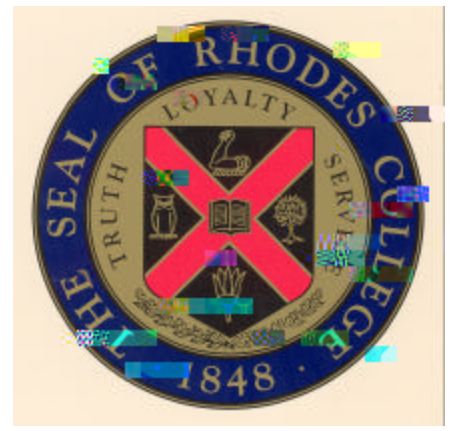


Undergraduate



Research

&

**Creative Activity
Symposium**

Rhodes College



April 29th, 2003 – Memphis, Tennessee

Table of Contents

Abbreviated Schedule	Page 2
Fine Arts Division	Page 3
Humanities Division	Page 4
Social Sciences Division	Page 11
Natural Sciences Division	Page 16
Combined Natural and Social Sciences Poster Session	Page 23
Special Sessions:	Page 30
Environmental Research	
Urban Studies Charette	
Biology II Laboratory Research	
Acknowledgements and Thanks	Page 38

Symposium Planning Committee 2003

Eric Gottlieb (Natural Sciences)

Eric Henager (Humanities)

David Jilg (Fine Arts)

Thomas McGowan (Social Sciences)

Richard Redfearn (Natural Sciences)

Jack Stewart (Student Representative)

Alison Stohr (Student Representative)

Undergraduate Research and Creative Activity Symposium 2003

Abbreviated Schedule:

Plenary Lecture:

**Dr. Michael Long, B.S. Biology, B.A. Psychology, Rhodes College, 1997;
Ph.D., Brown University, 2003**

10:30-11:30 am, Frazier Jelke Lecture Hall B

“Six years after Rhodes: My life in science so far”

This presentation will give an overview of Michael's journey through science beginning at Rhodes College, continuing through a brief stint as a technician, and ultimately arriving at the completion of his graduate work in Neuroscience at Brown University. He will introduce a number of the techniques used in the laboratory and discuss some of the results from his thesis work.

The Student Presentation Sessions:

1:00-4:00 pm, various locations on the Rhodes campus

Closing Reception and Announcement of Outstanding Presentation Awards:

*4:30-5:30 pm, Frazier Jelke Amphitheatre
(Rain location: Hardie Auditorium, Palmer Hall)*

Humanities Juried Oral Presentations

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

1:00-1:20 Justice Through the Ballot Box: The Civil Rights Movement in Fayette County, Tennessee, 1959-1964

Grace Williams

Faculty Mentor: Russell Wigginton

Department of History

In 1959, an African-American man named Burton Dodson was tried for murder in Fayette County, Tennessee. It was clear to all blacks in Fayette County that neither this man, nor any other African American could ever receive a fair trial in a place where no one of his race was eligible to serve on a jury. The jury selection for Burton Dodson's trial reinforced to other African Americans in Fayette County that they would have to fight for equal representation on juries and in political offices. As a result, blacks in Fayette County, realizing that the right to vote was central to their social, political, and economic status, organized a movement with the primary goal of obtaining the right to vote. Fayette County African Americans were able to sustain their movement through harsh resistance from local whites and without the presence of national civil rights organizations. This study examines ways in which the struggles, and the successes, of their movement to gain the right to vote compared with other places during the Civil Rights Movement.

1:20-1:40 Don't Know Thyself: The Comedy of Self-Ignorance

Benjamin Groover

Faculty Mentor: David H. Sick

Department of Greek and Roman Studies

Many studies exist on the subject of tragedy and the tragic hero; few define the comic hero, however. Starting from Plato's claim that comedy results from self-ignorance, this paper examines self-ignorant characters from several major works, starting from the classical period. Characters from prominent Greek, Roman, and English playwrights, such as Plautus and Shakespeare, reflect self-ignorance on biological, psychological, and sociological levels. The culmination of the study is an original dramatic scene incorporating the theories discussed.

1:40-2:00 Of Reverence and Rivalry: An Analysis of Reputation in Dryden's Aureng-Zebe

Ann Young

Faculty Mentor: Jennifer Brady

Department of English

In the prologue of his final rhymed play *Aureng-Zebe*, John Dryden declares he is "betwixt two ages cast," revealing a disturbing sense of displacement that is echoed throughout the accompanying text and transmitted into the play proper (14: 21). Indications within this work and its accompanying texts suggest that Dryden is undergoing an acute sense of alienation from his literary precursors and successors, which was particularly troubling for Dryden, who felt an intense filial attachment to his Renaissance fathers Shakespeare, Jonson, and Fletcher. His sense of estrangement resulted in a directional crisis that coincides with the point of departure for a dramatic stylistic shift, away from heroic rhymed verse, as found in *Aureng-Zebe*, to blank verse, the style of his predecessors. Previously, Dryden had suggested rhymed verse was a genre that would allow him to establish a distinct yet equal reputation among his Renaissance predecessors. His announced intention within the accompanying text of *Aureng-Zebe* to abandon rhymed verse brings Dryden out of the realm of unchallenged reverence for his Renaissance precursors, and into the uneasy position of revering rival. In the accompanying text of *Aureng-Zebe*, Dryden's intense thematic focus on longing for a legitimate position within the continuum of literary tradition is infused with repeated declarations of self-doubt and despair. This shift matches Sigmund Freud's characterization of melancholia, and the resulting

crisis reverberates throughout the dedication, prologue, and epilogue in numerous references and examples. Both Dryden's melancholia and unease towards his perceived position between two strong generations are transmitted into the play proper.

2:00-2:20 **Irony in American Culture**

Erin Kitchell

Faculty Mentor: Joseph A. Favazza

Department of Religious Studies

Jebediah Purdy's *For Common Things* is an examination of the American culture's stance on civic duty. Turning our backs on a world that fails to meet the expectations society teaches us to build is a growing trend. Our generation is immersed in a culture that believes value comes from outside of ourselves, viewing it as a material thing that should rightfully fall into our lap. We increasingly neglect our own responsibility to shape the world as we wish it to be. Instead, we expect it to automatically conform to our expectations, withdrawing from it when it fails to do so. Irony, in Purdy's sense of the word, can be held accountable for most if not all of the civic disengagement typical of Americans. It takes its place at the center of our current, and largely unacknowledged, cultural crisis. Purdy's book offers an explicit challenge to this way of life. His words illuminate the burden of our culture and call for a rededication to the values central to our self-image. Purdy simultaneously traces the roots of our disillusionment and passionately exhorts a return to civic engagement that is particularly pertinent in light of contemporary American politics.

2:20-2:40 **Ground of Christian Belief**

Carson Weitnauer

Faculty Mentor: Pat Shade

Department of Philosophy

My paper is a philosophical consideration of proper ways to ground faith in the Christian God. After analyzing the failure of the evidentialist debate to prove the existence of God (due to incorrect epistemological assumptions), I present Alvin Plantinga's epistemology to show how we can have faith in the Christian God. If Christianity is true, then a cognitive faculty known as the "sense of divinity" is designed to produce in us properly basic, warranted true beliefs about God. I conclude that we are justified and internally rational to believe that with the Holy Spirit's aid our sense of divinity is restored to proper function and leads us to accept Christian belief as properly basic. With renewed

3:20-3:40 **‘Wretched Women’ and ‘Docile Bodies’: Female Deviancy and Social Discourse in Memphis, Tennessee, 1850-1870**

Elizabeth P. Smith

Faculty Mentor: Gail Murray

Department of History

This study focuses on black and white women who transgressed the social norms of nineteenth-century Memphis society. Presenting deviance as a cultural construction, I adapt the ideas of Michel Foucault to this historical analysis of deviance as a conflict of power.

Amida, have still provided a variety of descriptions and coined terms to describe cancer and other “cancer-like” symptoms. In addition, these authors have also given detailed accounts for treatments of cancer, the most common of which was surgery. Nevertheless, the Greeks’ and Romans’ incomplete knowledge of cancer is demonstrated in their depictions of cancer in both sculpture and literature. Through a historical analysis of the disease, possible explanations for the increased frequency of cancer today could be elucidated.

1:40-2:00 **Hope of the Kingdom at Hand: The Eschatological Vision of the Azusa Street Mission**

Bob Davis

Faculty Mentor: Tom Bremer

Department of Religious Studies

The worldwide Pentecostal movement was born in an old stable on Azusa Street, Los Angeles in 1906, to a religious community that was marginalized by class, race, ethnicity, and gender. The rapid spread of the movement may be attributed to its eschatological vision of an imminent, premillennial return of Christ to earth. This eschatological vision helped form a countercultural spirituality and ethic in the earliest Pentecostals that was at once continuous and distinct from its Wesleyan Holiness roots. The eschatological fervor of the Azusa street revival inspired radical personal and ecclesial transformation, the dissolution of social and cultural barriers, and empowerment of society’s most marginalized to take part in realizing their ultimate hope and joy—the Kingdom of God. Its vision of the Kingdom is far from irrelevant to contemporary theological reflection on Christian eschatology, and may be able to promote a more complete and useful understanding of the role of apocalyptic hope in the life of Christian faith.

2:00-2:20 **Calderón y su Gran teatro del mundo**

Allison Prickett

Faculty Mentor: P. Eric Henager

Department of Modern Languages

Durante el Siglo de Oro, Pedro Calderón de la Barca escribió *El gran teatro del mundo*, un auto sacramental que señala una manera de vivir moralmente. Como escribe Robert L. Fiore, “*El gran teatro del mundo*, through the allegory of life as a drama, emphasizes moral rather than theological problems in an effort to explain man’s anguish as he is confronted with his involuntary presence in the world” (40). En el presente estudio, examino estos aspectos morales y su incorporación tanto en la obra de Calderón como en ciertas otras obras en las que la figura de Dios y la del autor se aproximan. Estas obras ponen en escena una conversación literal entre Dios y creación (autor y personaje) como estrategia para representar ciertos dilemas filosóficos. Dios, como autor, se representa como el que da todo lo que el ser humano tiene y, por eso, el que puede quitarlo si el ser humano no hace bien su papel.

2:20-2:40 **Los de abajo: La representación de la mujer**

Cynthia Hallums

Faculty Mentor: P. Eric Henager

Department of Modern Languages

La Revolución Mexicana fue una lucha para los que no tenían una voz política durante la presidencia de Porfirio Díaz. Después de la Revolución, las vidas de todos los grupos que antes luchaban cambian, pero la vida que cambia más es la de la mujer. *Los de abajo* (1915) de Mariano Azuela cuenta una historia de la Revolución y el papel que las mujeres desempeñaron en la lucha. En *Los de abajo* Azuela usa a Camila y a La Pintada como una representación de la mujer en la Revolución. Camila representa la conciencia revolucionaria al mismo tiempo que representa la víctima, mientras que La Pintada representa el papel del hombre tradicional y la asesina de la conciencia revolucionaria. En *Los de abajo* La Pintada y Camila existen en contraste y representan aspectos diferentes de la cultura mexicana. En la sociedad tradicional de México, Camila representa la mujer

ideal y obediente, mientras que La Pintada representa la contradicción de este ideal y tiene ciertas acciones machistas. Las mujeres en *Los de abajo* existen en yuxtaposición y representan imágenes contrastivas de la mujer en la Revolución Mexicana.

2:40-3:00 **La religión en Latinoamérica: El sincretismo en La aurora en Copacabana por Pedro Calderón de la Barca y So Far From God por Ana Castillo**

Tamara L. Martin

Faculty Mentor: P. Eric Henager

Department of Modern Languages

Aunque Latinoamérica es muy heterogénea y abarca muchos climas y tierras, desde la época colonial, la religión católica ha sido un constante en la región. A pesar de su constancia ha sufrido continuas alteraciones. En el catolicismo moderno se percibe todavía un sincretismo entre varios conceptos prehispánicos y la religión que los conquistadores llevaron a las Américas hace cuatro siglos. La palabra “sincretismo” significa la unión entre varias corrientes ideológicas a pesar de la aparente dominación de una sobre las otras. El presente estudio es una comparación entre la representación del sincretismo religioso en *La aurora en Copacabana* (1672) por Pedro Calderón de la Barca y *So far from God* (1993) por Ana Castillo.

3:00-3:20 **The Family: A Concept in Transition in La casa de Bernarda Alba and So Far From God**

Kimberly Kirkpatrick

Faculty Mentor: P. Eric Henager

Department of Modern Languages

The traditional definition of a family generally includes a couple that society considers to be in a

Humanities Nonjuried Poster Presentations

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

Single Parent Families: Does TennCare Really Care?

Cindy Hallums

Julie Hallums

Jenna Groner

Natalie Pennington

Mark Wilson

Faculty Mentor: Gail Murray

Department of History

When examining the complex issue of poverty in the United States today, adequate healthcare is a pressing concern for impoverished individuals, policy administrators, and professionals in the field. With the recent budget cuts facing the state of Tennessee, TennCare has taken a significant role in providing relief to low income families. For our project, our group examined the structure, rules, and regulations of TennCare as an organization as well as the problems in accessing the benefits that TennCare provides. Additionally, we used a hypothetical family to demonstrate how actual individuals are affected by the healthcare system and state policies like TennCare. Through the use of our “family,” we are also able to portray the pressures and strain that single parent family’s face when attempting to overcome the obstacles intertwined in the Tennessee healthcare system.

To Eat or Not to Eat: The Trade-Offs of Low-Income Food Budgeting

Leah Walter

Charlie Patrick

Lori Steger

Phaedra Fisher

Faculty Mentor: Gail Murray

Department of History

Our project is a study of what it takes for a single mother to feed three children, two of which are school-age, with only one income source and whatever public assistance is available. First, we calculated an approximate take home salary based on part-time work taking into account social security and taxes to be withheld. We determined how much she would receive each month in food stamps and vouchers, and we confirmed that the children would receive up to two free meals at school. After taking these steps to determine how much she would have to spend each month, we then went to several grocery stores to compare prices and discover what one in this situation would have to sacrifice in order to give her family healthy, balanced meals. We also account for such factors as distances to grocery stores, generic vs. name brands, and fast food meals that may be necessary for convenience sake. The project is intended to demonstrate that even with public assistance, a single mother with three small children will have a difficult time feeding her family on a limited income.

Full-time, Part-time, or Double-

evaluates the possible benefits associated with low-wage jobs. Examples of possible benefits include contributing toward one's retirement, which may seem positive, but is not necessarily helpful to someone who is barely able to sustain his or her family. Other examples include the number of paid sick days or vacation days provided and whether the employee has to work for a certain amount of time before accruing these benefits. To conduct our investigation, the research group interviewed managers in eight different service sector jobs. We were able to conclude that it is unlikely that people working in the service sector will be able to support themselves, let alone their families, solely on the income of one of these jobs. To sustain a family in Memphis without some outside source of assistance, it would be necessary either to have the income of two workers in each home, or in single parent families, to work multiple jobs.

rather, the midwives recognize that women's bodies are capable of giving birth without medication which may harm the mother and her baby. As a result, midwifery centers women in the birthing process in a way that gives them responsibility and autonomy over their bodies and ownership of the health of both themselves and their babies.

- 1:20-1:40 **Nurses, Catholic School Girls, Hookers and Little Red Riding Hood: A Thick Ethnographic Description of the Strip Club Sub-Culture**
Jennifer Marshall

even more comprehensive literature search to explore how color has been approached, utilized and incorporated into everyday life and meaning throughout the past and present day.

2:20-2:40 **Rearranging the Typical Discourse of Ethnography: A study of photography and anthropology.**

Sarah K. Hays

Faculty Mentor: Susan Kus

Department of Anthropology and Sociology

There exist many criticisms of photography and its uses in the areas of anthropology. These critiques range from the cost of equipment and specialized skills required, to the potential bias of the photographer and the myriad of interpretations and meanings that can be derived from a single shot. Rather than attempting to illustrate the validity of photography in the field of anthropology, the potential ways photography can be used in field research are addressed. This project utilizes photographs and members of the Memphis community to demonstrate the multiple perspectives that can be derived from photographs. Ten photographs of different interactive situations were printed and taken back out into the community to gather individual views and observations of the prints, rearranging the typical discourse of ethnography. The results of this exercise yielded a variety of narratives regarding each photograph. Several similar elements were present across the participants' descriptions, providing interesting insights into the Memphis culture. The premise of this project provides for many possibilities of similar future research; focusing on specific groups utilizing more prints and interpretations relating to the group's specific need or problem.

2:40-3:00 **“The Athenian Agora: Creating and Perpetuating Objective Reality”**

Jenna A. Altherr

Faculty Mentor: Thomas McGowan

Departments of Anthropology and Sociology and Greek and Roman Studies

My research focuses on the Athenian Agora, where I demonstrate how the physical layout and material artifacts of an area illustrate the shared objective reality of a group. The paradigm I am ~~speaking in images. Borge and Luckman's definition states that reality is socially constructed. This challenge intercrimary~~

3:20-3:40 **Sticks and String: An ethnographic study or "Yarn to Go"**

Leah Coffman

Faculty Mentor: Susan Kus

Natural Sciences Oral Presentations – Session 1

Frazier Jelke Lecture Hall B, beginning at 1:00 pm until 3:45 pm

1:00-1:15 Characterization of the hydrophobic patch domain in the G1 cyclin, Cln3, of *Saccharomyces cerevisiae*.

Alison Groeger

Faculty Mentor: Mary Miller

Department of Biology

In *Saccharomyces cerevisiae*, G1 cyclins are responsible for initiating the cell cycle in a process that ultimately leads to cell division. Cyclins function by binding to and activating a cyclin dependent kinase, in this case Cdk1. In addition to expression, localization and substrate interaction of the cyclin-Cdk1 complex influences activity. Many cyclins have a hydrophobic patch domain (hpd) in the beginning of the cyclin box. It has been demonstrated that the hydrophobic patch promotes the recruiting of substrates to cyclin-Cdk complexes in the cases of Cyclin A in humans and Clb5 in *S. cerevisiae*. In *S. cerevisiae* the three G1 cyclins are called Cln1, Cln2, and Cln3. To investigate whether or not the function of Cln3 is dependent upon the hpd, we have mutated three residues in the Cln3 hpd and tested the mutant protein, *cln3-hpm*, for function. Tests reveal cases in which the *cln-hpm* is less efficient at rescuing the cell cycle than wild-type Cln3. This investigation supports the notion that the hydrophobic patch domain of Cln3 plays a significant role in the cyclin's activity during the G1 phase of the cell cycle in *S. cerevisiae*.

1:15-1:30 Signal Transduction Mechanisms of GABA-B regulation of Calcium Currents in Isolated Hippocampal Neurons

Amir Paydar

Faculty Mentor: Jay A. Blundon

Department of Biology

The neurotransmitter GABA has been shown to have multiple effects in the mammalian brain. GABA receptor activation inhibits, or decreases, calcium ion flow through N-type calcium channels and facilitates, or increases, calcium currents through L-type channels. These discrete effects are often present simultaneously in a single cell. In this study, we investigated the intracellular signal transduction mechanisms for both effects. TwofoU9 Trin Tcolin dis

3:00-3:15 **Genetic complementation of Calcofluor White hypersensitive mutants of the filamentous fungus *Aspergillus nidulans***

Timothy A. Hoggard

Daniel Dunnivant*

Faculty mentors: Darlene Loprete* and Terry Hill

Departments of Biology and Chemistry*

Fungi are important and beneficial contributors to the environment and to human economy. Yet, fungi are also capable of being powerful pathogens to plants, animals and humans. The fungal cell wall plays a critical role in fungal growth and maintenance. Fungal viability depends on cell-wall metabolism so understanding how the cell wall is constructed is important. Since human cells lack a cell wall, the ability to manipulate the wall could increase the benefits of fungi or decrease the risks of fungi. We used Calcofluor White (CFW), a chemical that binds to the cell wall, to identify six cell-wall mutants from a collection of mutants in the filamentous fungus, *Aspergillus nidulans*. Those individuals that have a damaged cell-wall gene grow poorly or not at all in the presence of the CFW. Transformation of one of the mutants with a genomic library has currently led to the genetic complementation, rescued growth in the presence of CFW. The rescuing plasmid has been isolated from the mutant, characterized and is currently being sequenced to determine the ORF responsible for the rescue.

3:15-3:30 **Predictors of Self-Reported Physical Symptoms in Children**

Sandra Scott

Faculty Mentor: Chuck Stinemetz

Department of Biology

Reliability of self-report of both medical history and current symptoms is crucial for healthcare practitioners to be able to formulate an accurate diagnosis and manage symptoms, but many factors such as impaired cognitive ability, old age, pain-related anxiety, and perceived vulnerability to illness have been shown to affect the ability of patients to comprehend, recall, and express their symptoms. Assessing the likelihood of children who have recently completed treatment for cancer and of healthy children to report their physical symptoms involved collecting demographic information from and administering measures of physical symptoms, defensiveness, anxiety, anger management, body consciousness, and perceived situational stress to 240 children. Age, anxiety, anger expression, public and private body consciousness, and perceived situational stress correlate positively with self-report of physical symptoms, while defensiveness correlates negatively with self-report of physical symptoms. Correlation is not demonstrated between self-report of physical symptoms and status of physical health, gender, race, socioeconomic status, anger control, or perceived body competence. Awareness of which personality and demographic characteristics are associated with various levels of report of physical symptoms in children might assist clinicians in determining when symptoms have been over- or underreported by children.

3:30-3:45 **The Theory and Application of Glucose Amperometric Sensors (Nonjuried)**

Stanley Ray Vance, Jr.

Faculty Mentor: Bradford Pendley

Department of Chemistry

Diabetes, a condition characterized by the body's inability to uptake glucose properly, can lead to an abnormal excess of glucose in the bloodstream. This metabolic disease affects the lives of millions around the world each year. In order to manage diabetes properly, a person with diabetes should regularly check their blood glucose level and take appropriate action based on the result. In response to the necessity of accurate and rapid measurements of blood glucose levels, the scientific community has developed amperometric glucose sensors to aid patients in monitoring their blood glucose level. At the present time, the commercialized finger-stick glucose sensors are readily available. The presentation will provide a general overview of how these particular amperometric glucose sensors function. In addition to basic theory, the presentation will focus on the similarities and differences

chemical links between hydrocarbon chains. Such links form a rigid structural matrix and prevent lamellae from stacking under van der Waals attraction. This morphological insight may help explain and correct the wear mechanisms leading to implant failure.

1:45-2:00 **Adding Device Drivers to the MOSES2 Simulator**
Bryan Alexander

2:30-2:45 **Backscatter Techniques for Ultrasonic Bone Assessment**

Chad Jones

Faculty Mentor: Brent Hoffmeister

Department of Physics

Ultrasound offers a safe, inexpensive, and non-invasive means of measuring bone density in patients suffering from degenerative bone diseases such as osteoporosis. Current ultrasonic techniques

depended on contact time and contact surface area, and these findings suggest that handshakes can be an extremely effective way for disease to spread.

Pyrolysis GC-MS and transmission electron microscopy in the characterization of crosslinked UHMWPE microstructure

Carl Carlson*

Karyn Spence

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

Faculty Mentors: Richard Redfearn* and Ann Viano

Departments of Chemistry* and 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

imagM1538 Td using TEM and SEMte 0 TdM15n total knee ac
e adkne1, y d hesesEBNATd (-)Tj 0.01495 T-s7g TEM anon l.3125Carl985Td (-1.39045 se d C846e adkne3Ccgge is0.5w clonse
son ow 0 -1.2308 43538 Td

The Effects of Meta-Stereotypes and Attempts to Suppress Racist Thoughts on Interracial Interactions

Casey Blalock

Betsy Bogler

Faculty Mentor: Chris Wetzel

Department of Psychology

American is an increasingly diverse nation, and as a result, most people interact with people of different ethnicities on a regular basis. One's expectations about how others will perceive them, motivation to suppress racist thoughts and behaviors, and level of self-awareness can impact interracial interactions. Meta-stereotypes, or how one thinks others perceive their in-group, may aid in the suppression of social stereotypes so as to reduce negative evaluations from others (Macrae, Milne, & Bodenhausen, 1998). The present study investigates the effects of meta-stereotypes and attempts to suppress racist behavior on the self-perceptions, observer perceptions, non-verbal behavior, self-awareness, and mood of individuals during interracial interactions. Caucasians interacted with an African American confederate whom they were told expected them to be either prejudiced or non-prejudiced. They were asked explicitly not to act racist or implicitly to just act naturally during the interaction. The results indicated that males in the explicit suppression - prejudiced expectation condition appeared to have more positive interactions with the African American confederate, while males in the implicit suppression and prejudiced expectation condition appeared to have the most negative interactions. Women's interactions were largely unaffected by the independent variables. The implications of these findings for interracial interactions are discussed.

Overhearing a racial slur followed by condemnation: Implicit racism as a social disease

Shelley Fulghum

Kate Strother

Olivia Inscore

Faculty Mentor: Chris Wetzel

Department of Psychology

The present study explored participants' reactions to hearing a racial slur and how that experience would affect their judgments on ratings of an African-American target. Sixty Caucasian college students evaluated an essay, ostensibly written by an African American male applying for a scholarship. While they were reading the essay, a male research accomplice either voiced a racial slur or a non-racial remark. A second female research accomplice either condemned the comments or remained silent. Male participants' ratings of the essay were lowered (contaminated) by the racial slur unless it was confronted by the second accomplice. Male participants' essay ratings were also reduced when the second accomplice challenged a non-racial remark as being racist. Female participants' showed sympathy or compensation effects, increasing their evaluations when they heard the slur, heard a challenge, or heard both. After evaluating the essay, participants provided first impression ratings of their fellow participants allegedly for a separate experiment. Both female and male participants rated the female accomplice as extremely likable when she confronted the racial comment, whereas her likeability decreased when condemning a non-racial comment.

Facts in Fiction: The Effects of Text Structure on Reading Comprehension

Amanda Hathaway

Laura Hilliard

Lindsay Sears

Sarah Donley

Faculty Mentor: Hyun-Jeong Kim

Department of Psychology

The expository text structure found in school text books contains unfamiliar condensed facts and details, which can oftentimes be overwhelming and uninteresting. The purpose of this experiment is to see if a more interesting, relevant text structure, namely narrative structure, will improve comprehension. The qualities of narrative structure should result in better comprehension because of its simplicity, familiarity, and similarity to our everyday lives, whereas expository texts are more decontextualized. Participants included 64 undergraduate

Natural and Social Sciences Posters – Session 2

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

The Abundance of Chlorinated Pesticides in Soil with Regards to their Distance from Cypress Creek, Method Comparison and Bioremediation

Jack Stewart

Dan Paull

Faculty Mentors: Richard Redfearn and Bradford Pendley

Department of Chemistry

In our project we had three specific goals: Assess pesticide content of Cypress Creek floodplain, Assess pesticide content as a function of distance from creek and Determine pesticide abundance by two methods for method comparison (Soxhlet and an Association of Analytical Chemists official k fradford P. Addissel3pres8n 0 9.M14369Tc -0.029

no difference between any of the transects. There was no observable difference between the urban and rural spider communities of the Wolf that were sampled.

Characterization of *Aspergillus nidulans* Mutants Defective in Cell Wall Metabolism

Chip Hartigan

Hung Hoang

Faculty Mentor: Terry Hill

Department of Biology

Fungi are important microorganisms that play essential recycling roles in nature, cause a number of diseases, and participate in industrial processes. The ability to manipulate fungi is not only medically and economically advantageous but is desirable for improving our understanding of nature. The invasive lifestyle of filamentous fungi is characterized by a branched hyphal growth form determined by the cell wall. Much remains to be discovered on how fungal walls are synthesized in regulating fungal growth. Previous work in this lab involved the screening of a collection of *Aspergillus nidulans* mutants and identifying strains that show hypersensitivity to sub-lethal levels of the cell wall inhibiting agent Calcofluor (CFW). The goal of our research has been to establish baseline measurements of growth and spore germination as a preliminary step towards the full phenotypic characterization of several mutant strains. We monitored the germination of a wildtype strain (GR5) and two mutant strains (1-49, 11-92) both in the presence and absence of CFW. Quantifiable aspects were compared in establishing a maximum 3 $\mu\text{L}/\text{mL}$ concentration of CFW that allows for normal germination of the wildtype strain while severely inhibiting the growth of the two mutant strains. Calcofluor at this concentration was proven able to differentiate mutants from wildtype using both colony and microscopic assays.

“And I was so happy it felt like I was free”: Children’s narrative construction of emotion

Alexis Harris

Faculty Mentor: Marsha Walton

Department of Psychology

The construction of emotion in narratives about interpersonal conflict was examined in a sample of 689 narratives written by 452 inner-city Memphis children from 3rd–6th grade in two schools. A coding system was developed and inter-rater reliability was achieved to identify emotionally laden language and talk about emotions. Feelings, emotional expressions, emotional behaviors/experiences, and desires were coded. Talking about emotion was related to other previously coded variables such as age, gender, and neighborhood in the story. In the higher-risk school, children talked less about emotion while reporting higher levels of violence, and in the moderate-risk school children talked more about emotions as they got older. The relationships between talk about emotions and moral reasoning, naive epistemology, and types of explanations for aggression are also explored.

“What Would You Do?”: Comparing Children’s Responses to Hypothetical Conflict Situations and Their Written Narratives

Jessica Struby

Faculty Mentor: Marsha Walton

Department of Psychology

This study was designed to investigate whether children’s responses to hypothetical conflict situations are related to factors presented by the children in a narrative depicting an actual conflict they encountered. 434 inner city 4th–6th graders were asked to complete the Hypothetical Conflict Test (HCT), which poses a hypothetical peer conflict situation, providing a list of responses and prompting the student to designate which responses they might use in such a situation. The HCT scores were then compared to numerous factors in children’s autobiographical peer conflict narratives in order to test the validity of the questionnaire as well as to determine some of the factors which may influence children’s resolution strategies. Results indicated that high Hypothetical Conflict scores predict more frequent attempts to resolve narrative conflicts. In addition, HCT scores are related to narrative factors such as violence, emotionality, and morality.

A Neighborhood Comparison Investigating Factors that are Related to the Prevalence of Homicides within Certain Neighborhoods in Memphis, Tennessee.

Sarah Donley

Faculty Mentor: Lizabeth Zack

Department of Psychology

Four hundred and eighty-four homicides that occurred in Shelby County, Memphis, Tennessee, from August 2000 to December of 2001, were investigated for this study. Specifically, there were 238 homicide suspects and 246 homicide victims. Initially, frequencies were run on different variables, such as the incident address, suspect and victim's residence, age, race, gender, and the month, day, and year that the incident occurred. The data was provided by the Memphis Police Department and The University of Memphis' Center for Community, Criminology, and Research. Once frequencies were run, several series of maps, using the Geographic Information System program, were created to help identify patterns and/or "hot spots" where a number of homicides had occurred. Four neighborhoods that contained a number of homicides were then chosen in order to compare the socioeconomic and demographic characteristics of the neighborhoods. This information was obtained from the 2000 United States Census, and the values for those characteristics were tested across all four neighborhoods using an independence of classification chi-square test. Results showed that the following socioeconomic and demographic characteristics not only differed significantly across all four neighborhoods, but also were identified as "risk" factors that correlated to the number of homicides within each of the neighborhoods.

Absolute Pitch and its Connection to Dorsolateral Frontal Region Activation

Julia Walsh

Karen Dobyns

Jen Labreque

Dan Paull

Sean Walton

Mary Williams

Faculty Mentor: Robert Strandburg

Department of Psychology

The purpose of this study was to gain insight into the mechanisms necessary for absolute pitch (AP)—the ability to identify a tone's pitch without contextual musical reference. MRI studies have shown that AP individuals differ from non-AP individuals in produced dorsolateral frontal (DLF) activation when listening to tones. The DLF region is involved in controlling word-object associations, and seems to play a role in AP. We used EEG to measure brain activity in the DLF region of non-AP individuals. The participants learned to associate 5 letters to 5 tones and we recorded their EEG during tone presentation, both before the learning phase and after the learning phase. We expected to find a decrease in alpha power and an increase in beta power in the DLF region (signaling activation in this area) after the subjects learned to associate each tone with its corresponding letter. In essence, AP individuals automatically retrieve tonal/verbal associations from the DLF region during tone presentation which allows them to spontaneously name tones. If non-AP individuals show similar activation of the DLF, then this would indicate a similar processing of pitch information across both AP and non-AP individuals.

The Effect of Temperature on Bacteriophage Plaque Formation (Nonjuried)

Rose Hiner

Faculty Mentor: Mary Miller

Department of Biology

A bacteriophage is a virus that attacks only specific bacterial cells. The virus uses the host cell's mechanisms to produce viral DNA and proteins creating new phages. These phages then lyse the host cell killing the bacterium and creating a zone of clearing in a bacterial lawn called a plaque. These bacteriophages can be effective antimicrobial agents against many bacteria; therefore, research is being done to determine if bacteriophages can be a good substitute for antibiotics. Because bacterial infections tend to be associated with increased body temperature, it is important to determine the temperature sensitivity of these viruses. This experiment tries to determine the effect of temperature on plaque formation. This effect is addressed by incubating *E. coli* with the

bacteriophage, lambda, at 16°C, 30°C, 37°C, and 42°C and determining the number of observed plaques at each temperature. We demonstrated that more plaques are formed as temperature increases in the range provided. Therefore, at higher temperatures, the phages are able to survive and seem to be more effective.

Special Sessions:

Campus Environmental Research: Audits, Baseline Studies, and Community Involvement

Environmental Audits Oral Presentations Session

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

This is a special, non-juried session sponsored by the ACS Environmental Initiative to highlight sustainability on campus and in the neighboring community. The session is designed for students who are at the introductory stage of conducting research.

1:00-1:20 Gas Guzzling?

David LeFevor

Elizabeth Cooper

Joan Mcenry

Faculty Mentor: Carol Ekstrom

Department of Physics (Geology)

With the current situation in the Middle East and the well known effects of fossil fuels on the environment, it is important to be cognizant of the amount of gasoline that we, as individuals and as a school, consume. We have generated figures on how much gasoline the average Rhodes student consumes on a daily, monthly and yearly basis on his/her commute to school. We also circulated a questionnaire to assess whether students were aware of the fuel efficiency of their automobiles and to see how a possible change in the campus automobile policies would be taken by the student body. The final part of our project was to collect information from campus safety on the fuel consumption of the campus fleet and decide, on a purely financial basis, whether a switch to more fuel efficient vehicles would be beneficial.

1:20-1:40 Feasibility of a Glass and Plastic Recycling Program at Rhodes

Andrea Strickland

Jim Hopkins

Faculty Mentor: Carol Ekstrom

Department of Physics (Geology)

We are investigating the possibility of implementing a plastic and glass recycling program. While Rhodes currently recycles aluminum and paper, there is no recycling program for plastic and glass. According to a previous garbology study done at Rhodes, plastic alone accounts for the third highest percentage of garbage generated on campus. Since that study was done, some of the coke vending machines at Rhodes have been changed from dispensing aluminum cans to dispensing plastic bottles and East Village has been built, both of which would most likely increase the amount of plastic generated on campus. We plan to estimate the quantity of plastic and glass generated by Rhodes, as well as the disposal costs.

1:40-2:00 **Energy Audit 2003**

3:20-3:40 **Water Audit 2003**

Daniel Bremmer

Enoch DeVors

Faculty Mentor: Carol Ekstrom

Department of Physics (Geology)

For our audit we compare flux and usage between a dormitory and a non-dormitory building. The two buildings that we will use are Spann (dormitory) and the McCoy Theater (non-dormitory). We have interviewed Amy Radford of the Physical Plant and gained information and statistics for the past several years that will help in this audit. We will also be using past audits for comparison. We plan on finding out how water usage has decreased and see if improvements in water conservation technology have helped to solve the problems of wasted water on campus. If not, we will consult the physical plant and see if there is any other method that can be used to conserve water. We will be investigating the possibility of an Eco-house project such as the one they are doing at Centre College. Our base line figures will be the stepping stones for such a project.

3:40-4:00 **Hazardous Waste on Rhodes Campus**

Marcus Cox

John Gordon

Cleve Weise

Faculty Mentor: Carol Ekstrom

Department of Physics(Geology)

As a part of the Environmental Geology 214 Environmental Audit program at Rhodes college, we have decided to discover hazardous material on campus, research the correct disposal techniques of hazardous material, find out if these practices at Rhodes are being followed, and if we can improve upon them. By studying hazardous materials on campus, we may be able to better store and dispose of dangerous materials on campus. Further with the development of an emergency plan we will be able to act quickly and effectively in the time of a spill emergency.

4:00-4:20 **Paper Survey**

Susan Duesler

Katie Duff

Faculty Mentor: Carol Ekstrom

Department of Physics (Geology)

Rhodes potentially wastes a significant amount of paper that could be recycled, put to more efficient/better use, or cut down. We examined the paper usage at Rhodes in the computer center, the purchasing office. We have conducted a cost analysis for paper consumption, tallied student usage of paper, and are examining other options. We have discussed the possibility for double-sided printing in the computer labs, but have concluded that it simply is not feasible. We have also noticed that the students are to blame for most of the paper waste on campus. However, we have other plans: we are hoping to ask faculty to commit to printing double-sided handouts, etc., through their departments and the copy machines. We believe that this will significantly cut down on much of the paper that is wasted. We are also in the process of determining how much paper is recycled and how much trash (that cannot be recycled) is placed within these bins.

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 is funded by an EPA grant for 2002-2003.

Rhodes students Mary Johnston; Rebecca Held, Greta Clinton-Selig, Joanie Mcenry, Jeshenna Johnson, Julian Thomas, and students in Geology 214 have worked with Cypress SWEEP students on a variety of projects.

Our SWEEP partners are Ms. Gwendolyn Shorter, Cypress Middle School teacher; Ms. Brenda Pirtle, Cypress Middle School teacher; Mrs. Lora Gibbons, SWEEP Program Manager; and the SWEEP students from Cypress Middle School.

Lobby by Frazier Jelke Room 141, and Frazier Jelke Room 145

2:30-4:00 **Models of Storm Drains, and Edible Landfills in F J Lobby near F J 141**

3:00-3:30 **SWEEP Skit and Songs in F J 145**

Community Research: the Urban Studies Charette ***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, nonjuried session sponsored by the Urban Studies Program. The term “charette” 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 Charette: Michael Kirby, Urban Studies Program

Church and Community: How are African American Churches providing for their Neighbors?

Kate Norman

The project studies African American Churches within the Memphis community and their involvement in their own community. It shows how the congregations are interacting with their community by what services they are offering and the awareness they have of the needs of the community. Also, it examines whether the members of the congregations are living within the neighborhood where the Church is located. This project shows that Churches can have a significant impact on their community by recognizing the needs of their community and by providing services to meet these needs.

Binghampton, ARE YOU BEING SERVED?

Ginny Meadows

The project answers the questions if agencies really serve their target areas? It will research various private and public service agencies in the Binghampton neighborhood. Staff were interviewed from each organization to determine what services the organizations provide, information about volunteers and employees, and what clients they serve. A sample of agency clients were interviewed to determine how they viewed the quality of the services.

Tracking COACT: A Case Study of Midtown Community Policing Practices

Shayla White

Very little is known about community policing practices in Memphis and even the literature about community policing in other cities is limited. Community policing services and activities are hidden from view to the community and are very difficult for researchers to study. This study was able to obtain unique access to viewing the activities of community policing officers in the Madison Heights neighborhood of Memphis. The student “shadowed” the officers for four days and quantified the extent of time the officers spent on specific community policing activities. This research was supplemented with interviews of residents in the area. The hypothesis of this study was that the officers were not performing community-policing activities in the Madison Heights area. The research did not confirm the hypothesis and found some evidence of effective community policing practices. The study also suggests some ideas for improving community policing of this unit.

Jubilee Schools in Memphis

Allison Grabias

The project examined the newly reopened Jubilee Schools in Memphis. By interviewing students from when the schools were originally opened and then interviewing current faculty, the project was able to compare specific aspects of the schools. Overall, it shows that by addressing the major problems of the original schools, the Jubilee Schools may be more successful.

A Redevelopment Strategy for the Sears Crosstown Building

Curtis Thomas

This project is a study of the redevelopment potential of the Crosstown Sears building in Memphis. The Memphis building is one of many identical buildings that were abandoned when the Sears Corporation left the catalog business in the early 1990s. The goals of this project were twofold: First, to make an informed prediction about the likelihood of a rehab of the building based on an examination of what has been done with similar Sears buildings across the country. Secondly, to present a redevelopment proposal for the site that is sensitive to the needs of the surrounding community, as well as economic trends in Memphis. The redevelopment proposal is based on interviews with community association leaders and experts in the community, as well as an examination of market research and similar development projects. This proposal suggests a community-city partnership to initiate a redevelopment project, which entails a partial demolition of the building coupled with a mixed-T initiate428

rede62 Gra

Tax Increment Financing

John Hendricks

Industrial Facilities Discharging into Cypress Creek

Kate Burgess

A Decade of Change in Hickory Hill

Rodriquez Bailey

Biology II Laboratory Projects: Crayfish Behavior

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

This special, nonjuried session displays posters of research conducted over the last two weeks by the two Tuesday sections of the Biology II introductory labs.

The effects of female chemical signals on the agonistic behavior of male crayfish

Stephanie Gong

Jessica Graham

Leah Kaye

Kristin McKenna

Faculty Mentor: David Kesler

Department of Biology

Visual recognition ability in crayfish

Kelley Babcock

Bethany Drehman

Adam Master

Faculty Mentor: David Kesler

Department of Biology

Comparing dominance In male and female crayfish

Rami Almefty

Peter Igoe

Kristen Andrews

Elizabeth Nabers

Faculty Mentor: David Kesler

Department of Biology

The role of sex in crayfish agonistic behaviors

Lydia Andras

Harrison Golden

Abigail Ray

Chasie Wallis

Faculty Mentor: David Kesler

Department of Biology

Patterns of offensive and defensive behavior in crayfish: fight or flight

James Frost

Angela Kornman

Richa Thapa

Susan Wright

Faculty Mentor: David Kesler

Department of Biology

Intensity and length of aggressive behavior between same sex crayfish

Tyler Gamble

Jonathan Huckeba

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

Judges

David Jilg (Fine Arts)	Victor Coonin (Fine Arts)
Maria Talero (Humanities)	Tim Huebner (Humanities)
Terry Hill (Natural Sciences)	Romi Burks (Natural Sciences)
Mary Miller (Natural Sciences)	Darlene Loprete (Natural Sciences)
Brad Pendley (Natural Sciences)	Tony Becker (Natural Sciences)
David Jeter (Natural Sciences)	Shubho Banerjee (Natural Sciences)
Robert England (Natural Sciences)	Xinxin Jiang (Natural Sciences)
Greg Matthews (Social Sciences)	Natalie Person (Social Sciences)
Mark Pohlman (Social Sciences)	Tom McGowan (Social Sciences)
Chris Wetzel (Social Sciences)	Joyce Kim (Social Sciences)
Kim Hendrickson (Social Sciences)	

Rhodes Jazz Combo

John Ross (Director, guitar)
Angela Kornman (alto sax)
Jenni Scott (tenor sax)la

Y.25 245.25 w -2657hri1nni S986