friendship Quality and General Optimism: Effects of Pre-Adolescent Peer Groups

Christopher Helbling, Brittany Chandler
Faculty Mentor: Kathryn Russell, Department of Psychology

Friendship quality and optimism are both important moderators of children's social development and success within school environments. However, past research has not examined how the two constructs relate to one another. This study examined the relation between friendship quality and general optimism in middle childhood. Participants were 12 boys and 16 girls in 4th and 5th grades from a low SES school in the southern United States. They completed a self-report questionnaire of friendship quality and peer optimism. Results confirmed our hypothesis that friendship quality and peer optimism are positively correlated, and that the correlation was stronger for girls than for boys. Results will be discussed in terms of implications regarding social development as well as adaptation within school environments.

#50 Assessing Child Social Development through the Analysis of Friendship Quality and Peer Optimism

Sumati Jain
Faculty Mentor: Kathryn Russell, Department of Psychology

Friendships play an important role in a child's social development. Recent research indicates that the quality of friendships can be just as important as the number of friendships a child has, yet little is known about the correlates of friendship quality. In the present study, one such correlate, peer optimism, was examined. We hypothesized that the relation between peer optimism and friendship quality would be positive. Participants were 28 African American fourth and fifth grade students from the same elementary school. They completed two questionnaires assessing the quality of their best friendship and their peer optimism. Results confirmed our hypothesis that the two constructs are positively correlated. Girls were also found to be more optimistic about peers than boys. Results will be discussed in terms of implications for our understanding of children's social development.

#51 The effects of enriched environment on responses to methylphenidate

Michael Hadler, Olivia Brown, Brian Darrith, Lauren Brooks, Kim Gerecke
Faculty Mentor: Kim Gerecke, Department of Psychology

In humans, greater physical and cognitive activity throughout life is positively correlated with prevention of neurodegenerative disorders. In addition, normal age-related declines in learning and memory are prevented by an active lifestyle; perhaps through prevention of gray matter loss and improvement in neuronal efficiency. In animals, this effect can be modeled using and enriched environment (EE), which incorporates enhanced social, learning and exercise elements into the living environment. Exposure to EE has been shown to increase neuron size, length of dendrites, spine numbers and synaptic density in rodent brains. The effects of EE on dampening drug seeking behavior is poorly understood; however, a recent study has indicated that EE can dampen morphine-induced reward and subsequent drug seeking behavior (Xu et al., 2007). In addition, much still remains to be understood concerning the abuse potential of amphetamine-like stimulants (i.e., Methylphenidate [MPH; trade name Ritalin]), drugs that are widely prescribed for treatment in children with attention-deficit hyperactivity disorder (ADHD). We hypothesize that EE will block any addictive effect of MPH in mice. In addition, we will also assess the impact of MPH on memory performance.

#52 Perceptions of Social Self-Concept and Peer Acceptance

Authors: Francesca Davis and Shannon King
Faculty Sponsor: Kathryn Russell, Department of Psychology

The development of a social self-concept is an essential task of middle childhood. Research shows that high social self-concept is related to high peer acceptance. The present research sought to examine whether or not children with high social self-concept are conversely more accepting of others. Participants were 12 male and 16 female, African American 4th and 5th graders in an urban public school. Students completed a measure of social self concept and completed acceptability ratings of characters from a vignette. Preliminary analysis indicates this relation is not present as expected in this sample. We discuss reasons and limitations as to why our hypothesis was not supported as well as implications of children's social development. We also discuss future research.

Economics

#53 Examination of Maslow's Theory of Human Motivation

Rebecca Luster
Faculty Mentor: Dee Birnbaum, Dept. of Economics and Business Administration

A.H. Maslow produced a theory of human motivation in which motivators are classified into five basic needs in a pyramidal hierarchy. This project investigates whether or not Maslow's theory is valid. After approval by Rhodes' Institutional Review Board, seventy-five subjects were interviewed to determine their basic needs. These needs were then sorted, removed of duplicates, and categorized by five additional subjects. The resulting systems of categorization were far different from that of Maslow. This paper will present the resulting systems of categorization as well as critically analyze A.H. Maslow's theory of human motivation.

55 & 56 Storm Water Environmental Education Program SWEEP

SWEEP is an after-school program that partners Rhodes College and Cypress Middle School to focus on science and environmental education. It was funded by an EPA grant for 2002-2003, and Associated Colleges of the South, Campus/Community Grant for 2004, Congressionally Directed grants for 2004-2007, and a HUD COPC grant for 2005-2007. This year a grant from the City of Memphis Public Works department is supporting collaborative research project by Rhodes, University of Memphis, LeMoyne Owens College, and SWEEP entitled *An Intercollege Chemical and Microbial Study of Water Sources and Quality in Storm and Non-storm Discharges Along the North Cypress Creek Storm-Drainage Channel in Memphis, Tennessee.* Rhodes students Stephanie Juchs, Whitney Ranson, Dustin Sump, and Katherine Scherer have worked with SWEEP students on the grant and a variety of other activities.

Our SWEEP partners are Cypress Middle School teacher Ms. Shelby Wilson, Principal Ms. Jenna Brandon, and Cypress Students Allandous Carson, Anthony Coleman, Rashad Cook, Ellis Davis, Joe Davis, Marquez Dickerson, LeDerrio Flowers, Chazatee Guess, Darwin Hill, Antonio King, Phyliscia Lloyd, Lawrence Mays, Torenzo Reed, and Mario Williams.

The Storm Water Environmental Education Program (SWEEP) alerts students to environmental issues in their community

Stephanie Juchs, Whitney Ranson, Dustin Sump
Faculty Mentor: Carol Ekstrom, Department of Physics (geology)

The Storm Water Environmental Education Program (SWEEP) is an after-school program dedicated to educating Cypress Middle School students about environmental issues, especially issues prevalent in the surrounding community. The children meet twice a week to discuss issues ranging from how the water cycle works to how they can conserve water in their daily lives. Additionally, Cypress Creek is used a laboratory for investigating water quality and quantity issues. The students demonstrate their knowledge in writing exercises and posters they create for Cypress Middle as well as the Rhodes community. Field trips to laboratories at University of Memphis and LeMoyne-Owen College allow the children to see how the water in Cypress Creek is tested and also demonstrate the possibility of having a career in the sciences.

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