



**APRIL 29, 2005**  
**MEMPHIS, TENNESSEE**



## **Table of Contents**

Abbreviated Schedule	Page 2
“Symposium at a Glance” grid	Page 3
Fine Arts Division	Page 4
Humanities Division	Page 10
Natural Sciences Division	Page 17
Social Sciences Division	Page 24
Natural and Social Sciences Poster Sessions	Page 34
Special Sessions:	Page 45
Molecular Biology: Bioinformatics Posters	
Animal Behavior “Mini Symposium”	
Environmental Research: Cypress Creek Oral Session	
Community Involvement in Environmental Research:	
Urban Studies Charrette	
Biology II Laboratory Research	
Acknowledgements and Thanks	Page 59

### **Symposium Planning Committee 2005**

Courtenay Harter (Fine Arts)  
Eric Henager (Humanities)  
Chris Mouron (Natural Sciences)  
Thomas McGowan (Social Sciences)  
Richard Redfearn (Chair, Natural Sciences)  
Katie Jameson (Student Representative)  
Sonia Singh (Student Representative)

---



**Symposium at a Glance: for Friday, April 29, 2005**

**F = Fine Arts    H = Humanities    N = Natural Sciences    S = Social Sciences**

**Event:**            9:00    10:00    11:00    12:

**Fine Arts Oral Presentations–Session 1**

***417 Clough, beginning at 10:40 a.m. until 12:00 noon***

***Session Chair: Hamlett Dobbins, Department of Art***

10:40-11:00 **The Adventures and Travelings of Jenny Rogers**

Jenny Rogers

Faculty Mentor: Hamlett Dobbins

Department of Art

Making maps has been a way for me to figure out, literally and figuratively, where I have been and where I am going artistically. Projects include an atlas, a personal chronology, a project in which I send people treasure maps in the mail that will lead them to a buried treasure that I have selected for them individually as well as other prs



a transitional stage of the development of instrumental music as it moved away from vocal models to become anee

music program are the demands of both past and future, the risks of entertainment in worship, and the role of the music director.

3:00-3:20 **“A garden locked...a fountain sealed”:** The Song of Solomon in Botticini’s

*Nursing Madonna*

Georgianna Bowersox

Faculty mentors: Victor Coonin<sup>1</sup>, Ellen Daugherty<sup>1</sup> and Gail Streete<sup>2</sup>

Departments of Art<sup>1</sup> and Religious Studies<sup>2</sup>

With engagement of artistic realism and the explosion of humanist thought, 15<sup>th</sup> century Italian Renaissance society became focused on their relationship with the spiritual in terms of the everyday. Reflecting these notions within art, religious i



**The Department of Music  
presents**

***The Gladys Cauthen Orchestra Soloist Competition***

Thursday, April 28, 2005

4:00 p.m., Tuthill Performance Hall

Concerto for Flute and Orchestra in G major, K. 313  
*Allegro maestoso* Wolfgang Amadeus Mozart  
(1756-1791)

Leigh Bonner, flute  
JemmiLou Rye, piano

Concerto for Violin and Orchestra in G minor, Op. 26  
*Finale: Allegro energico* Max Bruch  
(1860-1920)

Brittany Bostick, violin  
Tom Barr, piano

Concerto for Piano and Orchestra in D minor, K. 466  
*Allegro* Wolfgang Amadeus Mozart  
(1756-1791)

Kayti Fan, piano  
Tom Bryant, piano

*Suite Modale* for Flute and String Orchestra Ernst Bloch  
(1860-1959)

Emma O'Hagan, flute  
Brian Ray, piano

"Exsultate, jubilate," K. 165  
*Exsultate, jubilate* Wolfgang Amadeus Mozart  
(1756-1791)

Caroline King, soprano  
Brian Ray, piano

Concerto for Flute and Orchestra in G major, Op. 29  
*Allegro* Carl Stamitz  
(1746-1801)

Shruti Acharya, flute  
Brian Ray, piano

"Non più, tutto ascolta...Non temer, amato bene," K. 490  
Wolfgang Amadeus Mozart  
(1756-1791)

Amy Moore, soprano  
Brian Ray, piano

*Andante Spinato and Grande Polonaise Brillante*  
for Piano and Orchestra in E-flat major, Op. 22 Frédéric Chopin  
(1810-1849)

Rene Orth, piano  
Brian Ray, piano





forma a esta identidad auto-determinada. En su obra, esta región mítica de los aztecas abarca más que su significado mexicana y la concepción del movimiento chicano de los años 70. El nuevo Aztlán es un espacio sin fronteras que incluye a todos los marginados, los pobres, las mujeres y hasta los homosexuales.

2:00-2:20 **La destrucción del arquetipo y la construcción de la verdad: La Virgen de Guadalupe en *El eterno femenino***

Jenna Sadar

Faculty Mentor: Amanda Irwin

Department of Modern Languages and Literatures

Desde hace siglos se ha puesto la Virgen María como el modelo seguir para la mujer. No es muy sorprendente, entonces, que al aparecer la Virgen de Guadalupe ella también se convirtió en un arquetipo literario.; más que eso, es un icono cultural en México. Sin embargo, ponerlas ella y a otras figuras de la historia mexicana es sumamente problemático para la identidad de la mexicana. En su única obra teatral, *El eter*

3:00-3:20 **Consequences of the Auricular Veneer in Chariton's *Callirhoe*: Translations or Transmogrifications?**  
Zach Harris  
Faculty Mentor: Kenny Morrell





Undergraduate Research an







11:40-12:00 **Finding Association Constants for Ionic Molecules using Monte Carlo Integration**

Paul Sinclair

Faculty Mentor: Shubho Banerjee

Department of Physics

Research into the condensation of ionic systems requires calculating a six dimensional integral that relates the number of free ions to the number of neutral molecules. Regular methods of integration, such as using the software *Mathematica* prove inadequate. Instead we use Monte Carlo Integration that uses random sampling of the integrand to estimate its average. Multiplying by the limits of integration for each variable then yields an estimate of the integral with accuracy that depends on the number of sampled points. The process is easily expanded to

## Undergraduate Research and Creative Activit



3:20-3:40 **Role of MRP4 in Testosterone Transport**  
Matthew D. Cain

1:20-1:40 **Reducing Expression of Neuronal Interleukin-16 using Small Interfering RNA**  
Sinifunanya E. Nwaobi

Aaron Creek

Faculty Mentors: Jay A. Blundon and Catherine P. Fenster

Department Biology

Neuronal interleukin-16 (NIL-16) is a cytoskeletal associated protein found exclusively in the cerebellum and hippocampus. NIL-16 selectively interacts with several neurotransmitter-gated and voltage-gated ion channels that are important for neural signaling. We believe that the interaction of NIL-16 with these ion channels m

migration in response to light and dissolved oxygen concentrations in the water column. I hypothesize that as oxygen stratification intensifies seasonally, dissolved oxygen rather than light will become the greater factor in determining average daytime and nighttime depths.

2:20-2:40



of hydrogen peroxide was established, though in either case further refinements are necessary before clinical implementation of the new technique is possible.

3:20-3:40 **Complementation of a Calcofluor-hypersensitive mutant in *Aspergillus nidulans* by a novel transmembrane protein**

Stanley Vance, Jr.

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

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

The cell wall serves a variety of roles pertinent to fungal reproduction, grow

11:00-11:20 **Changes in Capital flows into South Korea during the Asian Financial Crisis**

Alex Hornaday

Faculty Mentor: Nick McKinney

Department of Economics and Business Administration

Although the Asian Financial Crisis began in Thailand and subsequently spread to many other

12:00-12:20 **“The Market’s Reaction to the September 11<sup>th</sup> Attacks: An Empirical Investigation of” the Aerospace and Defense Industry**

Pratik Patel

Faculty Mentor: Nick McKinney

Department of Economics and Business Administration

Though little has been written about the market’s reaction to the September 11<sup>th</sup> terrorist attacks, stock market behavior has been the subject of much academic research for nearly a century. First introduced by Eugene Fama in 1970, the efficient market hypothesis (EMH) suggests that security prices reflect all available information. On this basis, financial markets are thought to be rationale and efficient in reflecting the underlying value of firms. Beginning in the 1980’s, however, researchers found certain anomalies that caused them to question the efficiency and rationality of capital markets. The consensus among experts is that past notions of market efficiency are flawed in explaining the volatile nature of the stock mark



## Undergraduate Research and Creative Activity Sym



3:00-3:20 **“It’s only natural!”: Small independent natural food markets in a world of artificial colors, flavors, and large corporations**

Stephanie Goldstein

Faculty Mentor: Susan Kus

Department of Anthropology/Sociology

Ethnographies allow us to step into the world of the “other” by access of participant observation, and doing ethnography provides an opportunity to have first-hand experience with cultures and cultural scenes that are so different from our own. In order to understand the importance of organic and natural markets in the community I undertook an ethnography during this semester observing and interviewing the owner and employees of Square Foods, an independently owned organic food store in Midtown, Memphis. Midtown is home to many alternative lifestyles and beliefs, but one thing that many people in the area have tended to support in the last fifteen years is natural and organic food. As the owner of Square Foods told me one day, “pure and unadulterated food is a necessity, not a privilege”. Even though people’s individual lifestyles may be vastly different from one another, independent natural food markets tend to create th

e t



**Social Sciences Oral Presentations – Session 4**  
***302 Clough, beginning at 1:00 pm until 4:00 pm***

***Session Chair: Marsha Walton, Department of Psychology***

1:00-1:20 **Exploring Campus Climate and Racism through Focus Groups**

Stephanie Albury

Kristina Dean

Albani Walker

Faculty Mentor: Anita Davis

Department of Psychology

This research is a continuation of research conducted at the campus climate of Rhodes College during the Fall 2004 semester. Focus groups comprised of approximately 10 students will meet to further discuss issues of inclusion.



Indeed, violence was used often to describe diverse areas of activity, such as communication, effort, politics, studying, relationships, and others. I found that less severe violence metaphors were used more than more deadly ones, but that highly destructive violence was still used frequently to describe experience. Gender differences also emerged; though men's and women's metaphors described similar genres of violence, women's metaphors tended to be less severe than men's. Women were also far m



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

***Frazier Jelke Lobby beginning at 1:00 pm until 3:00 pm***

*Session Chair: Richard Redfearn, Department of Chemistry*

*All posters will be available for viewing from 1:00 to 4:00. At least one of the student collaborators will be in attendance and available for discussion from 1:00-3:00. If a specific collaborator is presenting, that coauthor name is underlined.*

**Measuring the Rotational Velocity of the Sun Using the Doppler Effect and a Homemade Spectrometer**

Kevin Andring

Drew Scott

Faculty Mentors: Brent Hoffmeister and Jay White

Department of Physics

Spectrometers are devices that use diffraction to separate a light source into a continuum of wavelengths. By projecting light through a diffraction grating, emission or absorption spectra can be recorded and used to analyze characteristics of the light source. When the source of the light has a velocity relative to an observer, these wavelen2 0 0 1s 44448.61995 Tm(grat)Tj6gt.63995 Tm(n2 0hsj10.02 0 0 10.02 449.120 10.02 439.98637 43.0015 Tc 0 Tw 10.2 43i9

**The Diffusion of Heat through Metal**

Scott Barrows

Adam Keckler

Whitney Tidwell

Faculty Mentors: Brent Hoffmeister and Shubho Banerjee

Department of Physics

The diffusion equation is a partial differential equation that d



## The Gut-Reactor Theory and Giant Pandas: Internal Digesta Mixing as a Complication for Intake Modeling

Kyle J. Driscoll

Supervisor: Allen Jaslow

Giant pandas (*Ailuropoda melanoleuca*) have the ability to internally mix digesta. This was tested in two trials on a male and female giant panda at the Memphis Zoo. To test the pandas for internal digesta mixing, two separate colors of corn kernels were fed to the pandas at different time intervals (5, 10, and 15 minutes). P1y398

**A Microstructural Study of Ultrahigh Molecular Weight Polyethylene using TEM and Pyrolysis GC-MS**

Terese A. Holm<sup>1</sup>

Carl W. Carlson<sup>1</sup> Rhodes '04

M. Andrew Scott<sup>2</sup>

Karyn E. Spence<sup>2</sup> Rhodes '03

Matt Shanks<sup>2</sup>

Asit K. Ray<sup>3</sup>

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

Departments of Chemistry<sup>1</sup> and Physics<sup>2</sup>, Rhodes College; Department of Chemical and Biochemical Engineering, Christian Brothers University<sup>3</sup>

Ultrahigh molecular weight polyethylene (UHMWPE) is a commonly used material in human joint prostheses. The combination of its non-reactivity in the body and its mechanical properties make UHMWPE ideal for cartilage replacement in artificial knee and hip joints. A drawback is the material's production of submicron wear particles, which can cause adverse biological reactions. Post processing of the material with gamma-irradiation and annealing has been shown to reduce the production of these wear particles. While the effects of these treatments on the macroscopic properties of UHMWPE have been investigated, few research

## Undergraduate Research and Creative Activity Sy

ormation to be capable of phenotype rescue for each mutant. However, neither mutant strain  
e ORF for AN4897.2, suggesting that the gene acts as a high copy suppressor. The  
product of AN4897.2 is an



**Generation of a recombinant murine herpesvirus containing the Epstein-Barr virus viral interleukin-10 (vIL-10) gene**

Desiree Steimer

Faculty Mentor: Gary Lindquester

Department of Biology

Epstein-Barr virus (EBV), a highly pervasive human pathogen, expresses a unique viral interleukin-10 (vIL-10) gene that has striking homology to the human interleukin-10 (IL-10). vIL-10 has not previously been well characterized because of the narrow host range of EBV. To study the function of vIL-10 and its role in EBV pathogenesis, murine gammaherpesvirus (MHV) i

**Natural and Social Sciences Posters – Session 2: Social Sciences posters**

*All posters will be available for viewing from 1:00 to 4:00. At least one of the student collaborators will be in attendance and available for discussion from 2:00-4:00 pm. If a specific collaborator is presenting, that coauthor name is underlined.*

**Recognizing Diversity: Students' Experiences and Opinions on Diversity Acceptance in a Small Liberal Arts College Environment.**

Michael Bray

Marisa Adams

Lindsay Sears

Faculty Mentor: Anita Davis

Department of Psychology

Prior research examining diversity amongst college undergraduate populations tends to focus primarily on racial diversity or sexual orientation (Ancis, Sedaleck, & Mohr, 2000; Evans & Broido, 2002; Hurt





provide a more complete understanding of the U. S. campus climate. Results of the study suggest that anti-GLBT attitudes are present on small, southern, liberal arts institutions. Results also suggest that women are more tolerant and supportive of GLBT issues than are men. Data suggests that exposure to various forms of diversity corresponds to more pro-GLBT attitudes. High religiosity was found to be highly correlated to anti-GLBT attitudes. The results of this study are used to make recommendations for changes in campus climate. **i**

experiences at a small liberal arts college, such as motivatio



***Lynx lynx* Genome Analysis: Phylogenetic Analysis S6 Ribosomal Protein**  
Matthew D. Cain





## Undergraduate Research and Creative Activity Symposium

## Undergraduate Research and Creative Activity

3:00-3:20 **Remediation Technologies**

Alex Chambers

Faculty Mentor: Carol Ekstrom

Department of Physics

Sponsor: Environmental Geology 214

This project outlines the innovative and established treatment technologies for remediation of contaminated soils. It looks at isolation methods, separation methods, and destructive methods as well as *in situ* versus *ex situ* processes. These methods along with soil remediation case studies are used to

as34.52036 618.844.72165 618.84007dr31 9 90c29 10.02 415.89235 618.84007 Tm(i)Tj107 Tm(-esses. )Tj10.02 0 0 10





we found that the area is both highly used by pedestrians, but also a very busy, somewhat unsafe traffic area. In collecting this da

Undergraduate Research an





**Temperature Effects of Crayfish Behavior**

Sarah Cassidy  
Ambreen Mardhani  
Deena Patel  
Karina Van Sickle  
Faculty Mentor: Rosanna Cappellato  
Department of Biology

**The Effect of Worm Odors on the Behavior of Crayfish**

Krissy Eron  
Brittaney Glazer  
Kimberly Godwin  
Kacie Ross  
Katie Slimp  
Faculty Mentor: Carolyn Jaslow  
Department of Biology

**Crayfish Light Preference in an Aqueous Environment**

Casey Derbes  
Grant Hayes  
Kelly Hoth  
Amy Ross  
Kelly Brier San Miguel  
Faculty Mentor: Carolyn Jaslow  
Department of Biology

**Male vs. Male and Male vs. Female: Is Crawfish Aggression Affected by Gender?**

Frances Benoist  
Amie Cahill  
Elizabeth Killion  
Emily Smith  
Faculty Mentor: Carolyn Jaslow  
Department of Biology

**The Effect of Size Variation on Aggressive Behavior and Bout Victories Among Male Crayfish**

Mary Landon Downs  
Jeremy Foon  
Nici Thomas  
Daniel Vanaman  
Faculty Mentor: Carolyn Jaslow  
Department of Biology

**Female Crayfish Agonist Behavior Due to Different Environments**

Matt Ricke  
Eddy Han  
Joe Williams  
Mark Scott



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

**Session Judges: Rhodes Faculty (F = Fine Arts, H = Humanities, N = Natural Sciences, S = Social Sciences)**

Erin Harmon (F)	Ellen Daugherty (F)	Diane Clark (F)
David Mason (F)	Timothy Powell (F)	Rebecca Rothman (F)
David Jilg (F)	Rocío Rodríguez del Río (H)	Alexandra Kostina (H)
Anna Dronzek (H)	Gail Streete (H)	Tom Cohen (H)
Chris Seaton (N)	Loretta Jackson-Hayes (N)	Ivaylo Ilinkin (N)
Shubho Banerjee (N)	Rosanna Capellato (N)	David Kesler (N)
Jay Blundon (N)	Mauricio Cafiero (N)	Annette Teepe (N)*
Anita Davis (S)	Bette Ackerman (S)	Hyun-Jeong Joyce Kim (S)
J. Peter Ekstrom (S)	Tom McGowan (S)	Chris Wetzel (S)
Daniel Arce (S)	Mark Smith (S)	Marshall Gramm (S)

\*working with student volunteers

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

Monica Arroyo, Ph.D., Department of Structural Biology  
Stacy Donovan, Ph.D., Department of Developmental Neurobiology  
Steven Fenster, Ph.D., Department of Developmental Neurobiology  
Adam Gromley, Ph.D., Department of Genetics/Tumor Cell Biology  
David Vigerust, Ph.D., Department of Infectious Diseases

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

John Bass (Director)  
Josh Jefferies (trumpet)  
Matthew Horton (alto saxophone)  
Ryan Nall (guitar)  
Joe Noel (piano)  
Rene Orth (piano)  
Nate Smith (drums)  
Stephanie Swindle (bass)  
Charles White (tenor saxophone)  
Megan Norman (pianist for the Plenary Lecture reception)

**Special Session Organizers**

Tony Becker: Animal Behavior  
Carol Ekstrom: Environmental Research: Cypress Creek Oral Session  
Carol Ekstrom: Environmental Research: SWEEP events  
Michael Kirby & Carla Shirley: the Urban Studies Charrette  
Rosanna Cappellato, Carolyn Jaslow, David Kesler: Biology II Laboratory Posters  
Gary Lindquister: Molecular Biology: Bioinformatics Posters

**The Office of Dean of the College for Financial Support, and the Center for Academic**