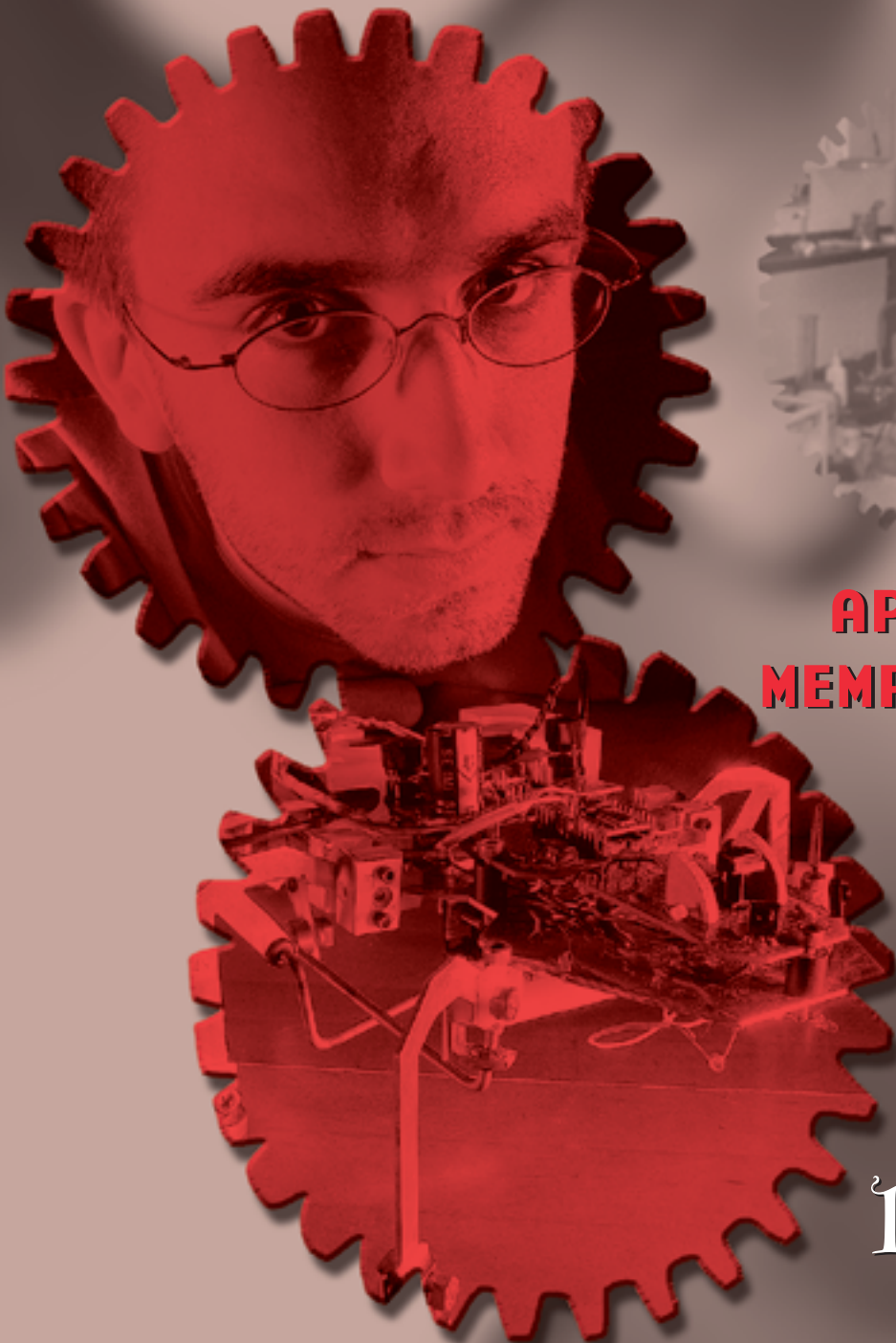


# UNDERGRADUATE RESEARCH AND CREATIVE ACTIVITY SYMPOSIUM



**APRIL 28, 2004  
MEMPHIS, TENNESSEE**



**Rhodes College**  
—1848—

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### **Symposium Planning Committee 2004**

Eric Gottlieb (Natural Sciences)  
Eric Henager (Humanities)  
David Jilg (Fine Arts)  
Thomas McGowan (Social Sciences)  
Richard Redfearn (Natural Sciences)  
Sonia Singh (Student Representative)  
Katie Jameson (Student Representative)  
Lindsay Moody (Student Representative)

## **Abbreviated Schedule:**

### **Plenary Lecture: Tuesday, April 27**

**Dr. Van Savage, B.S. Physics, Rhodes College, 1996; Ph.D. Physics, Washington University, 2001**

*Reception: Hyde Hall*                      *6:30 pm*  
*Lecture: 201 Kennedy Hall*              *7:15-8:15 pm*

**“Resource distribution networks and biochemical reaction kinetics: a unifying approach to cells, individuals, and ecosystems”**

I will begin by discussing how I chose my research path, and how my experiences at Rhodes prepared me for this path. Then I will explain the general philosophy behind my research on scaling laws in biology, including why we look for them, how general they are, and how they can be applied to disparate fields. Data will be presented that illustrate that these laws are ubiquitous, across both levels of organization as well as large ranges in time scales. Using a few basic assumptions about resource distribution networks in biological systems, allometric scaling laws that relate individual biological rates and times to body size will be derived. Similarly, I will derive the temperature dependence of biological rates and times from a few simple principles based on biochemical reaction kinetics. With these results I can then explain how the cellular, individual, and ecological levels interact, in contrast to the cellular level determining everything else. One can also speculate about theories for relating cellular and ecological phenomena to allometric scaling laws for individuals. In each case I will show data that support the predictions of these theories.

### **Wednesday, April 28, 2004: during our Symposium – a community lunch**

*Enjoy a “Ratnic” lunch with our community of scholars, on the main quad.*

### **The Student Presentation Sessions:**

*10:20 am-12:00 noon, various locations on the Rhodes campus*  
*1:00-4:20 pm, various locations on the Rhodes campus*

### **Closing Reception and Announcement of Outstanding Presentation Awards:**

*4:30-5:15 pm, Frazier Jelke Amphitheatre*  
*(Rain location: Frazier Jelke Lobby)*

### **Works by Student Playwrights:**

*5:30 pm, The McCoy Theatre*

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## **Fine Arts Oral Presentations**

***417 Clough, beginning at 1:00 pm until 3:20 pm***

***In all oral Sessions, the presenting author's name is underlined, in the case of multiple student coauthors. In all poster Sessions, it is assumed that any or all of several coauthors may be presenting.***

**1:00-1:20 Cogs of American Empire: Iconography and Text in H. C. Westermann's *Angry Young Machine***

Joe Vaughan

Faculty Mentor: David McCarthy

Department of Art

H. C. Westermann's *Angry Young Machine* (1959) is a scathing critique of the motivations for American aggression and foreign policy during the Cold War. Westermann creates this allegory through his use of text, personal iconography, and historical reference to the art of the past. It is therefore imperative to examine the iconography and text present within the sculpture with regards to the artist's own experiences and environment. *Angry Young Machine* then becomes a means to investigate politics, foreign policy, and American capitalist society during the late 50's. In his sculpture, Westermann is able to integrate his own personal experiences and beliefs into the grand scheme of American Imperialism. In this way, he condemns the society that has broken him through his wartime service, yet he avoids separating his own life from the role he played in the fighting. Westermann then discusses how a society of hollow men, robbed of their humanity, has hope for redemption. If it is through his art that he was able to save his own life, there may still be hope for the United States.

**1:20-1:40 The Uses of Complicity in Anselm Kiefer's Works of the Early Eighties: *Nürnberg***

Meghan Kiihnl

Faculty Mentor: David McCarthy

Department of Art

Anselm Kiefer's work of the early eighties uses Nazi ideology in a specific way, confusing the identities of both artist and viewer in relation to Nazism. Many have seen an appropriation of Nazi imagery and an assertion of "German-ness" in the work that continues a binary relationship between a German self and Jewish other. I argue that while Kiefer is certainly not promoting racist ideology, he also is not attempting to "normalize" the Nazi past, either by downplaying the horror of it, or by expunging its traces from the German identity.

How, precisely, does Kiefer use Nazi imagery? He suggests its continuity with a pre-war German identity, and enlists the viewer's sympathies in his supposed melancholy over the tragic complication of German identity with racist ideology. This is a pessimistic strategy, and disingenuous in the sense that Kiefer does not really mourn for a lost "Germanness". The strategy suggests the continuing ability of all humans to easily fall into step with racist and fascist ideologies that they do not understand. Such a pessimistic message does not have the auratic, authoritative quality viewers would like to read into it; instead I propose that it functions as part of a dialogue between an artist and his culture.

**1:40-2:00 Representations of Cataloguing in Haydn's "Ho viaggiato in Francia, in Spagna" and Mozart's "Madamina, il catalogo è questo"**

Caroline Vance

Faculty Mentor: Timothy Watkins

Department of Music

During the Classical period, the first encyclopedia and dictionary were published; both represented ways of ordering the known world into categories and systems. The eighteenth-century obsession with ordering extended into every realm of knowledge, from the natural sciences to the arts (as evidenced by

Rousseau's publication of a music dictionary). Interestingly, two arias from the late eighteenth century musically refer to this cultural phenomenon of ordering information. In two arias written at approximately the same time, "Ho viaggiato in Francia, in Spagna" (*Orlando Paladino*, 1782) and "Madamina, il catalogo è questo" (*Don Giovanni*, 1787), Haydn and Mozart reflect the eighteenth-century cultural tendency towards the systematic ordering of information through the use of some similar compositional techniques, including manipulation of scoring, rhythmic patterns, and melodic ideas.

2:00-2:20 **Sofonisba Anguissola: Dating Her Works at the Brooks Museum**

Ruth Houston

Faculty Mentor: Victor Coonin

Department of Art

Sofonisba Anguissola was an exceptionally talented painter of the Northern Italian Renaissance. Michelangelo admired her work, and she was commissioned by King Phillip II of Spain to serve as the court painter for his new bride, Queen Isabelle. We are lucky enough here in Memphis to have two of her paintings at the Brooks Museum. Both her *Self Portrait* and *Portrait of the Artists Sister* are dated to 1560. In 1560 Anguissola was in Spain. There are no records of any of her sisters visiting her. She would not have had time to paint a self-portrait or do a portrait of her sister because she was kept very busy documenting the couples wedding the entire year after she arrived in Spain. Also the dark and somber atmosphere of the Spanish courts greatly affected her style. The two paintings at the Brooks museum bear a greater resemblance to her portraits before her journey to Spain. Based on both biographical information and artistic style, the two paintings at the Brooks Museum should be dated several years earlier than 1560.

2:20-2:40 **Re-Reading Jackson Pollock's *Lucifer***

Zach Harris

Faculty Mentor: David McCarthy

Department of Art (History)

As a major figure in the history of modern art, Jackson Pollock exhibited influence and controversy both during his lifetime and after his death in 1956. Paintings from his classic "drip" period have been revered and denounced for a variety of reasons. In my research, I address the various critical interpretations of Pollock's painting in an attempt to reconcile the positives and negatives of such critiques and provide my own interpretation of his 1948 painting, *Lucifer*. Particularly, I theorize that Pollock's paintings were not, strictly speaking, about existential struggle and subsequent revelation, nor were they isolated to the formal problems of painting. Instead, I advance three conditions by which to interpret Pollock's *Lucifer*. One, there are elements present in the formal and existential composition of this work that allude to Pollock's adjudicating the example of Benton, Miro, and Picasso. Two, Pollock is intimately involved with the grand history of Renaissance painting, most notably Michelangelo's narration about the fall of humankind. Three, Pollock, through his use of the Lucifer motif, positions himself within a history of avant-garde gambits. By way of this interpretation, I hope to encourage a re-evaluation of Pollock's other classic paintings from the years of 1947-1950.

2:40-3:00 **A Simple Representation of a Complex Play: Costume Designs for Peter Shaffer's *Equus***

Morgan McCrary

Faculty Mentor: David Jilg

Department of Theatre

The costume design for Peter Shaffer's *Equus* was an evolving process that began with a very complicated picture and was streamlined to better serve the script as it was staged. While the majority of the costumes were contemporary in design, historical and technical research were considered. This research focused on prehistoric and Greco-Roman representations of horses and the practical application of this information toward the creation of five copper horse-head masks. The most important source of information, however, was the rehearsal process itself. The staging of the play was very much a

collaborative effort, and as the action onstage was pared down to its essential elements, the costume designs went through similar changes. The end product, as seen in the McCoy Theatre's 2003 production, was a design that compliments the intricate issues of the play by maintaining simplicity of color, line and form.

3:00-3:20 **Martha Rosler: A Willing Death**

Katie Lamb

Faculty Mentor: Professor David McCarthy

Department of Art

From 1967-1972 Martha Rosler created a series of collages called *Bringing the War Home: House Beautiful* that placed Vietnam soldiers and suffering citizens in the homes of upper middle class Americans. The obvious political undertones of such work have lead to the grouping of her as simply a political artist or an activist artist. Rosler's work and goals however do not fall entirely within the realm of activist art. Unlike other political artists, Rosler's willingness to place focus on the work, and the viewer expose the communicative and representational nature of art. Therefore, Rosler can be better understood as an artist whose personal politics and work exemplify what Roland Barthes predicts in, "The Death of the Author," when applied to art historical instead of literary texts.

**An Additional Fine Arts Contribution to URCAS 2004:**

**The Department of Theatre presents works by student playwrights**

*Wednesday, April 28, 2004*

*5:30 pm*

*The McCoy Theatre*

*Sacrifice*, by Kendall Karcher

*Mind Games*, by Lauren Jarrell

*As Two Men Meet on a Moonless Street*, by Christopher Stout

*Composition*, by Caleb Burke

The playwrights were students in Professor Stephen Schottenfeld's Dramatic Writing class/Fall 2003.

The pieces are performed, directed and designed by students in Professor David Jilg's Theatre Arts class/Spring 2004.

Lighting designs by students in Professor Laura Canon's Lighting Design class/Spring 2004.

## **Humanities Oral Presentations – Session 1**

***108 Buckman, beginning at 1:00 pm until 3:40 pm***

### ***1:00-2:20 Panel: Authenticating (Legitimizing) Relics: The Rise and Fall of the James Ossuary***

#### **1:00-1:20 The James Ossuary: A Religious Relic?**

Lindsey Seifert

Faculty Mentor: Bernadette McNary-Zak

Department of Religious Studies

This project explores the impact of the James Ossuary as a tangible relic on the contemporary religious imagination. The Christian world in Antiquity was littered with relics, making the holy readily accessible to many worshippers. Recently, many religious people have enthusiastically responded to the discovery of the James Ossuary, which is the first archaeological find related to Jesus to appear in contemporary time. These religious people are seeking to gain access to the holy through the veneration of the ossuary as a religious relic. Therefore, this project explores the construction of the ossuary as a sacred object and examines the social processes by which the ossuary has been legitimated and authenticated by religious persons.

#### **1:20-1:40 The Hijacking of Ethos: The Academy and the “James Ossuary”**

Robert Edgecombe

Faculty Mentor: Milton Moreland

Department of Religious Studies

The emergence in late 2002 of a first-century ossuary, or bone box, bearing the inscription “James, son of Joseph, brother of Jesus” created an immediate and awkward controversy for scholars in the fields of epigraphy, archaeology, and New Testament studies. As the news media publicized the box and trumpeted its significance as a possible “link” to Jesus of Nazareth, as the artifact was aggressively marketed by journalist Herschel Shanks, and as the Royal Ontario Museum in Toronto prepared a display for it, scholars’ voices were introduced and circulated in ways which frequently distorted the discourse about the ossuary’s authenticity and meaning. Some important scholars were largely ignored, some had their ideas stripped of explanation or otherwise misrepresented, and some were forced to react to the ossuary on record under astonishingly unprofessional circumstances. Others, meanwhile, became (and remain) conspicuous commentators on the ossuary despite little expertise in the area or, more insidiously, as a protection of their commercial interests or theological polemics. This study is an effort to evaluate the propriety and meaning of that response for scholars as they continue to think about the ossuary episode, as well as an attempt to engage broader questions about such critical dynamics as the interaction between the press and the academy, the public vetting of archaeological objects, and the prospects for the more responsible dissemination or complex, highly specialized information.

#### **1:40-2:00 Mary Wasn’t a Virgin”: The Media’s Production of Truth**

Mary Claire Giffin

Faculty Mentor: Ryan Byrne

Department of Religious Studies

On October 21, 2002, Biblical Archaeological Review announced in Washington, D.C. the discovery of the James Ossuary. The James ossuary was an ossuary, or “bone box,” that held an inscription on its exterior stating, “James, the son of Joseph, the brother of Jesus.” Since its discovery this limestone box has generated much discussion among scholars and a great deal of media coverage. One of the most interesting and debatable subjects of coverage was a controversy that arose concerning the inscription itself, for this inscription blatantly states that, in fact, Jesus did have a brother. Such a claim questions one of the foundational beliefs in Catholicism: the perpetual virginity of Mary, the mother of Jesus. Despite much coverage concerning the authenticity of the James ossuary itself, the coverage concerning the perpetual virginity of Mary created powerful and insinuating headlines

that shook the very foundations of the religious community. This paper demonstrates the power one finds in language, this language's influence over its human audience, and the media's brilliant and challenging utilization of this everyday activity that is universally human.

2:00-2:20 **Experiencing the Bone Box: The James Ossuary and the Royal Ontario Museum**

Marion Heckethorn

Faculty Mentor: Tom Bremer

Department of Religious Studies

The James Ossuary, a limestone funerary box, came to public attention in October 2002 because of its inscription, "James, son of Joseph, brother of Jesus." It was displayed in the Royal Ontario Museum in Toronto. My paper details the experiential aspects of the James Ossuary as a religious object on display in a museum setting. I investigated the planning and considerations that went into the museum's vision of how to evoke certain emotions or reactions from its visitors. Research involved collecting primary archival materials and personal interviews with church leaders, biblical scholars, laypeople, museum workers, and residents of Toronto. This paper delves into the actual display of the bone box and visitors' experiences of it in the museum setting. Whether or not the box actually held the bones of Jesus' brother, its impact on those who saw it provides insight into how museums elicit religious experience.

2:20-2:40 **Break**

2:40-3:00 **Containment Costume**

Greta Clinton-Selin

Faculty Mentor: Dee Garceau

Department of History

The 1950s was a decade that placed a lot of emphasis on reordering gender. Following World War II, women who had been employed in war work on the homefront and men who had served in the trenches came back together at home, and both had to reinvestigate what it meant to be men and women during peacetime. Women's clothing styles of the time symbolized women's idealized role and status within Cold War culture. Popular silhouettes of the decade emphasized – even exaggerated – feminine figures, both as a way of reemphasizing expectations for physical as well as social and economic differences for men and women. In the 1950s, the styles of women's dress, particularly silhouettes created by strict undergarments evoked the Victorian ideal of beauty and its connotations of domestic and submissive ideals for fragile-looking women. More pointedly, however, the artificially sculpted female form reinforced the Cold War rhetoric of containment and control of everything and everyone who could potentially disrupt the reigning capitalist, militant, patriarchal American order, even America's women.

3:00-3:20 **The Crossroads of Community: Lewis Mumford, Jane Jacobs, and the Meaning of 'Renewing' America**

Robert Edgecombe

Faculty Mentor: Jeffrey Jackson

Department of History

In 1961, two significant commentaries on the history, condition, and possibilities of cities appeared: Jane Jacobs' *The Death and Life of Great American Cities* and Lewis Mumford's *The City in History*. Set in the context of their publications—a decade after an unprecedented federal effort at urban renewal in the United States—these works and the ideas propagated within them and in other writings by their authors constitute an important dialogue about the ways in which urban planners understood cities and about the effects of their projects on city residents. This project evaluates Mumford's and Jacobs' competing arguments about how the organization of social spaces like parks, buildings, streets, promenades, and housing could improve or impair the possibilities of achieving successful democratic communities within America's cities—communities which fostered healthy degrees of interaction, security, commercial viability, and participation. For these two critics those possibilities were often very different in ways that were interesting and continually meaningful.



3:20-3:40 **A Sisterhood of Patriarchy: Sororities and Gender Norms**

Caroline Bishop

Faculty Mentor: Dee Garceau

Department of Women's Studies

In a society in which feminism has become a respected political and academic endeavor, it is tempting to look to college sorority as an institution that might offer positive reinforcement of feminist ideals and a truly transformative concept of "sisterhood". One might hope that the women in these sororities have learned to work together to erase the practices of patriarchy. However, in my paper I utilize numerous studies and the critical examination of my own experiences to prove that the college sorority does more to promote than to obliterate the androcentric model. I demonstrate that it is through the process of institutionalization that these women come to accept that the end result of the sorority experience ought to be homogamy (marriage with a man of appropriate social and ethnic background). Thus, united with the common goal of attaining a husband rather than the somewhat saccharine ideal of "sisterhood", sorority women work together to achieve status for themselves so that they might attract a proper mate. In this way they are reinforcing, even encouraging, a system that keeps them under its heels.

**Humanities Oral Presentations – Session 2**

***110 Buckman, beginning at 1:00 pm until 4:00 pm***

1:00-1:20 **Modificación de los elementos fantásticos en “La biblioteca de Babel” y “La muerte y la brújula” de Jorge Luis Borges**

Caroline Vance

Faculty mentor: Kathleen Doyle

Department of Modern Languages and Literatures

Este trabajo propone considerar los enlaces entre estos mundos distintos creados por Borges en cuanto a la teoría de la literatura fantástica sugerida en la obra The Fantastic por Tzvetan Todorov. Todorov sugiere que el género de la literatura fantástica ha sido adaptada para la época moderna en forma del cuento policial. Explica que tanto la ficción policial como la ficción fantástica depende de la duda del lector creada por la ambigüedad. En los cuentos considerados aquí, la ambigüedad se crea de maneras distintas, pero se resuelve de maneras semejantes. En “La biblioteca de Babel,” la ambigüedad tiene que ver con la existencia del universo propuesto por Borges. En el segundo, “La muerte y la brújula,” la duda se crea mediante la descripción de un asesinato brutal y la investigación del asesinato. Entonces tenemos un cuento que parece ser más o menos fantástico por razones de posibilidad y otro que parece policial. Este estudio propone ver la ambigüedad creada en cada obra y analizar los rasgos fantásticos (o no fantásticos) de cada una. El resultado antevisto es que estos dos cuentos borran los límites de la ambigüedad que se emplea para crear un cuento maravilloso/fantástico y la que se emplea para crear un cuento policial.

1:20-1:40 **La teoría de la monstruosidad en el contexto histórico: una crítica de los relatos de Emilia Pardo Bazán y Carmen de Burgos**

Kristen Bach

Faculty Mentor: Kathleen Doyle

Department of Modern Languages and Literatures

La definición de lo fantástico no puede ser estudiada sin examinar las teorías diferentes, particularmente las de los autores que creen que la historia y lo fantástico son inseparables. Algunos autores piensan que Tzvetan Todorov, el crítico más frecuentemente asociado con la teoría de lo fantástico, no incorpora el elemento importante de la historia y el contexto social en relación con lo fantástico. Una teoría histórica se enfoca en la relación entre la imaginación de la mujer durante su embarazo y los eventos que causan que el niño nazca con una mutación. El nacimiento de los bebés con una mutación ha inspirado el estudio de los monstruos y la imaginación de la madre, la teratología.

Hay relatos por Emilia Pardo Bazán que se consideran fantásticos que se llaman “El hijo de alma,” “El antepasado,” y “Las espinas.” Cada relato contiene la teoría sobre la imaginación de la mujer; sin

embargo, desde que hay un elemento de la historia, los relatos deben de estudiarse en relación con el momento histórico y social. Además, este estudio incluye un relato por Carmen de Burgos, “La mujer fría.” En conclusión, las teorías de la maternidad y la monstruosidad sugieren que las ideas de lo fantástico pueden cambiar mientras cambia la sociedad también.

1:40-2:00 **Lo fantástico femenino**

Erin E. Dicke

Faculty Mentor: Kathleen Doyle

Department of Modern Languages and Literatures

El género de literatura gótica y fantástica es indudablemente uno muy complejo y fascinante. Algo que me interesa es cómo el uso de lo fantástico, lo gótico y lo sobrenatural es una gran preocupación en las literaturas hispánicas del Siglo XIX. Hay temas centrales de este género que son predominantes y que representan la base de los textos escritos por autores hispánicos como los examinados a través de mi investigación. He investigado ciertas obras porque, además de seguir “la norma” de textos góticos y fantásticos, ellas revelan un gran cisma entre lo que significan “masculino” y “femenino” y cómo funcionan estos arquetipos en la literatura fantástica. Lo que específicamente voy a examinar en mi trabajo final son las varias representaciones de las mujeres en las literaturas hispánicas del género fantástico y gótico. Presumo que hay ciertas convenciones subyacentes del papel de la mujer que están reveladas en las obras examinadas y que los autores, de una manera u otra, llaman la atención a los problemas con los papeles de género aceptados durante esta época. Además, estas convenciones difieren entre los autores masculinos y las autoras femeninas. Demostraré que las convenciones de la literatura fantástica y gótica facilitan un espacio apropiado para las representaciones de la mujer. Concluyo que los autores masculinos utilizaban lo fantástico y gótico para representar a la mujer de otra manera que las autoras femeninas los utilizaban.

2:00-2:20 **¿En quién debemos confiar?: El uso del narrador y el papel del lector en las novelas El balneario y El cuarto de atrás por Carmen Martín Gaité**

Caroline Hood

Faculty Mentor: Dr. Kathleen Doyle

Department of Modern Languages and Literatures

Este trabajo va a explorar el papel del narrador y del lector en las obras fantásticas, específicamente las de Carmen Martín Gaité. Típicamente en las novelas fantásticas de Martín Gaité, los narradores manipulan al lector y causan confusión. Es decir, cuando hay múltiples narradores, hay demasiadas perspectivas. Hay también complicaciones con los narradores en primera persona, porque le es difícil al lector decidir si el narrador es fidedigno y si hay otros factores (tales como la locura, etc.) que están afectando la versión de la historia del narrador. Recíprocamente, la falta del diálogo o el silencio también influyen al lector de una obra fantástica. El discurso, o la manera de que un narrador narra, dice mucho sobre el tono de una obra fantástica. Según lo visto en las novelas de Martín Gaité, los narradores pueden influir la tensión dentro de una novela fantástica y la interpretación (y el involucramiento) del lector. Este trabajo examina el uso del narrador y relación con el lector, los personajes de la novela, la voz femenina que critica las estructuras sociales, y los elementos fantásticos en las novelas El balneario y El cuarto de atrás por Carmen Martín Gaité.

2:20-2:40 **Lo fantástico en práctica: una aplicación de la teoría a la literatura**

Neal McGough

Faculty Mentor: Kathleen Doyle

Department of Modern Languages and Literature

Lo fantástico es un género literario a veces difícil de definir. El volumen de trabajos que tratan de identificar tendencias en textos del género, sin embargo, es enorme. El libro conocido como el trabajo definitivo sobre el tema, Lo fantástico por Tzvetan Todorov, es aplicable a muchos textos fantásticos. Esta presentación aplica la teoría de lo fantástico desarrollado por Todorov a Leyendas por Gustavo Adolfo Bécquer.

2:40-3:00 **Break**

3:00-3:20 **Are You Lookin' at Me?: An Exploration and Redefinition of the "Masculine Gaze"**

Brenna Ragghianti

Faculty Mentors: Ellen Armour and Leslie Petty

Women's Studies Program and Department of English

In 1989 Laura Mulvey, a feminist film theorist, wrote a seminal essay entitled "Visual Pleasure and Narrative Cinema" exploring the gaze within dominant patriarchal society. Defining it as the "male gaze," Mulvey positions her theory within that of Jacques Lacan and Sigmund Freud, using psychoanalytic theory for a feminist debate. Critics of Mulvey assert that she uses an unnecessary male/female binary, inappropriate for dealing with the gaze. Because of this binary, many feel that she does not account for other gazing possibilities within her theory, and in the process, forces men into an active role and relegates women to a passive role.

In this paper, I will begin with the definition of gaze and expound upon it throughout my discussion of the topic. First, I plan to explore the various theoretical analyses of the gaze, beginning with Laura Mulvey and then using some of her critics as a basis for rebuttal. Second, I will redefine gaze, or masculine gaze as it is often known, creating "dominant," "alternative," "oppositional," and "mutual" gazing categories to take its place. In order to do so, I will examine the films *Basic Instinct* (1992) *The Girl* (2000), *Far From Heaven* (2002) and *Benny and Joon* (1993).

3:20-3:40 **Surfaces and Environments: The Interpretive Confusion behind Barthelme's *Snow White* and Television**

Mia Hood

Faculty Mentors: Tom Cohen, Rob Canfield, and David McCarthy

Department of English

Donald Barthelme's metafictional novel *Snow White* incorporates fragments of trash from the pop-television world into its textual collage. As a result, the overall effect of the novel resembles the overall effect of watching television. Both media transform meaning into flattened images, exhaust narrative forms, erase history, and decenter readerly expectations and the notion of an omnipotent author-figure. While Barthelme uses transformation, exhaustion, erasure, and decenteredness to liken his text to the televisual screen, these devices are organic to television's medium.

Upon closer examination, however, we discover that the devices at hand supply evidence for two opposing interpretive models: the surface and the environment. We can understand the text as either a surface built up and stylized by aesthetic images or an environment that welcomes everyone – author, critic, reader, and character – into the narrative fold. For the novel, Barthelme-the-author's presence precludes an exclusive interpretation of the text as environment. For television, the system of exchange values that commodifies the audience's attention span precludes this environmental interpretation. The inevitable tension between these two models allows us to understand the author's role in the novel and capitalism's role on television.

3:40-4:00 **Primitivism vs. Primitive Art: the Differences between Submission and Subversion in the Art of Jean-Michel Basquiat**

Allison Brown

Faculty mentor: Rob Canfield

Department of English

"Primitivism Versus Primitive Art: the Differences between Submission and Subversion in the Art of Jean-Michel Basquiat" is a researched critical analysis of several of the artistic works of the late Basquiat and an evaluation of their cultural discursive content in the iconography of the pieces. The critical focus of the piece is to identify and analyze how Basquiat's art defines, portrays, and counteracts the conscription of cultural Others (specifically African Americans) into essentialized and determinist notions of specific 'Otherhood.'

The paper evaluates four specific paintings in which appear reoccurring symbols such as a crown, a halo, or a famous black cultural icon. Basquiat's art uses these symbols as an exposition of and (alternative to) the roles superimposed onto a collective black psyche by socially constructed ideals of "blackness." Within the parameters of this visual symbolism, Basquiat's art not only displays the modes of cultural conscription into a predetermined social role; it also examines the effects of this (mis)representation on a cultural 'black' identity. In doing so, Basquiat's art offers a radical means of resistance to the cultural marginalization of "Otherness" and the signifying discourses of difference that consign Others to society's periphery.

### **Humanities Poster Presentations**

***Buckman Foyer, beginning at 1:00 pm until 4:00 pm***

#### **Blessings or Blunder: An Exploration of Wages and Benefits of Employees on College Campuses in Memphis**

Elza Crocco

Rachel Frantz

Lauren Neupert

Shelton Oakley

Veena Rangaswami

Katherine Stewart

Faculty Mentor: Gail S. Murray

Department of History

The purpose of our project is to investigate the wages and benefits of campus staff including Aramark, housekeeping, campus security, physical plant, and bookstore employees at three colleges/universities. Our hope is to compare the various results found at each of our investigation sites: the University of Memphis, Christian Brothers University, and Rhodes College. We also hope to uncover any wage disparities or inequalities between public, private, and religious-affiliated schools. Each group member will be involved in creating a general questionnaire, survey, and interview outline to be used in our investigation. With the permission of each school, we plan on interviewing the various employees, administrators, and students. Our expectations are broad; hopefully, we will be able to realistically compare the wages and benefits at each school, the influence of size, religious-affiliation, and public versus private schools, along with the attitudes and emotional benefits or consequences of the employees being observed. These results are valuable in that they shine light on the lives and hard work of those employees who often go unnoticed as well as reminding us and others to be appreciative and aware of the wage disparities of many hardworking Americans.

#### **The Real Cost of Public Education: Limitations on Student Involvement for the Working Poor**

Meg Chambers

Leigh Coburn

Katherine Mauzy

Raven Scott

Faculty Mentor: Gail Murray

Department of History

This project will investigate the real cost of attending public school in Memphis. We will examine the costs for students at two different elementary schools, Caldwell and Snowden, and two different high schools, Northside and White Station. The student bodies of Caldwell and Northside are mainly low-income students, whereas the students in Snowden and White Station are more mixed between low-income and middle-income students. In order to determine the cost of public school, we will look at the price of essentials, such as uniforms, meals, and school supplies. We will also look at the cost of being involved in extra-curricular activities or taking more advanced classes. For this we will determine the cost of activities such as participating in a sport, playing a musical instrument, taking Advanced Placement exams, going on field trips, and other expenses for involved students. The

purpose of determining the costs involved with public education is to examine the limitations on involvement for low-income students, and to assess the accessibility of these school necessities to the working poor.

### **“Memphis Daycares: Are You Getting What You’re Paying For?”**

Sara Connaughton

Ashley Wells

Lauren Dodd

Becca Eza

Jenny Schneider

Faculty Mentor: Gail Murray

Department of History

Our project investigates the availability and quality of low-cost daycare in Memphis and seeks to determine how working-class daycare options compare with more expensive daycare centers accessible only to the middle and upper classes. We will select three daycare centers, each from a different price range, and compare the centers on the basis of employee skills and training, transportation options, child to teacher ratio, cleanliness, meal availability and nutrition, curriculum, and hours of operation. We will gather information both by conducting phone interviews as prospective parents and by visiting the centers to observe first-hand their facilities and services. We anticipate a correlation between the cost of a facility and its level of quality, with working-class children thus receiving fewer opportunities and less enrichment in daycare than do children of higher economic status.

### **Getting There on Time: Public Transportation in Memphis, TN – Costs, Benefits, Barriers**

Valery Krieg

Elokin Capece

Sheria Holmes

Faculty Mentor: Gail Murray

Department of History

This project seeks to investigate MATA, the public transportation option in Memphis, Tennessee in order to determine the practicability of the bus and trolley car system for the working poor. The real costs of public transportation to the working poor, i.e. additional time spent in transit as compared to private car use, will be evaluated in relation to benefits provided by the system. Barriers to accessing public transportation will be assessed as well. Through the use of three different scenarios, the public transit system will be evaluated based on the real life feasibility of navigating the system. Interviews will also be conducted with frequent MATA users in order to determine common perceptions regarding Memphis public transit. This project will demonstrate the difficulty of using the system as well as the hidden cost of riding the bus. It will also offer possible suggestions for improvement.

### **After School Care: Available for Everyone?**

Brooke Raushel

Dorothy Crimi

Mira Patel

Lori Dunn

Faculty Mentor: Gail Murray

Department of History

This research project proposes to examine after school care programs for low-income families with children who live in the Hunt Village/Greenlaw neighborhood in Memphis, TN. This neighborhood consists of the working poor, many of whom are unable to supervise their children after school. The four programs examined were Holy Names School after school program, the New Horizons Children’s Academy Day Care, the Memphis Public Library, and 1 of the 6 Memphis Boys and Girls Clubs. These programs were evaluated on the basis of how many children utilized them, cost, transportation from various schools, supervision, as well as other factors. These factors are important and effect low-income families and the development of their children. This project aims to identify

costs and benefits of these various programs and to demonstrate the need for affordable, supervised after school care for the children of the working poor.

### **Smart Girls: Developing Educated and Aware Young Women**

Sheria Holmes

Charley Broswell, Coordinator, Boys and Girls Club

Faculty Mentors: Dee Garceau and Carla Shirley

Women's Studies Program

I have been working with teen-age girls at the Ira Samelson Boys and Girls Club facilitating a program called Smart Girls. This program has given me the opportunity to have an active role in girls' lives in the Memphis community. I have seen first hand the problems and issues girls in Memphis come in contact with such as drugs, alcohol, sex, and pregnancy, and have helped them solve or at least deal with some of these issues. I believe it is important that this information be presented to the larger community because girls at this age are very vulnerable to easily solved problems. With education and communication we can develop a group ready to function in a male dominated world.

### **Social Sciences Oral Presentations – Session 1**

***302 Clough, beginning at 1:00 pm until 4:20 pm***

#### **1:00-1:20 Archaeological Evidence of Hierarchical Organization of the Ancient Maya**

Leslie Isaacman

Faculty Mentor: Peter Ekstrom

Department of Anthropology and Sociology

This paper presentation delves into Mayan archaeology from a socio-political standpoint. In it, I will discuss the various ways in which the archaeological record displays evidence of class ranking and hierarchy. More specifically, I will present the decentralized, centralized and dynamic models of socioeconomic organization and identify the material manifestations of various class levels as distinct in each method. The third model, the dynamic model, presents a more realistic characterization of sociopolitical and socioeconomic integration.

The site that I will focus on is Minanha, Belize. This site is at the juncture of 2 well-traveled path systems, between the major sites Caracol and Naranjo, which allows for more accurate comparison and contextualization. The site epicenter is a raised elite residential/ritual acropolis in the north and lower, but also raised, areas to the south containing ritual, administrative, and residential components. In comparison, the site periphery is most likely the dwelling area of a "lower" sociopolitical class society. I will be explaining the spatial differentiation of "lower" versus "upper" class societies in one community area and how this differentiation is manifest in the archaeological record.

#### **1:20-1:40 Tituba as a Tool of History and Fiction**

Erin Hoekstra

Faculty mentor: Professor Peter Ekstrom

Department of Anthropology/Sociology

Tituba, often characterized as the instigator of the Salem Witch Trials, lacks identity, biography, and history. In historical documents, Puritan clergy and witch trial officials gave Tituba the identity which survives today, that of "a slave originating from the West Indies and probably practicing hoodoo." In addition, Tituba has become a character used and manipulated by authors in their own fictional accounts of the Salem Witch Trials. Due to her lack of a certain historical identity, Tituba has become a fictional character who is used to embody ideals and ideologies of the authors. For instance, Arthur Miller in *The Crucible* writes during the era of the Red Scare and McCarthyism, and Maryse Condé in *I, Tituba, Black Witch of Salem* uses Tituba to embody the victims of slavery and colonization. Thus, Tituba assumes a wide variety of identities that reflect social mores, racial stereotypes, and authorial intentions. My paper will trace the historical and fictional identities of Tituba analyzing the historical contexts of these texts as well as authorial intention and prejudice.

1:40-2:00 **Cooperative and creative storytelling of fantastic worlds: An ethnographic look at “Dungeons and Dragons.”**

Ryan Thames

Faculty Mentor: Professor Susan Kus

Department of Anthropology and Sociology

Ethnographic fieldwork involving participation in another’s culture allows the social scientist to go beyond second-hand research and distanced observation to achieve first-hand engagement with a cultural scene and an experiential rapport with members of the culture studied. The method of participant-observation has proven invaluable to my understanding of the cultural scene of “role-playing” gamers. “Role-playing” games such as “Dungeons and Dragons” and their “gamers” are often stigmatized due to the use of “alienating” jargon and involvement in fantasy themes that appear to non-gamers as a deliberate distancing from mainstream society and “reality”—stigma not attached to video games with similar jargon and themes. Through participation in sessions of a game of “Dungeons and Dragons” and dialogue with players and a “game-master”, I discovered another side to this oft-misunderstood culture. Such “gaming” elicits active and creative imagination instead of “video stupor”. It utilizes dice and rules to avoid the endless “I shot you!/ No you didn’t!” arguments typical of “Cowboys and Indians” games on the playground so as to place the most importance on storyline. My study discusses how these rules provide a domain for rich, cooperative storytelling in a culture where such imagination is given few outlets.

2:00-2:20 **Domesticating the “Exotic”: Yoga by and for Americans**

Christine Coy

Faculty Mentor: Professor Susan Kus

Department of Anthropology/Sociology

The ethnographic method, which emphasizes the necessity of active participation in the culture or cultural scene one is studying, can enable the researcher to provide a more detailed and holistic account of that particular environment. In order to go beyond the impoverished popular stereotypes of yoga and yoga practitioners in the U.S., I undertook a study to not only observe but also to participate in yoga classes and a community of yoga practitioners at Midtown Yoga in Memphis. In the last five years, the practice of yoga in America seems to have become increasingly popular. Fashion and health magazines attest to the strengths of the practice by supplying information concerning its health benefits while highlighting celebrity practitioners. “Yoga gear” can be found advertised in magazines, name-brand boutiques, and even low-priced super-stores. The popularity of the practice can be observed in the increasing numbers of young, pop-culturally informed participants. The popularization of this ancient and “exotic” practice has led me to examine in more detail the “how” and the “why” of the “Americanization” of yoga.

2:20-2:40 **Lights! And Camera! Focus on the Action: Behind the Scenes of Independent Filmmaking.**

Eliza Hanson

Faculty Mentor: Professor Susan Kus

Department of Anthropology and Sociology

While we may all be born with the potential “to live a thousand different lives”, as the anthropologist Clifford Geertz asserts, we usually end up living only one. In order to enrich this one life we live, anthropologists argue that we need to explore some of those thousand other lives, whether on a distant shore or close to home. This semester I undertook an ethnographic study of a cultural scene close to home as I interned on the set of an independent film, “40 Shades of Blue,” being filmed in Memphis. Hollywood makes hundreds of movies a year, few making it to the big screen, and employs thousands of people whose public and gregarious lifestyles are our daily tabloid fare. However, the parallel world of independent filmmaking has remained small, select and private. This select group of people work in intense, intimate and intricate circumstances that are just as drama filled as the films they create. My

study attempts to focus the lights and “camera” on the action of the cultural scene behind the movie scenes being filmed on the set of one independent film production.

2:40-3:00 **Break**

3:00-3:20 **De Cleyre Cooperative: “The ‘real’ Real World” of Communal Living**

Mary Claire Giffin

Faculty Mentor: Susan Kus

Department of Anthropology/Sociology

The art of ethnography allows the field of anthropology to introduce different cultures or aspects of “other” cultural scenes to an audience often unaware and uneducated about them. Ethnography educates the world about the world, and therefore can bring understanding to the self through the “Other.” This semester I engaged in an ethnographic study at the de Cleyre Cooperative in the University of Memphis-Highland area of Memphis. This community home was founded in 1996 by self-proclaimed anarchists. Today, members of the cooperative continue to derive inspiration and direction in their lives and lifestyle from anarchist philosophy. Anarchy and community, as paradoxical as they may seem at first glance, create an eclectic cultural scene at the de Cleyre House. This scene includes subsistence gardening, environmental awareness, material minimalism, communal deliberation in problem solving, artistic creativity, and rich friendships. My study explores how together these features contribute to making the de Cleyre Cooperative a determined community committed to making the world a better, healthier, and more understanding place to live.

3:20-3:40 **“Family Arrangements and Romantic Relationships”**

Leah Coffman

Faculty Mentor: Dr. Carla Shirley

Anthropology/Sociology Department

This study is a qualitative, exploratory look at the relationship between family arrangements and young adults’ attitudes towards the importance of romantic relationships. This study looks for patterns of meaning in a series of in-depth interviews conducted by the researcher with Rhodes College students. Participants are asked to categorize themselves as having grown up in one of three family arrangements, a married arrangement, a single parent arrangement and a stepparent arrangement, and then asked to explain why they chose this category. Participants are then asked a series of questions about their perception of their parents’ relationship. In order to discuss romantic relationships, participants are asked to rank and explain the importance of various aspects of life, such as, career, family, romantic relationships, friends and religious life. They are also asked to define and explain aspects of romantic relationships such as, the definition of a serious relationship and how do you know when its time to end a romantic relationship. A discussion is created through the use of open-ended questions and probes revealing the rich and dynamic layers of how young adults see the importance of romantic relationships and how they relate that to the family arrangement in which they categorized themselves.

3:40-4:00 **The Death of the Mall of Memphis**

Katherine Mauzy

Faculty Mentor: Mike Kirby

Urban Studies Program

This project will investigate the death of the Mall of Memphis. At one point, the Mall of Memphis was considered to be the premiere shopping and entertainment location in the city. However, like many other urban areas across the United States, the growth and development of Memphis resulted in businesses transformations that ultimately caused the failure of the Mall of Memphis. Several hypotheses have been made in order to explain the failures of these abandoned malls. The three hypotheses in this project are that location, competition, and demographics caused the abandonment of the Mall of Memphis. These hypotheses will be used to examine the dead Mall of Memphis as it compares to three other malls in the area. Hickory Ridge, Oak Court, and Southland have been chosen for this comparison due to their close proximity to the Mall of Memphis and their possible impact on the failure of the mall.



Literature, census information, crime information, a consumer survey, business evaluations, and specific information pertaining to each of the individual malls in Memphis, will be used in combination to test the three hypotheses and to determine the reason for the death of the Mall of Memphis.

4:00-4:20 **The Success of Community Development Corporations in Memphis**

Ashley Arnold

Faculty Mentor: Michael Kirby

Urban Studies Program

Having had the opportunity to be an intern with a Memphis City Community Development Corporation, The Works, Inc., Ashley Arnold has developed an interest in the success and impact of these organizations to their community. For her senior project she has chosen to contact the local Community Development Corporations to collect data on their various projects, developments and investments. By utilizing the Geographic Information System (GIS), Ashley will present the collected data in a variety of maps which will depict the physical success and impact of Community Development Corporations in the Memphis area. Through the collection of data and analysis of literature Ashley's project will help to show the comparison both between Memphis City Community Development Corporations and to Community Development Corporation models found in literature. Her project is welcomed by the CD Council of Memphis and the local Community Development Corporations as an analysis of what is being done and where the majority of projects are based.

**Social Sciences Oral Presentations – Session 2**

***Frazier Jelke Lecture Hall A, beginning at 1:00 pm until 4:20 pm***

1:00 1:20 **Foreign Policy Divergence among Staunch Allies: An Analysis of American and British Foreign Policies towards Israel**

C. Kyle Russ

Faculty Mentor: Dr. Karl Kaltenthaler

Department of International Studies

The United Kingdom and the United States seem to be the strongest of allies and it is difficult to find an alliance this intimate and influential anywhere else in the world. However, the United States and United Kingdom do not always agree on foreign policy stances. Perhaps the most notable difference can be seen in their respective policies toward the Palestinian-Israeli conflict. These disparate foreign policies have been evident since before the founding of Israel in 1948 and can still be seen today through their respective views and policies concerning the latest incitement of violence, the *Al-Aqsa Intifada*. The extreme differences between the U.K. and U.S. support of Israel are most evident in United Nations voting patterns, foreign aid, and military aid. Theories that attempt to explain the variance in U.K. and U.S. support of Israel include a public pressure hypothesis, an institutional hypothesis, and an interest group hypothesis. Each of these theories has been found to have significant explanatory power, albeit to different degrees. Given that the Palestinian-Israeli conflict is one of the most salient issues today for both the U.K. and U.S., understanding why two of the world's greatest powers have nearly opposite stances towards Israel is certainly an insightful analysis.

1:20- 1:40 **In their own words: exploring children's construction of emotion and conflict resolution strategies in written narratives about conflict**

Alexis Harris

Faculty Mentor: Dr. Marsha Walton

Department of Psychology

Children's construction of emotion and descriptions of conflict resolution strategies in their written narratives about conflict were explored. Narratives from two schools, written by 364 predominantly African-American children, were reliably coded for reports of emotional states, emotional behaviors, volition, and six conflict resolution strategies. Reporting and describing emotion were pervasive phenomena, and communication was the most frequently described conflict resolution strategy. Chi

Square analyses revealed an interesting pattern of results suggesting specific relationships among children's reporting/description of emotion, the conflict resolution strategies they described, and the severity of violence present in their narratives. Narrative production is discussed as an essential tool for making meaning out of experiences, especially psychologically difficult conflicts. Implications are given for narrative interventions to develop and improve social perspective taking, communication, and other conflict resolution skills in children.

1:40-2:00 **Domestic Violence in Shelby County**

Mary Grace Fields

Faculty Mentor: Professor Kirby

Urban Studies Program

In Shelby County, Tennessee, domestic violence charges are routinely dropped by the Attorney General's office for lack of prosecution. This project involves a sample of dismissed domestic violence cases during the year 2002 that are handled by the Shelby County Public Defenders. All cases that are dismissed for lack of prosecution can be brought back up without breaking the rule of double jeopardy because the clients were not formally tried. Each of the cases will be researched to determine whether the Attorney General's office has subsequently indicted the client on the same charge. In addition to the disposition of the case, data will be collected about each client in order to develop an overview of domestic violence offenders in Shelby County. This project will aid the Public Defenders in the domestic violence division in advising their clients more fully on the consequences of having their cases dismissed for lack of prosecution. It will also be a helpful addition to the study of domestic violence perpetrators.

2:00-2:20 **The Motion Picture Industry in Memphis, TN**

Jonathan Spilman

Faculty mentor: Carl N. McKinney

Department of Economics and Business Administration

The fact that movie theatres are busier on the weekends is well known. Other factors must surely affect box office attendance numbers: seasonal fluctuations in attendance cycles, the type and rating of movies being released, and the state of the economy. My paper analyzes the local movie theatre industry in Memphis, TN, and its suburbs. I look at the effects on attendance figures by movie ratings, average daily temperatures, precipitation, and employment data for the local economy. My research utilizes attendance data from several local theatres, economic data from the Bureau of Labor Statistics, and weather data from the National Oceanic and Atmospheric Administration. The paper discusses what effect, if any, that attendance numbers or ratings of current movies have on concession sales or concession revenue per customer. Initial results have yielded a statistically significant, negative relationship between private employment and monthly attendance, meaning that in the short run movies may be an inferior good/service. The number of showings for films of each rating is also significant with PG movies having the greatest impact on monthly attendance.

2:20- 2:40 **Relative Efficiency and the Possibility for Arbitrage in the Market for NFL Draft Picks**

Michael Roach

Faculty Mentor: Nick McKinney

Department of Economics

With regard to pricing risky or intangible assets, the opportunity for arbitrage—the practice of buying a good at a low price and selling it at a higher one—induces activity that help establish an efficient pricing schedule. The NFL draft illustrates a situation where perceived arbitrage opportunities, in the form of exchanging draft picks, cause teams to act in such a way as to set a system of prices for those draft picks. When Jimmy Johnson took over as head coach of the Dallas Cowboys, he systematized the perception of arbitrage opportunities by assigning a point value to each draft pick. Other teams developed similar systems. Looking at the draft picks exchanged between NFL teams between 1980 and 2002, we can test whether, according to the point-based system, trades made after Johnson developed the

system were significantly more efficient than trades made before it. Secondly, by assuming a no-arbitrage condition holds, we can estimate the point values for each of the draft pick as determined by the terms of trade between teams. From this, we can test whether these values are significantly different from those assumed under Johnson's system, that is, determine if the market presents systematic arbitrage opportunities.

2:40-3:00 **The Determinants of Senate Voting Patterns and International Trade Agreements: The Cases of NAFTA and GATT**

Emily Costarides

Faculty Mentor: Nick McKinney

Department of Economics

This project examines the determinants of Senators' voting patterns with regard to international trade agreements using the cases of the NAFTA vote and the GATT Uruguay Round vote. The analysis consists of a model which, having accounted for ideological and partisan differences, focuses on determinants relevant to differences in the economic composition of states' economies. Most importantly, this analysis is concerned with the relationship between the diversity of the state economy and the probability that a Senator voted "yea" to GATT or NAFTA. The results of this analysis in the case of NAFTA suggest that a larger number of "large" sectors comprising a state's economy corresponds to a greater likelihood of a Senator voting positively for a free trade agreement while the results of applying the model to the case of the GATT vote confirm no definite determinant of such an increased likelihood.

3:00-3:20 **Career Analysis of Hall of Fame Nominated Major League Baseball Players**

Will Higginbotham

Faculty Mentor: Nick McKinney

Department: Economics and Business Administration

Election to the Major League Baseball Hall of Fame is the highest career honor which a professional baseball player can receive and only players of the highest caliber and consistency have the credentials to be nominated for election. One of the most important aspects of a Hall of Fame caliber career is the ability produce exemplary numbers year after year. Regression analysis was used to create models for the offensive output of Major League Baseball position players who have been nominated for the Hall of Fame since 1962. Separate regressions were run for entire careers and several increments of careers, such as the first five years and the last five years. Comparing the coefficients on the variables given by these models indicates which period in a player's career can be used to most accurately predict overall career statistics worthy of Hall of Fame nomination. Such insight would be interesting to fans and useful to Major League Baseball owners making labor decisions, baseball card collectors valuing cards, and baseball players aspiring to have Hall of Fame careers.

3:20-3:40 **Pay and Performance: Are Major League Baseball Players Paid Their Worth?**

Chris France

Faculty Mentors: Nick McKinney

Department of Economics

Professional sports offer a unique opportunity for economists in the field of labor economics. Because extensive statistics are usually kept in sports, the performance of individual athletes can be observed more easily than workers in other industries. Baseball, in particular, is a perfect opportunity to look at the performances of individuals and how they relate to the success of their organization because its statistical categories provide a direct measure of individual productivity. Having this direct measure of productivity makes it possible to evaluate the equity with which Major League baseball players are paid. That is what this paper intends to do. A two-equation model can be used to transform players' individual statistics into revenue generated for their team. The first equation estimates wins using statistical categories. This is used to determine a number of wins that each player generates, which is then plugged into an equation for revenue that has wins as an independent variable. Using this

methodology, each player's statistics can be transformed into a marginal revenue product that they generate for their team. The marginal revenue product can then be compared with the salary that they actually made to determine whether players are over or underpaid. I believe that over and under payment will vary with the experience of each player. Players who are eligible for free agency will probably be overpaid, whereas those who are not eligible for free agency are likely to be underpaid.

3:40-4:00 **Factors Affecting Test Scores in Tennessee Public Schools**

Jennifer Dill

Faculty Mentor: Nick McKinney

Department of Economics

Labor Economists often explore the benefits of additional years of education for a worker. Within the field of education, school boards have recently debated whether to pay teachers according to their experience and education or according to their students' standardized test scores. Rather than looking at how additional years of education enhance the salaries of teachers and faculty, this paper explores how additional years of education affect the education of students in Tennessee during 2002. Using data from the Tennessee Board of Education, an equation was formed that revealed how percentages on students' income level, students' race, students' behavior, faculty gender, faculty education, school district enrollment, and number of schools impact the standardized test scores of the students. According to this equation, the educational level of the faculty has a positive and significant impact on the educational success of students. Such an analysis provides insight into whether it is beneficial for school districts to seek out and offer higher wages to faculty candidates with more education, as well as into what factors affect students' education.

4:00-4:20 **A Matter of Strategy: Modeling Political Campaigns**

Chris Ebersole

Faculty Mentor: Dr. Nick McKinney

Department of Economics

Much has been written about the strategy of political campaigns. The overwhelming consensus has been that negative campaigns work, and the empirical data more or less supports this, but there has been very little solid explanation as to why they do. One reason for this is that individual campaigns are difficult to categorize; some may start positive and then go negative, as well as vice versa. Likewise, political races themselves may have very different characteristics, ranging from the office in question to the number of candidates involved. From a theoretic analysis, I will create a model of political campaign strategy that will illustrate the payoffs of positive and negative campaigning, and will account for the potential backlash that results from negative advertising. The model will then be used to demonstrate payoff maximization as a function of campaigning, and will provide a means of achieving a strategy equilibrium between the two candidates.

## **Natural Sciences Oral Presentations – Session 1**

***225 Ohlendorf, beginning at 10:20 am until 12:00 noon***

10:20-10:40 **Reproducibility of Apparent Integrated Backscatter for Ultrasonic Bone**

**Assessment**

Jeff France

Faculty Mentor: Brent Hoffmeister

Department of Physics

There is increasing interest in developing ultrasonic backscatter techniques to diagnose changes in bone density associated with osteoporosis. The goal of this project is to determine the reproducibility of a specific ultrasonic backscatter parameter called apparent integrated backscatter. Measurements were performed at the same site on a single specimen of human cancellous bone in 10 different trials. Between each trial the specimen was removed completely from the measurement system and then replaced for the next measurement. Reproducibility was assessed by calculating the coefficient of

variation for these measurements which is defined as  $100\% \times \text{standard deviation} / \text{mean}$ . Our measurements yielded a coefficient of variation of 2.1%. Thus we conclude that changes in bone density should produce changes in ultrasonic backscatter that are larger than 2% for this diagnostic technique to be clinically viable.

10:40-11:00 **A Video Imaging Technique for Measuring Cardiac Mechanical Response to Weak AC Stimuli**

Taylor Whaley

Chip Hartigan

Dr. Nicolle Kramer, Department of Biomedical Engineering, University of Memphis

Dr. Robert Malkin, Department of Biomedical Engineering, University of Memphis.

Faculty Mentor: Dr. Brent Hoffmeister

Department of Physics

Current flowing from a power source through a patient, via medical equipment, known as leakage current, poses a serious threat to some patients through the induction of ventricular fibrillation (VF). Furthermore, medical instruments that pass current medical standards for leakage ( $50 \mu\text{A}$ ) are potentially dangerous through the threat of hemodynamic collapse at electrical levels below the VF threshold. The objective of our study is to confirm the known electrical and mechanical activity of the heart during weak AC stimulation with a visual procedure that captures mechanical displacement. By visually recording displacement, we hope to surpass the current understanding of heart arrhythmias by correlating visual cardiac displacement with mechanical force data. The advantage of the current study lies in the use of in-vivo sensor probes placed in the heart, measuring mechanical displacement of contractile forces. We foresee the correlation of the visual displacement data with the mechanical force data during sinusoidal rhythm in hopes of establishing an effective non-invasive technique for visually recording mechanical displacement.

11:00-11:20 **Hamiltonicity in the Twice-Punctured Hypercube**

Adam Richardson

Faculty Mentor: Eric Gottlieb

Department of Mathematics

The vertices of the  $n$ -dimensional hypercube  $Q_n$  may be represented by the set of all binary strings of length  $n$ , with two vertices connected by an edge if and only if their binary string representations differ in exactly one position (i.e. vertex 001 is connected to vertex 000, but not to vertex 010). It is well known that, for any positive integer value of  $n$ , it is possible to move along the edges of the hypercube from one vertex to another in such a way that one visits each vertex exactly once and ends on a vertex that is connected to the vertex from which one began. Somewhat surprisingly, if one “shaves off” two vertices from  $Q_n$  and smoothes over the edges leading from those vertices, the resulting “punctured hypercube” has this same property if and only if the removed vertices are an odd number of edges away from one another. We summarize an original proof of this statement and show how this result may be applied to the question of whether this property is preserved when one removes four vertices in this manner from a hypercube of dimension greater than three. We show that the property holds for this last figure if and only if exactly two of the vertices removed have an even number of ones in their binary string representation.

11:20-11:40 **Functional MR Imaging of Attention Deficits in Pediatric Cancer Survivors**

John A. Sexton

Robert J. Ogg, Department of Diagnostic Imaging, St. Jude Children’s Research Hospital

Faculty Mentor: Ann M. Viano

Department of Physics

Children surviving cancer or cancer therapy that affects the central nervous system are at risk for neuropsychological and cognitive impairments impacting academic performance and quality of life. Evidence from behavioral studies suggests cancer and cancer therapy induced deficits in the ability to sustain attention underlie these impairments. Functional MRI (fMRI) was used to investigate the physiological bases for these attention deficits. Subjects were school-aged (6-17) survivors (n = 24) of pediatric brain tumors or leukemia at least one year off treatment, and healthy siblings (n = 11) of the same ages. Results indicate significantly decreased volume of activation (p = 0.05) in survivors (694.29 voxels) compared to healthy siblings (1480.67 voxels). Average distances activated regions from target regions of interest were larger (p < .01) for survivors (10.43 voxels) than healthy siblings (5.98 voxels). These results indicate reduced volume and concentration of cortical activation in survivors compared to healthy siblings.

11:40-12:00 **Effects of Plastic Implants on Magnetically Induced Currents in the Body**

Andrew R. Shores

Faculty Mentor: Brent Hoffmeister

Department of Physics

Magnetic Resonance Imaging (MRI) is one of the leading medical imaging techniques in use today. MRI machines use rapidly switched gradient magnetic fields to localize the NMR signals to produce an image. Time varying magnetic fields such as these induce electrical currents in the body that can cause cardiac and/or nerve stimulation when the current density rises above a certain threshold. MRI induced currents have been the subject of a number of recent studies, but the effects of metal and plastic implants on these currents are not well understood. In this study, we use an *in vitro* system to simulate the effects of implanted materials on magnetically induced currents in the body. The system consists of Helmholtz coils to simulate the time varying magnetic field, and a circular dish of 0.85% sodium chloride to simulate the electrical conductivity of human tissue. A custom dipole electric field probe is used to measure the current density at any point in the sodium chloride. Measurements from throughout the dish were compared to analytical and numerical predictions. The mean percent errors between measured current density and the predictions was 8% and 13%, respectively. When electrically insulating polyethylene was introduced into the dish, we observed the current density to increase by as much as 1600% (from 1.3 mA/m<sup>2</sup> to 22.3 mA/m<sup>2</sup> rms).

**Natural Sciences Oral Presentations – Session 2**

***Frazier Jelke Lecture Hall B, beginning at 1:00 pm until 4:00 pm***

1:00-1:20 **The Effect of Glycosylation on the Virulence of Influenza A (H3N2) Viruses**

Kimberly Bartmess

Jon McCullers, Department of Infectious Disease, St. Jude Children's Research Hospital

Faculty Mentor: Terry Hill

Department of Biology

Influenza is a major cause of death worldwide, and research into specific virulence factors is needed. The membrane glycoprotein hemagglutinin (HA) is important in influenza's infection cycle, and, because it is the main antigen of the virus, antigenic variation of the HA is favored in order to evade the body's immune system. Variation can include a change in the number of glycosylation sites. The goal of this project was to investigate the effect that the degree of glycosylation of the HA has upon viral replication and virulence of H3N2 influenza A viruses. Reassortant viruses were created using reverse genetics with HAs that had 7, 9, or 12 glycosylation sites matched with one of two neuraminidase (NA) proteins. We characterized these viruses for replication and virulence *in vivo* and *in vitro*. We hypothesized that the

degree of glycosylation of influenza viruses is inversely related to virulence in a naïve host. Mice infected with a virus that had an HA with low glycosylation (7 sites) lost significantly more weight than a virus with an HA with 12 sites. A hierarchy for lethality was established, with viruses containing an HA with 7 sites requiring the lowest dose to cause death while viruses with 12 sites required the highest dose. Interestingly, we also found the HA-NA functional match to be important in virulence. A potential explanation for the decreased virulence of highly glycosylated viruses is that greater levels of glycosylation allow for easier clearance by collectins.

1:20-1:40 **Development of New Chemotherapy Treatment for Retinoblastoma**

Sandra Culpepper

Dr. Michael Dyer, Department of Developmental Neurobiology, St. Jude Children's Research Hospital

Faculty Mentor: Dr. Jay Blundon

Department of Biology

Retinoblastoma, a developmental childhood tumor of the retina, is the third most common form of cancer in infants. Depending on the severity, current treatment of retinoblastoma often involves enucleation of one or both eyes in order to prevent metastasis. Current chemotherapy treatments combined with laser and cryotherapy have been helpful in an attempt to salvage vision, but in approximately 40-50% of cases the cancer returns following treatment. In order to help preserve vision and quality of life, we began experimentation to develop a more effective method of chemotherapy treatment for children with retinoblastoma. Drugs chosen for treatment affect tumor cells via different apoptotic pathways, and included carboplatin, topotecan, and vincristine. We found significantly decreased tumor viability in cultured cell experiments, especially with combination drug treatments. Using the most optimal drug therapy determined by our cell culture experiments, we now show significant improvement in retinoblastoma therapy in *in vivo* mouse experiments.

1:40-2:00 **Pyrolysis GC-MS in the Characterization of Crosslinked UHMWPE**

**Microstructure**

Carl W. Carlson<sup>1</sup>

Karyn E. Spence<sup>2</sup>

Matthew V. Shanks<sup>2</sup>

Asit K. Ray, Department of Chemical and Biochemical Engineering, CBU

Faculty Mentors: Richard Redfean<sup>1</sup> and Ann Viano<sup>2</sup>

Departments of 1. Chemistry and 2. Physics

Ultrahigh molecular weight polyethylene (UHMWPE) is currently the industry standard for use in large human joint prostheses. The combination of its relative nonreactivity in the body and its mechanical properties make UHMWPE an excellent choice to replace the cartilage in total knee and hip replacements. However, as the prosthesis ages, the UHMWPE begins producing small wear particles, which cause many adverse biological reactions. Techniques of crosslinking have been developed to reduce the production of these wear particles. While the effects of these techniques have been studied using TEM and SEM images, the effects these treatments have on the molecular structure are largely unknown. In order to obtain an understanding of the molecular structure of UHMWPE, we used solid-state pyrolysis coupled with gas chromatography-mass spectrometry to separate and identify off-gases. We identified certain products as coming from reactions due to branching and crosslinking and by using internal standards are working to quantify the amount.

2:20-2:40 **Break**

2:40-3:00 **Using an Eight-Arm Radial Maze to Study Learning and Memory in Mice Lacking Interleukin-16**

Karen Dobyns

Faculty Mentors: Jay Blundon and Catherine Fenster

### Department of Biology

Neuronal interleukin-16 (NIL-16) is a brain protein found in the hippocampus, an area important in learning and memory. The C-terminal half of NIL-16 is identical to pro-interleukin-16, the precursor to the cytokine IL-16. Caspase-3, the enzyme that cleaves IL-16 from NIL-16, and CD4, an IL-16 receptor, are also found in the hippocampus. We therefore hypothesize that IL-16 serves as a molecule that may influence neuronal signaling in the hippocampus, and thereby play a role in memory formation and/or memory retention. We compared spatial learning and memory retention in wild-type and IL-16 knockout mice using an eight arm radial maze. By placing food rewards in four of eight of the maze arms, we recorded errors in both short term memory (mice re-entered arms where the reward had just been eaten) or long term memory (mice entered arms that never contained food) during a two week period. One week later, mice were given a final run to test spatial memory retention. The groups did not vary significantly in memory errors until the final run one week after maze learning. The knock-out mice then showed significantly more short and long-term memory errors, suggesting that IL-16 is important in spatial memory retention.

### 3:00-3:20 **Characterizing genes important to the fungal cell wall in *Aspergillus nidulans***

Daniel Dunnivant

Faculty Mentors: Terry Hill<sup>1</sup> and Darlene Loprete<sup>2</sup>

Departments of Biology<sup>1</sup> and Chemistry<sup>2</sup>

The fungal cell wall is an important site for interaction between the fungal cell and its environment. Although it is recognized as a possible site for attack by antifungal drugs, the complex process of assembling and maintaining the cell wall is relatively uncharacterized. We have identified a mutant strain of the filamentous fungus *Aspergillus nidulans* with a defective allele causing hypersensitivity of Calcofluor White (CFW), an inhibitor of chitin synthesis in the wall. Using a plasmid genomic DNA library, we have cloned a DNA fragment which is able to rescue the mutant's hypersensitivity to CFW. We are currently in the process of sequencing the plasmid insert in order to identify the gene responsible for the phenotype rescue.

### 3:20-3:40 **NMR and Computational Studies of the Conformational Preferences of certain Silyl Dithianes**

Terese Holm

Morgan Cable (Florida Atlantic University)

Research done through NSF-REU at Wellesley College under Dr. Jean Fuller-Stanley

Faculty Mentor: Richard Redfearn

Department of Chemistry

Silicon has been found to have a variety of applications, most of which recently occurred in the field of medicine due to its potential to replace carbon in many novel species. Due to the fact that silicon and carbon are in the same group on the Periodic Table, it was previously assumed that the two elements possessed the same properties. Further experimentation has shown otherwise. Hence, a more complete understanding of silicon is significant not only for the advancement of medical technology, but also to contribute to the basic knowledge foundation of chemistry.

The purpose of this study was to provide an accurate characterization of the steric/electronic environment of silicon using spectroscopic and computational methods. This data would be utilized in a comparison of the behavior of silicon to carbon to determine what kind of relationship exists. The main focus of this project involved the synthesis and isolation of a novel series of organosilicon compounds, specifically the dimethyl, diisopropyl, ditert-butyl and diphenyl species of 2-methyl-2-silyl-1,3-dithiane.

### 3:40-4:00 **Handedness as a Form of Sexual Selection in Giant Pandas, *Ailuropoda melanoleuca***

Jeshenna J. Johnson

Faculty Mentor: Dr. Tony Becker

Department of Biology



We studied the handedness of two giant panda *Ailuropoda melanoleuca* at the Memphis City Zoo from October 2003 to May 2004. The predominate usage of paws appeared to be sexually dimorphic; the male showed a preference for right paw usage and the female left paw usage. We recorded the usage of paws during feeding, grooming, and all other interactions. By comparing the repetitive use of each paw during feeding, grooming, and other activity, we detected a preferred usage by each individual panda. The possible explanations were analyzed and it was concluded that the difference in usage could be attributed to a sexual preference. Finally, we compared the results of the male to that of the female and based our conclusions on data collected and previous literature.

### **Natural and Social Sciences Posters – Session 1**

***Frazier Jelke Lobby beginning at 1:15 pm until 2:30 pm***

***All posters will be available for viewing from 1:00 to 4:00. In a specific Session, posters will be manned by one of the student collaborators for that poster during the time specified.***

#### **Mechanisms of Immune Evasion: Development of Murine Gammaherpesvirus as a Model for Human Epstein Barr Virus Infection**

Andrew Burk

Dr. Jeff Sample, St. Jude Children's Research Hospital

Faculty Mentor: Dr. Gary Lindquister

Department of Biology

Murine Herpesvirus (MuHV-4) serves as a model system for the Epstein-Barr virus which is responsible for the disease infectious mononucleosis and certain cancers such as B lymphomas and nasopharyngeal carcinoma. One subtype of MuHV-4, MHV-78, contains lacks a cluster of immune evasion genes normally found in another subtype, MHV-68. The reinsertion of immune evasion genes from MHV-68 into MHV-76 provides a model to study the effects of the immune evasion genes individually. One example found in MHV-68 is the M3 gene which acts as chemokine scavenger that blocks chemokine function and suppresses host immune response. The specific aim of this study is to develop MHV-76 recombinant viruses that contain the M3 gene. This is accomplished by inserting M3 into a targeting construct flanked by sequences homologous to the MHV-76 virus genome. This construct is co-transfected with the MHV-76 DNA resulting in a recombinant progeny virus that is verified via DNA sequencing. These recombinants are then purified through the use of limiting dilutions and verified through PCR screens. The eventual goal of this experiment is to test the ability of the M3 recombinant virus to infect *in vivo* and characterize its growth properties.

#### **Rhodes Biodiesel Project: A Southern Fried Alternative Fuel**

Joshua Low

Glen Davis, Technical Associate, Department of Physics, Rhodes College

Faculty Mentor: Richard Redfearn

Department of Chemistry

Biodiesel is a cleaner fuel than diesel manufactured from traditional oil or "fossil fuels." It is unique among alternative fuels in that it can be used in existing vehicles directly replacing diesel fuel. Technically, it is fatty acid alkyl esters, prepared by transesterification reactions performed on vegetable oil feedstock or even beef tallow. The use of biodiesel reduces emissions of unburned hydrocarbons, carbon monoxide, sulfates, polycyclic aromatic hydrocarbons, nitrated polycyclic aromatic hydrocarbons, and particulate matter compared to regular diesel and gasoline. Several groups including the Ecology Center of Berkeley, California and Joshua Tickell's Veggie Van have done this process successfully. Biodiesel has been commercialized often for blends of biodiesel and diesel, but no biodiesel is sold close to Memphis. One can use either virgin vegetable oil, or oil that has already been used for deep-fat frying, hence "Southern Fried Fuel."

We have designed and built a biodiesel processing plant capable of producing gallon quantities of vegetable oil fatty acid methyl esters. On a small scale we have also prepared other types of alkyl esters. Gas chromatography-mass spectrometry (GC-MS) data will be presented that shows the efficacy of these transesterification reactions.

Also, the identity of combustion offgases of biodiesel vs. petroleum-based diesel will be compared using pyrolysis GC-MS.

### **Genetic complementation of Calcofluor White hypersensitive mutants of the filamentous fungus *Aspergillus nidulans* strain RCH 48.**

Lisa Harsch

Faculty mentors: Terry Hill<sup>1</sup> and Darlene Loprete<sup>2</sup>

Departments of 1. Biology and 2. Chemistry

The fungal cell wall plays a critical role in fungal growth and maintenance. Viability of cells is dependent on cell-wall metabolism, and so it is important to understand how the cell wall is constructed. In order to determine which genes are used in the make-up of the cell wall, mutant strains of *Aspergillus nidulans* were created that demonstrate sensitivity to the cell wall weakening chemical Calcofluor White. This research describes the generation and characterization of one such mutant strain, designated RCH 48. This strain was first tested by crossing it with a phenotypically normal strain of *Aspergillus nidulans* in order to determine whether or not the mutation in RCH 48 was due to a single gene based upon Mendelian ratios and also whether it is recessive. The result of these crosses was then used to do a genetic complementation by adding plasmids which will hopefully contain a match to the mutated gene, thus allowing the fungus to grow in the presence of CFW. One transformed strain derived from a genetic transformation of RCH 48 has been isolated, which shows increased resistance to CFW through several tests. If this result is upheld through further testing, the responsible plasmid will be isolated and sequenced.

### **The Effects of Mentoring Relationships on Adolescent Depression**

Dorothy Crimi

Tricia Hughes

Rebecca Karem

Betsi McGraw

Faculty Mentor: Anita Davis

Department of Psychology

Past research has suggested that an involvement in a mentoring relationship decreases adolescent depression and contributes to resiliency. As an extension of past research on mentoring relationships, this study examined various types of mentors and gender differences and their effects on adolescent depression. A sample of urban, African-American, mid-south high school students were surveyed on various topics including involvement in a mentoring relationship, mentor attributes, student's income level and depression levels. When examining the depression levels of adolescents, the presence or absence of a mentor had no significant effects. As found in previous studies, preliminary analyses indicate that females are more significantly depressed than males. Additional findings include that females are more likely than males to have a mentor and also that females and males are both significantly more likely to have a same sex mentor. Additional analyses will be conducted on more specific variables and also to examine various effects of mentoring relationships on adolescent's social support networks. Implications of the effects of mentoring relationships on adolescents will be discussed.

### **Human IL-13 Cloning into pBSSK Vector**

Reena Chacko

Makiko Watanabe, Himagi Jayakar,

Dr. Mike Whitt, Department of Molecular Biology, UT

Faculty Mentor: Dr. Jay Blundon

Department of Biology

Brain tumors have a high mortality rate with a median survival period of few months. Despite improved surgical and radiation techniques, there is no effective long-term treatment for malignant glioma. One of the approaches with promising preliminary results has been use of viral vectors for tumor therapy. GTx scientists are trying to design a *Vesicular Stomatitis virus* (VSV) vector expressing interleukin (IL-13) to target IL-13 receptors highly expressed on human glioma cells. My project was to generate an expression and cloning vector for human

IL-13 gene, allowing subsequent insertion of the gene, either alone or as chimeras with other proteins, into the virus backbone. This would be the 1st generation VSV targeted vector which would then be tested on glioma cells.

To generate an expression vector for IL-13, we subcloned IL-13 from the original TA vector into pBSSK vector. Subcloning involved digesting a TA vector containing the IL-13 insert and pBSSK, first with BamHI and then Xba I in order to obtain the insert. The digests were gel purified, the insert and pBSSK then ligated together with T4 quick ligase. The ligation mix is transformed into C600 cells, and the colonies screened for potential positive clones using the PCR method. One of the positive clones was then amplified to generate a large stock. The identity of IL-13 was confirmed by DNA sequencing as well as further expression studies.

### **Monitoring in the Wind River Mountain Range, Northwest Wyoming: A Long Term Water Analysis Project and Archaeological Survey**

Leslie Isaacman

Leah Coffman

Ellye Bernardi

Faculty Mentors: Peter Ekstrom<sup>1</sup>, Carol Ekstrom<sup>2</sup>

Departments of 1. Anthropology and Sociology and 2. Physics (Geology)

This poster will describe two aspects of an Associated Colleges of the South Monitoring project that I completed in the summer of 2003 in northwest Wyoming. For the first part of the study, I established and began an on-going water monitoring program for the Torrey Valley. This water monitoring is being done in order to study the biological impact of the valley's water system and to hopefully one day be able to identify possible hazards to the life of the bighorn sheep that live in the valley. For the second part of the study that took place in the same location, I worked with the United States Forest Service and two other students (Leah Coffman and Ellye Bernardi) in order to properly document and record ancient Shoshone dwelling and ritual sites. Through in-depth studies and active surveying, we were able to put together site information for nearly 15 previously unrecorded archaeological sites.

### **Role of Interleukin-16 in the Localization of K<sup>+</sup> Channels**

Altovise Ewing

Faculty Mentor: Cate Fenster

Department of Biology

Neuronal interleukin-16 (NIL-16), a protein found exclusively in the brain, contains PDZ domains and a terminal region identical to interleukin-16 (Kurschner and Yuzaki, 1999). PDZ domains of proteins are responsible for clustering cytoplasmic proteins as well as ion channels on the membrane. The PDZ domains of NIL-16 have been shown in non-neuronal systems to bind to proteins, including subunits of K<sup>+</sup> and Ca<sup>++</sup> channels (Kurschner and Yuzaki, 1999). While preliminary data suggests that the function of these ion channels is altered by binding of NIL-16, the binding of NIL-16 with these channels has not been demonstrated in neuronal systems. We hypothesize that the localization of nerve K<sup>+</sup> and Ca<sup>++</sup> channels is modified by binding associations of channels with NIL-16. Neurons from primary cell-cultures were transfected with plasmids containing the C-terminus of Kv4.2, a subunit of a nerve K<sup>+</sup> channel. Once transformed, the C-terminus will disrupt regular binding of NIL-16 to Kv 4.2 of K<sup>+</sup> channels and cause them to shift. Antibodies were used as indicators to assist in locating K<sup>+</sup> channels which may have relocated or remained in original locations. Results suggest that K<sup>+</sup> channel clustering is not dramatically altered when binding with NIL-16 is disrupted.

### **Identification of a gene affecting Calcoflour resistance, branching and septum placement in *Aspergillus nidulans*.**

Lauren Fay

Faculty Mentors: Dr. Terry Hill<sup>1</sup> and Dr. Darlene Loprete<sup>2</sup>

Departments of 1. Biology and 2. Chemistry

Cell walls define the shape of fungal cells and play important roles in mediating many interactions between cells and their environment. The assembly and modification of this complex fabric of polysaccharides and glycoproteins is incompletely understood. We have generated mutant strains of the filamentous fungus *Aspergillus nidulans* using the chemical agent NQO and have shown they contain a single gene mutation causing hypersensitivity to the chitin synthase inhibitor Calcoflour White (CFW). The phenotype of one of these strains

(R205) is hyperbranched, hyperseptated and has irregular hyphal diameter. Using a plasmid genomic DNA library, we have cloned three genomic fragments that complement the mutant's phenotype. Strains harboring one of these rescuing plasmids show increased resistance to CFW and a more normal distribution of hyphal braches and septa. End-sequence analysis of each plasmid was compared to the Whitehead Institute database and the sequence of the insert was determined. Each sequence was translated and BLASTed to determine the regions that show homology to known proteins. We found two of the rescuing plasmids contain ORFs that show homology to mannose transporters. Although the nucleotide sequences are not similar in these two plasmids their translated sequences show regions of high homology to each other. Work is underway to PCR amplify the putative mannose transporters and confirm their rescuing ability.

### **What's In a Name?: Self-Esteem and the Name-Letter Effect**

Erin Vickers

Ben Jorge

Amber Korb

Lindsay Spellings

Faculty Mentor: Joyce Kim

Department of Psychology

Past research has shown that the natural desire people have to feel good about themselves spills over into people's assessments of objects they own as a sort of self-enhancement mechanism. The Name-Letter Effect carries this finding over to the letters of people's names and asserts that people will rate the letters of their own names higher than the names of others. If this is indeed a self-enhancement mechanism, then, altering self esteem should alter the effect. As past research has been inconclusive in this regard, this experiment closely explores this relationship. This experiment also examined if the effect was implicit or explicit. Upon analysis of results, a strong name-letter preference was apparent. No self-esteem effect was found, but an interesting gender effect was observed whereby females rated self-words highest when they were in the negative feedback condition, and males rated self-words highest when they were in the positive feedback condition. This seems to indicate a gender difference in response to self-esteem threat. Analysis on whether the effect was explicit or implicit yielded no conclusive results. Implications and possible further studies are discussed.

### **Natural and Social Sciences Posters – Session 2**

***Frazier Jelke Lobby, beginning at 2:45 pm until 4:00 pm***

***All posters will be available for viewing from 1:00 to 4:00. In a specific Session, posters will be manned by one of the student collaborators for that poster during the time specified.***

### **Are Animated Agents Effective or Superfluous? The Impact of Animated Agents in iSTART**

Logan Williamson

Melissa Flinn

Meredith Guillot

Lori Dunn

Katie Yoder

Sunya Sweeney

Elizabeth DeMahy

Matthew McBride

Jennifer Scott

Lindsay Sears

Christina LaPrease

Jessica Struby

Faculty Mentor: Dr. Joyce Kim

Department of Psychology

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The study investigated the effectiveness of animated agents within the iSTART trainer. Animated agents are life-like characters that reside in virtual worlds and serve as tutors or co-learners to help students to achieve pedagogical goals. In the iSTART tutorial, animated agents introduce to students meta-cognitive reading strategies such as comprehension monitoring, bridging, and comprehension, and help the students apply them when reading scientific texts. The current iSTART trainer with agents was compared to agent and text, voice and text, text-only, and voice-only tutorials to examine whether agents enhance students' preference and performance. One hundred and eighty students from Rhodes and University of Memphis participated in the study. Preliminary results showed overall preference was ordered in terms of condition complexity; agent trainer, voice and text, text-only, and voice-only. Additionally, results indicated that animated agents were more preferred when subjects had no prior exposure to the strategies.

### **Microhabitat Use in Captive Giant Pandas: A Study for Management Decisions**

Becky Heineke

Meghan Carr, Memphis Zoo; Dr. Alan Jaslow, Department of Biology, Rhodes College; Ashlee Vaughn, Memphis Zoo

Faculty Mentor: Dr. Alan Jaslow

Department of Biology

Because of the genuine possibility of extinction in the wild, captive giant pandas (*Ailuropoda melanoleuca*) are of great interest to researchers who hope to gain valuable information regarding their behavior. This study is an example of how the data that is currently being collected at the Memphis Zoo can be analyzed and transformed so as to translate into changes in the management of these captive animals. In the long term, success in this venture could lead to a better understanding of panda behavior in general, as well as allow for the healthiest possible living environment, with emphasis on reproductive capabilities.

### **High Copy Suppression Analysis of Mis-localized G1 Cyclin *CLN3* in the Budding Yeast *Saccharomyces cerevisiae*.**

Katie Jameson

Faculty Mentor: Mary Miller

Department of Biology

Cell division involves a series of integrated and coordinated events during which a single cell grows, duplicates, and segregates into two cells. G1 cyclin proteins, such as *CLN3*, function to integrate intracellular and extracellular signals to initiate the cell cycle in a process that ultimately leads to cell division. Non-regulated division can result in cell death or uncontrollable division contributing to cancer.

While *CLN3* is thought to regulate division in response to cellular signals, little is known about its upstream regulators and downstream targets. Our study utilizes a *CLN3* mutant that localizes to the cytoplasm. *CLN3* normally localizes to the nucleus, but our mutant localizes primarily to the cytoplasm. This mutant is unable to trigger division, and is therefore responsible for a lethal phenotype. We are investigating the molecular basis of *CLN3* activity through high copy suppression analysis. Genes that are able to suppress the *CLN3*-dependent phenotype are identified using a transformation protocol with a high copy number plasmid library. Currently, almost 40,000 transformants have been screened yielding 222 putative suppressors, which we are characterizing to identify specific genes that may be necessary for *Cln3* activity and regulated cell division.

### **Happy and Sad Stories: An evaluation of the experiences of Family Support Workers**

Brandy Alexander

Paige Mossman

Dr. Anita Davis

Department of Psychology

Various programs respond to the needs of adolescent mothers and their children; however, few studies have evaluated the experiences of mentors and other non-familial persons who provide support and guidance in these interventions. The purpose of this study was to analyze the experiences of Family Support Workers who provide intervention and education for adolescent mothers in a home visitation program. The authors examined interviews with twenty of these workers from both rural and urban environments, focusing on the workers' most positive and most negative experiences. Using qualitative analysis, a coding schema was developed to identify and define

common themes, such as the presence or absence of positive mothering skills, family planning, and motivation to set attainable goals. Preliminary results suggest that there are similarities between the themes of the positive stories and those of the negative stories. The results also show many of the objectives, challenges, and personal commitments of the workers. Discussion of this study explores the importance of understanding how Family Support Workers reflect on their vocational experiences and respond to success and disappointment in their work.

### **Generation of Recombinant Murine Herpesviruses**

Kristin Campbell

Dr. Jeff Sample, Associate Member, Department of Biochemistry, SJCRH

Faculty Mentor: Dr. Gary Lindquester

Department of Biology

The purpose of this study was to establish an efficient mechanism to insert genes of interest expressed during the lifecycle of Epstein-Barr virus (EBV) into a recombinant murine herpesvirus 76 (MHV-76) vector in order to better understand their functions in a virus infection *in vivo* natural setting. This was initially done by cloning the EBV gene *vIL-10* encoding the homolog for human IL-10 into a previously generated targeting plasmid. After cloning was complete, we proceeded to make recombinant virus encoding *vIL-10*. Upon analysis of the recombinant virus however, it was determined that recombination had not occurred correctly and that the viral titer was too low for further studies. The initial targeting construct included a 3-kbp portion of the MHV-76 genome immediately upstream of the deletion present in this natural variant of MHV-68. We then modified this targeting construct to include a MHV-76 flanking sequence from leftward of this deletion to increase the efficiency of homologous recombination and virus titer. We are currently determining whether this modification will be beneficial. If successful, this targeting construct will be useful for the analysis of not only EBV genes, but other viral and cellular genes thought to be important for viral pathogenic potential.

### **Change in Social Structure in the Sulawesi Macaque**

Bailey Nichols

Faculty Mentor: Dr. Tony Becker

Department of Biology

Sulawesi macaques were observed at the Memphis Zoo in the spring of 2003 and 2004. Social structure was established in 2003, and the objective was to determine if any changes occurred in one calendar year to show a different behavior pattern between a family of macaques. There was a difference in interactions between a baby macaque, his mother, and adolescent male, and an adult male. These differences may be explained by a few different factors. The adolescent male reached sexual maturity between 2003 and 2004, therefore, mating quite frequently with the female. The baby macaque is older and is no longer in need of constant care of his mother, and the adult male surrendered his alpha male status.

### **Courtship Behavior in the *Giraffa camelopardalis reticulata***

Leslie Patterson

Rupal Patel

Richard Meeks, Memphis Zoo

Faculty Mentor: Dr. Anthony Becker

Department of Biology

From the spring of 2003 to the spring of 2004, the courtship behavior of the reticulated giraffes was researched at the Memphis Zoo. The objective was to determine if the male reticulated giraffe showed a preference to one specific female in the herd. The herd originally comprised of one male and five females; however, a few months ago one of the females passed away. At each observation, we looked for thirteen courtship behaviors: head butt, urine sniff, flehmen, nuzzling, circling, cut-off, stroking, kick, following, pre-pacing, pacing, code pink and copulation. Observations were taken at different times of the day. In the spring of 2003, the male showed preference towards the youngest female in the herd. In the fall, however, the male showed preference towards the second eldest female. By the spring of 2004, the male changed back to his original preference for the youngest female. This could be due to two reasons. The first reason could be that the female who passed away was the

second eldest female. The second reason could be related to the how she passed away. She died of cancer that may have caused her to constantly cycle; therefore, continuously attracting the male for copulation.

### **A New Sex-linked Mutation in Mice Causing Cataracts**

Andrew Romeo

Jianxue Li, Department of Neurology, BIDMC

Jiewu Liu, Department of Developmental Neurobiology, SJCRH

Richard Sidman, Department of Neurology, BIDMC

Jian Zuo, Department of Developmental Neurobiology, SJCRH

Faculty Mentor: Darlene Loprete

Department of Chemistry

A new mutation in BALB/cByJ inbred mice was recently discovered that causes cataracts. Preliminary data suggests that the mutation is X-linked and located at the Xcat locus on the mouse X chromosome, which has previously been mapped to approximately 68cM. The new mutation is thought to be homologous to the human X-linked gene NHS, which causes Nance-Horan Syndrome. In this study, we aimed to verify that the new mutation is X-linked and allelic to Xcat using PCR analysis. Also, we further characterize the mutation using Northern analyses on tissues affected in the presumed human homologue NHS. Our ultimate goal is to establish a connection between the new mutation and NHS mutation in humans.

### **Comparative Study of Spore Germination in Wild Type and Mutant Strains of *Aspergillus nidulans***

Stanley Vance

Caroline Sartain

Faculty Mentors: Terry Hill<sup>1</sup> and Darlene Loprete<sup>2</sup>

Departments of 1. Biology and 2. Chemistry

The cell wall plays an essential role in the maintenance of cellular structure, in addition to the mediation of extracellular interactions of fungal cell systems. Recently, we have generated mutant strains of the filamentous fungus *Aspergillus nidulans*, which exhibit a hypersensitivity to Calcofluor White (CFW), a chitin synthase inhibitor. Previous work has demonstrated a correlation between hypersensitivity to CFW and defects in cell wall integrity. As suggested in earlier observations, these cell wall defects could possibly correlate with other processes of cellular development such as nuclear division and septum formation. We have chosen to map the development of early spore germlings of two mutant strains, R83 and RCH30, via fluorescence microscopy. Before assessing the phenotypes of these mutants, we have quantitatively and qualitatively analyzed growth nuclear division patterns of strains GR5 and A28, which show wild type (normal) cell wall development and are genetically related to mutants R83 and RCH30. We saw in 0 through 8 hour stages at 30°C that these wild type strains exhibit polarity after the first mitotic division. Also, they lay down septa after the fourth mitotic division (8- nucleus stage). Development is comparable to that described in previous work with A28 (Momany and Taylor, *Microbiology* 2000 146:3279-3284), although our wild types showed slower rates of cellular division due to lower incubation temperatures. Our observations for GR5 are the first for this strain. We are proceeding with analysis of the growth parameters of the mutant strains. After obtaining these data, we will perform statistical analyses and conclude whether the morphological patterns of the mutants are significantly different from those of the wild types. If they are, these morphological differences will provide information pertaining to the synthesis and function of the *A. nidulans* cell wall.

### **Analysis of Social Dominance Among Reticulated Giraffes, *Giraffa camelopardalis reticulata***

Melanie Woods

Faculty Mentor: Dr. Tony Becker

Department of Biology

In the spring of 2003, six reticulated giraffes (*Giraffa camelopardalis reticulata*) were observed at the Memphis Zoo in Memphis, Tennessee. The objective of this study was to determine the arrangement of social status within a group of reticulated giraffes. The hypothesis was that the male, among only females, would be the most dominant.

The structure of the females would be based upon age, therefore the oldest female would have the highest status and the youngest female would have the lowest status. The dominance among them could be observed during feeding. Since their only nourishment was located in the same small casing, the giraffes had to compete with each other in order to obtain food. All of the giraffes displayed behaviors of either aggression or submission depending on the status of the competitors. The social structure before and after the death of the most dominant female will be discussed.

### **Special Sessions:**

*These are all nonjuried sessions featuring scholarship from Rhodes students who are studying specific topics like animal behavior, or are participating in special programs like the Rhodes Institute for Regional Studies.*

### **Poster Session for Molecular Biology: Bioinformatics projects**

*Frazier Jelke Lobby beginning at 1:15 pm until 2:30 pm*

*This session will run concurrently with the juried Natural and Social Sciences Poster Sessions. Session organizer: Gary Lindquister, Department of Biology.*

*All posters will be available for viewing from 1:00 to 4:00. Posters will be manned by one of the student collaborators for that poster during the time specified.*

#### **Identification of aquaporin gene in *Arabidopsis thaliana***

Daniel Keedy  
Krista McClain

#### **A structural and evolutionary characterization of alcohol dehydrogenase in *Arabidopsis thaliana***

Stacie Beverly  
Carolina Goodman  
Desiree Steimer

#### **Channel protein relatedness across plant species**

Reena Chacko  
Etasam Khan

#### **DNA sequencing analysis supports that *Arabidopsis thaliana*'s "OE1" gene codes for myrosinase which is involved in the defense and metabolic systems**

Rami Almefty  
Kyle Gehres

#### ***In silico* analysis of *Arabidopsis* cDNA: Identification of a tubby protein family**

Kelley Babcock  
Julie Bishop

#### **Genetic sequencing analysis of signal peptidase in *Arabidopsis thaliana***

Leslie Austin  
Nicole Walker



**Animal Behavior “Mini-Symposium”**

***Frazier Jelke Lecture Hall C, beginning at 1:00 pm until 4:00 pm***

***Session organizer: Tony Becker, Department of Biology.***

1:00-1:25 **Maternal and Non-Maternal Interactions of an Infant *Colobus abyssinicus***

Siamac Salehy

Jon Berger

Gaines Fricke

Queena Chae

1:25-1:50 **Age-Related Mock Fighting and Aggression of *Zalophus californianus* Sea Lions in Captivity**

Lindsay Chapman

Elaine Odle

Stacie Beverly

Julie Bishop

1:50-2:05 ***Break***

2:05-2:30 **Approach and Response Behaviors between Male and Female Baboons**

Emily Bryson

Matin Ghafari

Deana Satar

Tonya Thurber

2:30-2:55 **Facial Expression and Social Hierarchy in the Bonobo, *Pan paniscus***

Jennifer Herrold

Chip Hartigan

Moss Driscoll

2:55-3:10 ***Break***

3:10-3:35 **Play Behavior in Jaguar, *Panthera onca*, Cubs: a Practice for Hunting in the Wild, or a Recreational Activity?**

Lauren Fay

Lisa Harsch

Desiree Steimer

Carolyn Westfall

3:35-4:00 **Preening and Feeding Behavior in Leadbeater’s Cockatoos, *Cactua leadbeateri***

Lydia Andras

Michael Burke

Holly Heath

Justin Marler

**Rhodes Institute for Regional Studies**

***205 Kennedy, beginning at 10:30 am until 11:45 am; 1:00 pm to 2:45 pm***

*The Rhodes Institute for Regional Studies held its inaugural session during the summer of 2003, during which students spent eight weeks working on inter-disciplinary research papers with a regional focus. Rhodes Institute Fellows originally presented their work to each other at the end of last summer's Institute. Today they present their papers to the entire campus community.*

*Session organizer: Tim Huebner, Director, Rhodes Institute for Regional Studies.*

10:30-10:45 **“The Dean of Memphis Musicians”: Christopher Philip Winkler, 1824-1913**

Daniel Anglin

Faculty Mentor: Timothy Sharp

Christopher Philip Winkler was a church musician who lived in Memphis from 1855-1902. He taught private voice, piano, and organ lessons and was a prolific composer in the Classical American style. He consistently worked for the Jewish Temple, and St. Peter's Cathedral composing many of the works that were performed there. He also worked at St. Mary's School, St. Agnes Academy, Second Presbyterian, St. Patrick's, and Calvary Episcopal. He obtained the 32nd degree in Freemasonry before he died and supplied the music for the lodges in Memphis. He was a founding member of the Opera Club, Mozart Society, Maennerchor, and Mendelssohns.

10:45-11:00 **“A Matter of Right”: The Changing Role of the NAACP in the Desegregation of the Memphis City Schools, 1959-1973**

Meg Chambers

Faculty Mentor: Tim Huebner

This paper examines the role of the Memphis NAACP in leading the school desegregation battle. Tracing the NAACP's activity beginning with the Supreme Court's 1954 ruling in *Brown v. Board of Education* and ending with the battle over busing in the early 1970s, this paper seeks to highlight the tactics and ideology of the Memphis branch and examine how their strategy changed in light of the radicalization of the Civil Rights Movement toward the end of the 1960s. This paper follows the school desegregation litigation launched by the NAACP in 1960, outlining the NAACP's role in pushing the case through the courts, and also looks at the struggle for desegregation outside of the courtroom, observing the protests headed by the NAACP and their pressure on the Memphis Board of Education. Though school desegregation was a long and embattled process in Memphis, and the results were ultimately fairly disappointing, the NAACP's role was enormous in securing the rights for black students as guaranteed by the Supreme Court in 1954.

11:00-11:15 **Maturity in the Magnolia State: The After-Politics of Casino Gambling in Mississippi**

Chris Ebersole

Faculty Mentor: Michael Nelson

Mississippi legalized casino gambling over a decade ago, and since then has seen its state transformed by the industry. The state's rapid ascension to third-largest casino market in the country has raised questions and issues about how to deal with a boom that few envisioned. With casinos legal in only 8 of Mississippi's 82 counties, many of its residents neither live near nor support casino gambling, and at times have voiced strong opposition to the industry. The resulting political tension statewide coupled with the state's fiscal dependence on casino gambling has created a unique set of circumstances. These are traced and explained through the innovation, growth, and maturity of casinos in Mississippi.

11:15-11:40 **The W.C. Handy Blues Awards: A Comprehensive Twenty-Five Year History**

Emily Goodman

Brian London

Faculty Mentor: Timothy Sharp

Our 25-year history on the W. C. Handy Blues Music Awards includes a detailed account of each year's events. This includes hosts, performers, presenters, times, dates, locations, financial records, direct quotes, and winners. The past 25 years has been a rollercoaster for the Blues Foundation and the Handy Awards. Our research findings suggest that each year, the Handy Awards go through similar problems with leadership, financing, and attendance. The actual shows, however, appear to be enjoyed greatly by those who attend. The awards shows are known not only for unprecedented musical collaborations, but also for honoring those who have worked the hardest over the previous years in contributing to blues music and its resurgence. As the Handys approach the 25th year of production, things are still very unstable at the Blues Foundation, leaving the project with a note of uncertainty, though that seems to be a running theme for both the shows and the Foundation.

11:40-11:55 **Explaining the Enigma: Understanding the Failure of Further Legalized Gambling in Arkansas**

Chris Hathorn

Faculty Mentor: Michael Nelson

When New Hampshire became the first state to create, own, and operate a lottery in 1964, no one could have imagined the domino effect that was to follow. Over the next forty years, legalized lottery and casino gambling expanded across the nation and became commonplace. By the early 1970s, lotteries had spread throughout the Northeast and into parts of the Midwest, and by 1975, thirteen states had legalized lotteries within their borders. Today, a total of forty states have done so. Casinos have spread to a total of eleven states today.

With regard to the national proliferation of legalized gambling, though, the state of Arkansas has proven an anomaly. Though it has attempted to legalize both lotteries and casinos on multiple occasions, the state has consistently failed to do so. Making the state's resistance to this national trend particularly odd is the dynamic of competition created by its neighboring states, all of which have lotteries or casinos. Given that the state allows pari-mutuel betting at its dog and horse racetracks, its outright refusal to legalize other forms of gambling has become all the more odd.

My study attempts to explain how and why Arkansas has consistently refused to legalize lottery and casino gambling while virtually every state around it has contributed to the wave of legalization. In doing so, I will examine both gambling's widespread national proliferation and chronicle Arkansas' repeated failures to legalize lotteries and/or casinos. Using theoretical models of policy innovation by state governments, I will then attempt to explain what factors particular to Arkansas have contributed to the failure of further legalized gambling within the state.

12:00-1:00 ***Break for lunch***

1:00-1:15 **“Walk the Line”: Carl Perkins, Johnny Cash, Jerry Lee Lewis, and the Culture of Rockabilly**

Hailey Hopper

Faculty Mentor: Tim Huebner

Rockabilly was a product of its times, born of the values and preferences brought to booming cities by migrating farmers, supported by the emergence of youth who had time for leisure, and contributing to a society challenged and changed by racial integration. The poor rural backgrounds of the artists, the influence of black music, and the atmosphere of Sun Studios came together in the music of Carl Perkins, Johnny Cash, and Jerry Lee Lewis, while their evangelical religious beliefs and rebellious lifestyles both inspired and hurt their music. Perkins, Cash, and Lewis, without ever knowing it, changed the face of music, as their influence is still heard today in the work of those who followed. Their music and lifestyles also contributed to concepts that were manifested in the Civil

Rights Movement, the Sexual Revolution, and hippie culture, while they forced the church to deal with a new sort of secular thought. The rockabilly sounds of Perkins, Cash, and Lewis, though popular only a short time, have had far-reaching effects on popular music and society.

1:15-1:30 **New SEC Regulations on Audit Committee Independence: Memphis Executives Assess Impact on Their Companies**

Logan Stevens

Faculty Mentor: Debbie Pittman

The alleged frauds of Enron, WorldCom, and Adelphia contributed to a loss of confidence in U.S. corporate governance and led to the Sarbanes-Oxley Act of 2002. This broad legislation mandates new regulations to prevent abuse of the shareholders by corporate boards and executives. This paper addresses the implementation problems associated with new Audit Committee independence requirements found in section 301. Six Memphis-based companies report that their companies will not need to make many changes in order to comply with the recent legislation. The smaller public companies are finding the legislation the most costly and difficult to implement.

1:30-1:45 **Best Sales Practices for First Time Users of Interest Rate Swaps**

Mike Wisniowski

Faculty Mentor: Debbie Pittman

Interest rate swaps are a useful tool for companies to use to hedge the risk of fluctuating interest rates. Interest rate swaps are a 47 trillion dollar market and use has expanded to less sophisticated corporations. First time users of interest rate swaps need to be aware of policies and standard documents that the dealer industry uses to protect itself from litigation. According to industry documentation, all users of swaps are independent of the dealer and may never rely on a dealer in negotiating the swap. The paper provides guidance to first time users who may be confused by sales practices that send signals in conflict with the documentation.

1:45-2:00 **An Evidence Question: Irish-Americans and the Memphis Race Riot of 1866**

Millie Worley

Faculty Mentor: Tim Huebner

The Memphis Race Riot that broke out May 1, 1866 and lasted nearly three days has received relatively little scholarly attention. In the past, research generally assumed that the rioting mob contained mostly Irish police and firemen, and that the Riot erupted out of Irish-black tension. This study examines actual city records of the period preceding the riot, such as records of arrests made, payrolls, and city council minutes. These records do not support the traditional, simple definition of the rioters as angry Irishmen. Reconstruction in a diverse southern city like Memphis should not be oversimplified. In fact, these records considered alongside the official Congressional Report on the event reveal a complex web of ethnic, racial, and political issues that culminated in the riot.

2:00-2:15 **Intentionality: A Theory of Action to Challenge 'The Most Segregated Hour**

Marissa Foshee

Faculty Mentor: Luther Ivory

Martin Luther King, Jr. said, "It is appalling that the most segregated hour of Christian America is eleven o'clock on Sunday morning, the same hour when we are standing to sing, 'In Christ there is no East or West'." Many argue this statement is still true today, but what efforts have been made in Memphis and the Mid-South to change this since the Modern Civil Rights Movement? By visiting church services and interviewing church staff members in Memphis, TN, I have tried to form an answer to this question. Looking at the efforts of two predominantly black churches, two predominantly white churches, and three racially integrated churches in Memphis, I have noticed the varying degrees of intentionality in actions to reconcile the racial communities within the Christian body. A growing number of churches seem to be adopting a new anti-racist attitude, producing action towards racial reconciliation, as opposed to the more common non-racist, yet passive, attitude. The

various levels of intentionality are evident in the churches' actions to educate each other about unfamiliar cultures, to build relationships with other races, and to take a role in the social issues of another culture even when the local community's racial population changes.

2:15-2:30 **The African-American Church: Expressions of Postmodern Theology**

Lindsey Seifert

Faculty Mentor: Luther Ivory

This research examines how the incarnational expression of the black church, with its established interpretive traditions of preaching, music, and emotionally expressive forms of worship, expresses postmodern theology. I demonstrate that historically the black church has had an antimodern ethos in its foundations, even before the intellectual and cultural movement of postmodernism began to develop in contemporary western society as a rejection to modernism. However, I note that this ethos can best be realized through an Afrocentric approach; rather than a European perspective that privileges a Eurocentric worldview and epistemology. I argue that when American religion placed enough emphasis on the experiential dimensions of religion, African Americans could then develop a personal synthesis of European Christianity and African religions. Postmodern theology in the religious context of the black church consists of certain crucial schematic differences from its expressions in modern European worship services. African Americans developed their own trajectory of Christianity, which expresses antimodern theology, because of their unique social location and historical circumstance.

2:30-2:45 **The Great Awakening of Prayer in Public Schools: A Survey of the Religious Response to Prayer within the Public School System**

Teresa Clower

Faculty Mentor: Luther Ivory

Religion and politics have played a major role in shaping the characteristics of the South. The former factor more than the latter has had a tremendous effect on the culture of this region. Religion has been the dominating factor in determining many political issues that range from abortion to homosexual marriages. It played a tremendous role in the Civil War, the Civil Rights Movement, and as recent issues as the force legalized gambling here in Tennessee. It is no shock that on an issue as important and controversial as school prayer, religious groups would be a key factor in determining the accepted norm. I will be surveying the "Religious Response" to the secularizing of the public school system and the removal of prayer as an official part of the school day, with emphasis on the Southern influence and response to this issue.

**Environmental Research: Audits and Baseline Studies Oral Session**

***410 Rhodes Tower, beginning at 1:00 pm until 4:20 pm***

*This is the fourth year of a special session focusing on the local environment. The research projects for Environmental Geology 214 are sponsored by a grant from the Associated Colleges of the South's Environmental Initiative CLS Alliance to highlight sustainability ideas on campus and the neighboring community. Session organizer: Carol Ekstrom, Department of Physics.*

1:00-1:20 **The Effects of Lead in Our Natural Environment**

Beth Campbell

Lucie Watkins

Faculty Mentor: Carol Ekstrom

Department of Physics

Sponsor: Environmental Geology 214

Lead has been a continuous environmental problem and health hazard throughout the United States, especially in the lives of children. We will be discussing the adverse effects of lead poisoning, how to test for

lead, and EPA regulations on lead toxins in the environment. We will also be addressing some of the lead toxin information the Sierra Club has found with their Water Sentinels program. Additionally, we will be discussing studies done by other colleges and universities around the United States which may provide a model for a service learning project for Environmental Geology next year.

1:20-1:40 **Vertical Soil Analysis Extended**

Katie Lane

Wendy Brooks

Faculty Mentor: Carol Ekstrom

Department of Physics

Sponsor: Environmental Geology 214

The Cypress Creek floodplain in the Vollintine-Evergreen neighborhood is known to be contaminated with pesticides, which companies legally dumped into Cypress Creek until the government passed regulations against it in the 1960's. We took a six foot core of the Cypress Creek Floodplain to compare the level of Persistent Organic Pollutants in the soil to a similar study completed in 2003. Our core is located 80 feet downstream from the previous study. We compare both the consistency of the different sedimentary layers over the 80 foot distance, and the consistency of the chemical analysis with the composition of the layers. Combined with the findings of the previous study, the results of our soil analysis will provide a more precise knowledge of the type and level of chemicals in the Cypress Creek flood plain.

1:40-2:00 **Conducting Conductivity**

Elza Crocco

Tommy Orton

Jay Voss

Faculty Mentor: Carol Ekstrom

Department of Physics

Sponsor: Environmental Geology 214

For many years the Cypress Creek Floodplain has been contaminated with pesticides as a result of local companies dumping their waste into the creek. This practice has presented an imminent concern to surrounding community members. Although tests of the Floodplain have been conducted in the past, our audit will test the soil to try to specifically locate the pockets of pesticides. The pesticides appear to be more concentrated in clay than sand. We are experimenting to see if a field survey using a Conductivity Meter can identify the sand and clay areas within the floodplain. Because the Floodplain covers a vast area of land (nearly 52 acres) our study will determine whether this method is a fast and efficient way to evaluate the soil. We used a Geonics EM31 Conductivity Meter and Global Positioning System (GPS) to create a map with GIS software to display the subsurface areas of clay and sand.

2:00-2:20 **Overton Bayou Watershed**

Tatiana Cerna

Michael Reardon

Arla Shult

Faculty Mentor: Carol Ekstrom

Department of Physics

Sponsor: Environmental Geology 214

Clean and dependable water sources are determined by the monitoring of the purity of streams and rivers. Our group monitored water quality in Overton Bayou, a tributary of Cypress Creek, for six weeks. We measured pH, water temperature, nitrate, phosphate, and dissolved oxygen. In addition, we conducted a survey of the residents of the surrounding area to determine if there are community concerns about the Bayou. We took GPS readings of all storm drains in the watershed and then constructed a base map using GIS, Geographic Information System, to display our data. This study will be a valuable resource to the residents of this area, and will contribute to the City of Memphis' study of the watersheds in Memphis.

2:20-2:40 **Less Water = More Pizza**

Jenn Bulmash

Rachel Hays

Faculty Mentor: Carol Ekstrom

Department of Physics

Sponsor: Environmental Geology 214

Many college students do not realize the environmental implications of their actions, such as simply taking a shower in which 9-12 gallons of water are used per person, per day. This audit attempts to see if the residents of Stewart Hall will decrease their water consumption due to increased awareness of water usage and the incentive of a pizza party. The water meter at Snowden and University shows how much water is being used. Taking two measurements for any one given period of time, in this case four days, gives how much water is used during that period. If the water usage decreases during the second reading, the residents will earn a pizza party.

2:40-3:00 **Rhodes College Window Audit**

Hunter Duesing

Rebecca Simmons

Lee Thomas

Faculty Mentor: Carol Ekstrom

Department of Physics

Sponsor: Environmental Geology 214

Windows bring light, warmth, and beauty into buildings and give a feeling of openness and space to living areas. They can also be major sources of heat loss in the winter and heat gain in the summer. When air leaks around windows, energy is wasted. Energy is also transferred through the centers, edges, and frames of windows. Eliminating or reducing these paths of heat flow can greatly improve the energy efficiency of windows and, ultimately, of buildings. When properly selected and installed, windows can help minimize a buildings heating, cooling, and lighting costs. A consulting firm was hired by the college to make a cost analysis of insulated windows for the new Barrett Library. We have done additional research and will compare our results to those of the consulting firm. Payback times are an important way of determining how long it will take to see a positive effect on the energy bill for Rhodes. Our research may provide important evidence for cost efficiency if the college were to install insulated, energy efficient, windows in future buildings. We hypothesize that insulated campus windows will contribute to lowering Rhodes' energy costs.

3:00-3:20 **Temperature Extremes**

Amy Gray

Rob Gunn

Marc Tachuk

Faculty Mentor: Carol Ekstrom

Department of Physics

Sponsor: Environmental Geology 214

One of the world's main concerns at this time is sustainability. At current rates of consumption, many natural resources will be exhausted in the near future. We must begin with changes in each of our daily lives. In an attempt to conserve energy on campus, we are conducting research to determine whether or not residents of Rhodes Tower and Clough Hall enjoy satisfactory indoor seasonal temperatures. If we discover that residents are too cold during the summer or too hot in the winter, we will determine the cost effectiveness of expending less energy on heating and air conditioning these two buildings. All energy production inevitably produces waste bi-products that must either be contained or treated. We hope to reduce the production of these wastes by using the results of this study to negotiate with Physical Plant for a conservation of this unnecessarily expended energy. The negotiation could possibly include a moderate reduction in Rhodes expenses as well.

3:20-3:40 **Saving Memphis' Riverfront**

Marc Lissauer

Faculty Mentor: Michael Kirby

Interdisciplinary Studies

Sponsor: Urban Studies, GIS

The historic founders of Memphis designed the riverfront promenade as public area for the use of Memphians. The Riverfront Development Corporation (RDC), with the authority of the local government, designed a plan for the area focusing on commercial and residential development. The plans breach the originally designed purpose of the land. In addition, several buildings of historical significance will be demolished. Using successful riverfront development strategies from other cities, this project will create a plan for the riverfront promenade to preserve its historical significance. A separate plan for commercial and residential development will be created to displace the RDC's interest in the area. Using Geographic Information Systems (GIS) A map of downtown will be developed which includes all available usage information. The goal of GIS research is to identify key locations in the downtown area that would thrive through commercial and residential development. The overall hope is to create a beautiful public riverfront area Memphians will be proud of while fuelling economic growth in the Memphis downtown.

3:40-4:00 **The City of Memphis: Assessing Neighborhood Parks**

Lee Thomas

Faculty Mentor: Michael Kirby

Interdisciplinary Studies

Sponsor: Urban Studies, GIS

The Memphis poll is an annual report that indicates citizens' perceptions of the services rendered by the City of Memphis. This report displays the results of data collected from a 128-question survey taken by more than 600 Memphians. According to the Memphis poll, there have been growing concerns with the declining ratings of Memphis' neighborhood parks. Until recently, the park services showed a significant improvement from about 1995 until 2000. The park services, since, have shown a considerable decline, which has plummeted from 86 to 69 percent in the past four years. With the understanding that these poll responses are simply a matter of opinion, I set out to do a little research on my own. In order to identify park locations, I used a Global Positioning System (GPS) and plotted these areas on a map using Geographic Information Systems (GIS) map, I visited and observed a series of Memphis neighborhood parks and rated each one with the use of a customized assessment, which consisted of thirty-one components. Categories such as "green space", "amenities" and "litter" served as a basis of observation, while subcategories ensured a greater specificity in evaluating each individual park. The results from the surveys were categorized in an SPSS database and conclusions on the condition of Memphis neighborhood parks were drawn from overall and individual park findings.

4:00-4:20 **Air Quality: An Urban Disaster: A Comparison between Atlanta and Memphis**

Courtney Lundeen

Faculty Mentor: Michael Kirby

Interdisciplinary Studies

Sponsor: Urban Studies

This research project will compare air quality and related transportation issues in the cities of Atlanta and Memphis. The Atlanta metropolitan area has enjoyed one of the strongest economies in the United States. Atlanta has experienced several growth-related challenges such as automobile dependency, core city abandonment, increased energy consumption, and traffic congestion, which all lead to the poor air quality of the city. In comparison to Atlanta the city of Memphis has followed similar urban growth patterns, but has yet to experience the same serious air quality problems. However in ignoring the continuing urban sprawl of the city and the increasing traffic conditions, Memphis seems to be following the same path that Atlanta took ten years ago. This research intends to discover the extent to which Memphis is following the *Atlanta urban growth model*. Using Environmental Protection Agency (EPA) data and census material, this study will provide comparative statistics of the two cities' air quality, car use, traffic volume, and transportation means. While Memphis air quality is not yet a serious concern, this project will predict the air quality problems which lay ahead of the city. Given the



heavy dependence on the automobile and the limited role of mass transportation Memphis is spiraling into a similar air quality disaster just like the city of Atlanta.

## **Community Involvement in Environmental Research:**

### **SWEEP: Storm Water Environmental Education Project**

*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 2003, and an Associated Colleges of the South, Campus/Community Partners grant for 2004. Rhodes students Meg Brunner, Elza Crocco, Rachel Frantz, Courtney Jones, Leah Pranger, Kaveh Salehy, Jay Voss, and students in Geology 214 have worked with Cypress SWEEP students on a variety of projects.*

Our SWEEP partners are Cypress Middle school science teachers Mrs. Gwendolyn Shorter, Mrs. Brenda Pritle, Ms. Kimberly Jones; Cypress Middle School Principal Mr. Raymond Vasser; Cypress Middle School students Hope Braswell, Johnny Brown, John Brownlee, Derique Cannon, Jermarcus Champion, Curissa Dyson, Shantella Fitzgerald, Curissa Dyson, Shantella Fitzgerald, Laderius Garrett, Zandria Gray, Coycelyn James, Nakila Jefferson, Juaneka Key, Anntanise Lewis, Felicea Long, O’Brinden Martin, Rodrequize Mcatee, Devin McBee, Anastasia McCray, Desmond McNutt, Roderick Moore, Da’vante Murphy, Demetrius Pirtle, Leslie Stewart, Brandon Wallace, Sankeisha Washington; A.K.A. Sorority; Dr. Alfred Hall, Memphis City Schools; and Mr. Tom Lawrence, City of Memphis.

This year’s SWEEP session of URCAS is dedicated to Mrs. Gwendolyn Shorter whose talent, energy, and dedication to her students have made the SWEEP program possible.

Faculty Mentor for SWEEP: Carol Ekstrom, Dept. of Physics (Geology)

### **Lobby by Frazier Jelke Room 143, and Frazier Jelke Amphitheatre**

2:30-4:00 **Models of Storm Drains, and Posters in F J Lobby near F J 143**

3:30-4:00 **SWEEP Skit and Songs in F J Amphitheatre (rain location: F J Lobby)**

### **Community Research: the Urban Studies Charrette**

*Orgill Room in Clough Hall.*

*Posters available for viewing 1:00 pm until 5:30 pm*

*Students are available from 4:30 to 5:30 to answer questions about their posters.*

*This is a special session sponsored by the Urban Studies Program. The term “charrette” signifies an intense effort to complete or present a project. The projects reflect fieldwork in Memphis and represent issues related to urban social, political and environmental policy.*

*Faculty Mentor for the Charrette: Michael Kirby, Urban Studies Program*

### **Suburban Public Schools**

Meg Chambers

This research project will assess the successes and problems of suburban public schools in the Memphis area in order to examine the impact of suburbanization on local education. This project will gather parents' perceptions of suburban schools compared with their perceptions of urban schools and will also examine the expectations and myths of suburban schools. This information will be gathered with the intent of determining if and how suburban schools in Memphis are delivering a better educational experience than urban schools. This project will also seek to determine if suburban schools themselves are in danger of failing in the near future, or if they really can be a viable alternative to failing urban public schools. As suburbanization changes the face of urban America, this project hopes to shed light on the public education crisis and how the destinies of urban and suburban schools are linked

### **Domestic Violence Cases in Shelby County**

Mary Grace Fields

In Shelby County, domestic violence charges are routinely dropped by the Attorney General office's lack of prosecution. This project involves a sample of dismissed domestic violence cases during the year 2002 that are handled by the Shelby County Public Defenders. Each case will be researched to determine whether the attorney general has subsequently indicted the client on the same charge or any other charge. In addition to the disposition of the case or cases, data will be collected about each client in order to develop an overview of domestic violence offenders in Shelby County.

### **The Success of Community Development Corporations in Memphis**

Ashley Arnold

Having had the opportunity to be an intern with a Memphis City Community Development Corporation, The Works, Inc., Ashley Arnold has developed an interest in the success and impact of these organizations to their community. For her senior project she has chosen to contact the local Community Development Corporations to collect data on their various projects, developments and investments. By utilizing the Geographic Information System (GIS), Ashley will present the collected data in a variety of maps which will depict the physical success and impact of Community Development Corporations in the Memphis area. Through the collection of data and analysis of literature Ashley's project will help to show the comparison both between Memphis City Community Development Corporations and to Community Development Corporation models found in literature. Her project is welcomed by the CD Council of Memphis and the local Community Development Corporations as an analysis of what is being done and where the majority of projects are based.

### **Air Quality: An Urban Disaster**

Courtney Lundeen

This research project will compare air quality and related transportation issues in the cities of Atlanta and Memphis. Air quality is the key to human survival, yet society continues to ignore the major air pollution problems. The Atlanta area has enjoyed one of the strongest economies in the United States. However, the city has dealt with several growth-related challenges such as traffic congestion and poor air quality. In comparison to Atlanta the city of Memphis has fewer air pollution problems. In ignoring the increasing urban sprawl of the city and traffic conditions, Memphis seems to be following the same path that Atlanta took ten years prior. Memphis should learn from Atlanta's mistakes and work to avoid similar air pollution problems. This research intends to discover what Memphis is doing about their air quality control and traffic congestion. While Memphis air quality is not a serious concern, it is the duty of cities urban planners to study Atlanta's air pollution mistakes and prepare for what struggles may lay ahead.

### **The Memphis Riverfront Promenade**

Marc Lissauer

The historic founders of Memphis designed the riverfront promenade as public area for the use of Memphians. The Riverfront Development Corporation (RDC), a quasi-government organization, designed a plan for the area focusing on commercial and residential development. The plan breaches the originally designed purpose of the land. In addition, several buildings of historical significance will be demolished. Using successful riverfront development strategies from other cities, this project will create a plan for the riverfront promenade to preserve its

historical significance. A separate plan for commercial and residential development will be created outside of the area dedicated for public use. Geographic Information Systems (GIS) will use a map of downtown which includes information about the use, condition, and type of the building or property, to determine the area that would most benefit from a particular plan for commercial and economic development. The overall hope is to create a beautiful public riverfront area Memphians will be proud of while fuelling economic growth in the Memphis downtown.

### **The Death of the Mall of Memphis**

Katherine Mauzy

This project will investigate the death of the Mall of Memphis. At one point, the Mall of Memphis was considered to be the premiere shopping and entertainment location in the city. However, like many other urban areas across the United States, the growth and development of Memphis resulted in businesses transformations that ultimately caused the failure of the Mall of Memphis. Several hypotheses have been made in order to explain the failures of these abandoned malls. The three hypotheses in this project are that location, competition, and demographics caused the abandonment of the Mall of Memphis. These hypotheses will be used to examine the dead Mall of Memphis as it compares to three other malls in the area. Hickory Ridge, Oak Court, and Southland have been chosen for this comparison due to their close proximity to the Mall of Memphis and their possible impact on the failure of the mall. Literature, census information, crime information, a consumer survey, business evaluations, and specific information pertaining to each of the individual malls in Memphis, will be used in combination to test the three hypotheses and to determine the reason for the death of the Mall of Memphis.

### **The Impact of the Pyramid on Downtown**

Lee Thomas

A decade ago the Memphis Pyramid was projected to be a cornerstone in the reutilization of downtown Memphis. Newspaper articles and government reports are being used to show the expected impact of the building on its immediate neighborhood of the Pinch District. This project will then examine the actual impact of the Pyramid on the Pinch district. The changes in land use and development as a result of the Pyramid are being examined.

### **Biology II Laboratory Projects: Crayfish Behavior**

*Frazier Jelke 141w and 143w, beginning at 1:15 pm until 2:45 pm*

*This special session displays posters of research conducted over the last two weeks by the four sections of the Biology II introductory lab.*

### **Macho Crayfish: Aggression Influenced by Gender**

Joseph Bynum

Jimmy Cornfoot

Kourtney Schroder

Caitlin Sherman

Rebecca Smith

Faculty Mentor: Steven Brewer

Department of Biology

**The Effect of Water Temperature on the Frequency of Aggressive and Non-aggressive Behaviors in Crayfish**

Julie Bitely

Tiffany Burch

Alexis Davis

Sophie Gatins

Abbie Tucker

Faculty Mentor: Steven Brewer

Department of Biology

**Intensity and Quantity of Aggressive Behavior between Opposite Sex Crayfish**

Lori Fairchild

Akram Knefati

Therese Rapski

Cyrus Tanhaee

Faculty Mentor: Steven Brewer

Department of Biology

**Gender Aggression in Crayfish**

Lauren Bartling

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**Male Agnostic Behavior in Crayfish With and Without the Presence of a Female**

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**Conditioning Crayfish Behavior Using Electrical Shock Deterrents**

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**The Effects of Substrate on Crayfish Bouts**

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**Crayfish Response to Light and Dark Environments**

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**Crayfish Shelter-seeking Behavior as a Response to Light Intensity**

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**Competitive Aggression and Intrasexual Selection in Crayfish**

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**Does Texture Affect Crayfish Substrate Choice?**

Sara Bransford  
Teresa Bell  
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**The Effect of Shelter Presence on the Agonistic Behavior of Male Crayfish**

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**Agonistic Behavior and Interference Competition in Male Crayfish**

Elizabeth Erny

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**Do Crayfish Show a Preference for a Specific Type of Protection: Camouflage or Barrier?**

Hilary Mast

Lauren Kokajko

Susan Truss

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**Does Size Influence Behavioral Interactions Between Female Crayfish?**

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John Gehrig

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**Crayfish Habitat Preference Between Gravel, Rock, and Boulders**

Grant Bale

Courtney Cockerell

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**Acknowledgement and Special Thanks to the following contributors:**

**Judges: Rhodes Faculty**

David Jilg (Fine Arts)	Erin Harmon (Fine Arts)
Gail Streete (Humanities)	John Kaltner (Humanities)
Patrick Gray (Humanities)	Gail Murray (Humanities)
Donald Tucker (Humanities)	Eric Henager (Humanities)
Gordon Bigelow (Humanities)	Shira Malkin (Humanities)
Sasha Kostina (Humanities)	Loretta Jackson-Hayes (Natural Sciences)
Chris Mouron (Natural Sciences)	Cate Fenster (Natural Sciences)
Eric Gottlieb (Natural Sciences)	Tom McGowan (Social Sciences)
Julie Steel (Social Sciences)	Peter Ekstrom (Social Sciences)
Nick McKinney (Social Sciences)	Carla Shirley (Social Sciences)

**Judges: St. Jude Children's Research Hospital Mentors**

Michelle Hamlet, Ph.D., Department of Pathology  
Andrew Brooks, Ph.D., Department of Biochemistry  
Steven Fenster, Ph.D., Department of Developmental Neurobiology  
Carmilia Jimenez-Ramirez, Ph.D., Department of Biochemistry

**Musicians: Rhodes Jazz Combo and Plenary Lecture pianist**

John Ross (Director, guitar)  
Charles White (tenor sax)  
David Kottwitz (guitar)  
Jonathan (drums)  
Drew Beatty (bass guitar)  
Daniel Heacock (violin and mandolin)  
Joshua Jefferies (trumpet)  
Megan Norman (pianist for the Plenary Lecture reception)

**Special Session Organizers**

Tony Becker: Animal Behavior  
Carol Ekstrom: Environmental Research: Audits and Baseline Studies  
Timothy Huebner: Rhodes Institute of Regional Studies Session  
Michael Kirby: the Urban Studies Charrette  
Carolyn Jaslow and David Kesler: Biology II Laboratory Posters  
Gary Lindquenter: Molecular Biology: Bioinformatics Posters

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