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The Seventh Annual
Southwestern University
Undergraduate Research and Creative Works Symposium
April 6, 2006

Members of the Southwestern and Georgetown Community

It is our great pleasure to welcome you to the eighth annual Southwestern University Undergraduate Research and Creative Works Symposium (SUURCWS).

For the past eight years, the Symposium has become one of Southwestern's greatest legacies. Its grand display of the various interests, expertise, and in and out-of-classroom experiences of Southwestern students encapsulates the spirit of a liberal arts education. The Symposium is a celebration of students' ability to utilize classroom knowledge to gain understanding of the world and affect change in Southwestern, the community, and the world at large.

This year, a record high number of 100 presentations will be showcased featuring the works of 128 students from 24 disciplines. The diversity of presentations will hopefully provide an opportunity for the Southwestern and Georgetown community to engage in conversations on thought-provoking topics.

We appreciate your attendance immensely and hope that you leave the Symposium with a wealth of new knowledge. Get ready to expose yourself to something different.

Sincerely,

Braden Ackley, Hailey Ormand, and Emily Travis
Program Chairs, Undergraduate Research and Creative Works Symposium

**something like this will be entered here:



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SCHEDULE AT A GLANCE

5:00 – 6:00 Oral Presentations: McCombs Ballrooms and Merzbach Room

6:00 – 7:00 Poster Presentations: Bishop's Lounge

Hors d'Oeuvres will be served

7:00 – 9:10 Oral Presentations: McCombs Ballrooms and Merzbach Room

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Oral Presentations

Session 1: McCombs Center, Lynda McCombs Ballroom

- 5:00 1. **The Effect of mPOA Lesions on Paced Mating Behavior**
Amanda Covington, Matthew Gilbert, Department of Psychology, *Southwestern University*
- 5:15 2. **Relatedness and Alliance and Coalition Formation in Captive Chimpanzees**
Shanon Claudio, Animal Behavior Program, *Southwestern University*
- 5:30 3. **Effects of Anosmia on Female Rat Paced Mating Behavior and Mate Preference**
Sarah McCracken, Department of Psychology, *Southwestern University*
- 5:45 4. **Weddell Seal World: Analysis of Weddell Seal vocalizations**
Cody Freas, Animal Behavior Program, *Southwestern University*

Session II: McCombs Center, Marsha Shields Ballroom

- 5:00 5. **Male Bonding: The Influence of Male Relationships in Captive Chimpanzee Social Groups**
Mary Catherine Mareno, Animal Behavior Program, *Southwestern University*
- 5:15 6. **Sex, Drugs, & CoCoo Puffs: Zinc Sulfate Administration and Mate Preference in Female Rats**
James Le, Kuan Hsien Lee, & Sarah McCracken, Department of Psychology, *Southwestern University*
- 5:30 7. **Salinity Tolerance of Tadpoles**
Jessica Hua, Department of Biology, *Southwestern University*
- 5:45 8. **Comparing Applesnails to Oranges: The Impact of Different Measuring Techniques on the Study of Pomacea**
Abigail Youens, Department of Biology, *Southwestern University*

Session III: McCombs Center, Connie McNab Ballroom

- 5:00 9. **Locating Jewish Identity in Poland: Thoughts and Photographs**
Meghan Elliot, Department of Sociology and Anthropology, *Southwestern University*

- 5:15 **10. From Romance to Self-Realization: How College Women Construct a Self Through Romantic Relationships**
Alice May Berthelsen, Department of Sociology and Anthropology, *Southwestern University*
- 5:30 **11. T.V. and Our U.S. Pride**
William Faulk III, Department of Sociology and Anthropology, *Southwestern University*
- 5:45 **12. Religiosity and Attitudes toward the Civil Liberties of Nonconformists**
Mary Kierst, Department of Sociology and Anthropology, *Southwestern University*

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Session IV: McCombs Center, Cove Media Room

- 5:00 **13. Americans' Perceptions of Blacks, Hispanics, and Jews: A Study of the Effects of Education and Age on Attitudes Toward Minority Groups**
Sarah Fankhauser, Department of Sociology and Anthropology, *Southwestern University*
- 5:15 **14. Racial Integration within a Church Setting and Feelings Toward Homosexuality**
Caroline Morris, Department of Sociology and Anthropology, *Southwestern University*
- 5:30 **15. Screw You, We're from Texas: the Politics of Place and the Power to Resist in Texas Country Music**
Nathan Turner, Department of Sociology and Anthropology, *Southwestern University*

Poster Presentations and Creative Works

6:00 – 7:00 p.m. Session for Poster Presentations and Creative Works. Refreshments Served

6:10: Welcome: Jim Hunt, Provost

Location: Charles & Elizabeth Prothro Bishops Memorial Lounge,
 McCombs Center

Oral Presentations Continued

rather than a medical one and that, unlike some of the texts I have read would assert, the idea of deafness cannot be contained—it is a complex, ever-changing system. I will explore my membership, or lack of, in the Deaf world by trying to understand how those who are unquestionable members define it. Ultimately, I will show how definitions alone cannot put a person into deaf culture or remove a person from deaf culture. Deaf culture is not a neat construct, so I will not make attempts to answer specific questions—I will try to capture the experiences of people who are located within a particular time and place. I intend for this thesis to be a snapshot, not a solution. This thesis is meant to be provocative, not definitive.

59. Chinese Awareness on Campus
 Meg Connelly & Kuan Hsien Lee, Department of Modern Languages, *Southwestern University*
 Sponsor: Patricia Schiaffini, Department of Modern Languages, *Southwestern University*

Our project is going to be a lasting and workable resource for the growing Chinese program. It is a website with three different sections focusing on class/academics, campus/activities, and study abroad. The class section is for the Chinese teachers to work with, where they can upload information for their classes and about tutorials. It is supposed to assist students with research information and links to dictionaries. The campus section has information for both Chinese language students and non-Chinese language students. It has a streaming video of people's opinions of Chinese on campus and China in general. It will also have information for the Asia club. The study abroad section has information to make it easy to study abroad. It also answers questions and gives opinions from experienced students. We want the campus and others to be aware of this site, so that it will be used.

Session V: McCombs Center, Lynda McCombs Ballroom

- 7:00 **16. ZZZs to As: The Effects of Limited Sleep on Executive Functioning**
 Sally Redden, Leigh Mingle, & Shelly Tang, Department of Psychology, *Southwestern University*
- 7:15 **17. Why is Love Stressful?: Self-Expansion as a Partial Mediator of Passionate Love's Effect on the HPA-Axis**
 Aubri Paxson, Department of Psychology, *Southwestern University*
- 7:30 **18. Emulating Ellen and Worshipping Will: An Interview Study of the Influence of Media Role Models on Gay, Lesbian, and Bisexual Identity**
 Sarah Gomillion, Department of Psychology, *Southwestern University*
- 7:45 **19. Factors Influencing Eyewitness Reliability**
 Chris Green & Sally Redden, Department of Psychology, *Southwestern University*

Session VI: McCombs Center, Marsha Shields Ballroom

- 7:00 **20. Comparison of the Discriminative Stimulus Effects of DOM, MDL100907 and Ketanserin in Rats: Inverse Agonism?**
 Alison Unzeitig, Department of Biology, *Southwestern University*
- 7:15 **21. The Curse of Copper: A Look at International Grassroots Resistance to the Transnationals Companies We Rely On**
 Benjamin Johnson, Environmental Studies Program, *Southwestern University*
- 7:30 **22. EcoVillage: Green Living at Southwestern**
 Benjamin Johnson, Aubrey Weeks, Ansa Copeland, Matt Glenn, Alex Rutledge, & other members of Students for Environmental Activism and Knowledge, Environmental Studies Program, *Southwestern University*

Session VII: McCombs Center, Connie McNab Ballroom

- 7:00 **24. How Taxing is TAKS Testing on Texas Teachers?**
 Amanda Wallace, Department of Education, *Southwestern University*
- 7:15 **25. Gender Inequality: Effects of Elementary School Science on Girls' Interest in Science**
 Kimberly Cavett, Department of Education, *Southwestern University*
- 7:30 **26. Costs and Benefits of High Stakes Testing in Math**
 JoAnn Lawhorn, Department of Education, *Southwestern University*

Session VIII: McCombs Center, Cove Media Room

- 7:00 **27. Cultural Context of Math Word Problems**
Allie Stevenson, Department of Education, *Southwestern University*
- 7:15 **28. Schools of Low SES: Who, What, and How it Affects**
Katie Stancil, Department of Education, *Southwestern University*
- 7:30 **29. Speaking One's Mind: The Relationship Between Thought and Verbal Language**
Sam Shannon, Department of Religion and Philosophy, *Southwestern University*
- 7:45 **30. Guerillas in the Government: The Evolution of the National Liberation Movement--Tupamaro in Uruguay**
Olivia Travieso, Latin American Studies Program, *Southwestern University*

Session IX: McCombs Center, Lynda McCombs Ballroom

- 8:10 **31. Civic Involvement in Russia: An analysis of motivators and deterrents**
D. Martin Stanberry, Department of Political Science, *Southwestern University*
- 8:25 **32. Spain: A Transformation to Democracy, 1914 to Present**
Sarah M. Salinas, Department of Political Science, *Southwestern University*
- 8:40 **33. The Gentleman of the "Imperial Race": Constructions of Masculinity in Imperial Britain, 1870-1900.**
Sarah Morris, Department of History, *Southwestern University*
- 8:55 **34. The United Nations and Female Genital Mutilation**
Jacqueline M. Jeffcoat, Department of History, *Southwestern University*

Session X: McCombs Center, Marsha Shields Ballroom

- 8:10 **35. Courtly Love in the Writing Center**
Deann Armstrong, Department of English, *Southwestern University*
- 8:25 **36. Close Consultation: Familiarity and the Small University's Writing Center**
Bethany Leidlein, Department of English, *Southwestern University*

57. Time, Space, and Memory: Remembrance and Representation of the French Revolution in Trans-National Contexts
Sarah Morris, Department of History, *Southwestern University*
Sponsor: Lisa Moses Leff, Department of History, *Southwestern University*

As a seminal event, powerful symbol, and influential idea, the French Revolution has, and continues to, resonate within various collective memories. Undeniably a crucial national event, the Revolution has nonetheless exhibited transcendental elements, proving highly influential in numerous foreign arenas. Actors in disparate temporal and spatial contexts have continually appropriated and re-imagined components of the French Revolution, utilizing the memory of the Revolution as a crucible where historical, national, political, and revolutionary identities are forged and articulated. Utilizing Halbwachs's notions of past memories as collectively reconstructed on the basis of the present, and Pierre Nora's theories on realms of memory as repeatedly re-formulated dialogues between the past and the present, this paper explores memories of the French Revolution as a trans-national phenomenon. This paper examines the factors contributing to the Revolution's longevity and exportability and considers how certain aspects and understandings of the Revolution are utilized in different national contexts by a variety of actors, particularly those who identify with certain values espoused by the Revolution. Significantly, the Revolution's own historical conceits, universalizing ethos, rhetorical style, and formulations of time, particularly non-linear tropes, have impacted how it is remembered, creating paradigmatic frameworks within which processes of memory occur. By analyzing variable guises of the Bastille in historical memory, this paper seeks to explore how non-French individuals and groups discursively and visually utilize memories of the French Revolution, influenced by both parameters of the past and concerns of the present, to articulate a variety of ideologies and identities.

58. The Culture of Deafness: A Journey Into a Not-So-Silent World
Elizabeth Knox, Department of Communications Studies, *Southwestern University*
Sponsor: Bob Bednar, Department of Communications Studies, *Southwestern University*

I will be conducting an exploration of hearing and deaf culture and their bridges. My interest is providing a glimpse into the natures of the interactions between the two cultures and their variations. I focus on key elements such as Deafness (capital D) versus deafness and the idea of culture as a closed system. I am especially looking at the interactions that occur when signing deaf people must come into contact with the oral world. I am exploring how this shapes experiences and perceptions of each other as the Other, as a person who utilizes an entirely different method of communication. I will also explore how people who have physical attributes of hearing loss, but not the cultural membership of Deaf culture, interact with other deaf people. Like the hearing, these speaking deaf might find themselves at a loss for how to communicate with the signing deaf who are their kindred in a physical, anatomical regard. I hope to provoke thought about the idea of deafness as a social issue

impaired and those who use alternative methods to interact with a computer system. Accessible user interfaces include techniques and strategies for making information easy to access and use for every user, whether visitors or administrators. This includes print-friendly presentation of information and an easy way to track when and how the portal has been updated. Data security will be put into place to prevent unauthorized access to sensitive information and areas. This includes implementing a thorough and rigorous set of security protocols as well as a tiered user system, with varying privilege levels as appropriate. Content management and maintenance, a critical area, includes creating, editing, and deleting information, as well as ensuring everything is frequently backed up and in good working order.

56. Programming Environment for Network Processing Units
 Nathan Lindzey, Department of Mathematics and Computer Science, *Southwestern University*
 Sponsor: Richard Denman, Department of Mathematics and Computer Science, *Southwestern University*

Since the turn of the century, Internet usage has grown by over two hundred percent and is steadily connecting cultures across the globe. This breakthrough, along with the immense variation in electronic media, has introduced an unforeseeable magnitude of stress on the infrastructure of the Internet, which in turn has revealed its economic and architectural inadequacies. In order to support the ever-growing online community and the integration of cultures, the aforementioned problems must be addressed. Recently, through the strife of cyberspace, has emerged the NPU—a more flexible and economical solution than ASICs (Application-specific integrated circuits). The flexibility of the NPU can be attributed to using firmware in EEPROM (Electrically Erasable Programmable Read-Only Memory) for the functionality of the unit rather than integrated circuits which are inherently not reprogrammable. This approach allows network systems to dynamically adapt to changes in the network environment. Unfortunately, it is quite difficult in practice for programmers to harness this flexibility. Because the NPU is in its infancy, an industry standard for NPU hardware architecture has not been developed. Consequently, there exists a multitude of competing architectures. Having many different architectures is problematic because the programmer must have an intimate understanding of the target NPU architecture that is to be optimized. In light of this burden, there have been several efforts to create a standard programming environment for NPUs to relieve programmers of the aforementioned duty. The goal of my studies is to investigate NPU concepts and architectures in order to develop a pilot programming environment that will generate architecture-specific code from a higher level conceptual language. It is hoped that this higher level language will simplify the network programmers task when attempting to optimize network packet processing on an NPU.

- 8:40 **37. The Christina Rossetti Project**
 Chelsea Williams, Department of English, *Southwestern University*
- 8:55 **38. Huang Gongwang’s Dwelling in the Fuchan Mountains: An Intimate Expression through Rhythm and Brushwork**
 Melanie Sowa, Department of Art, *Southwestern University*
- Session XI:** McCombs Center, Connie McNab Ballroom
- 8:10 **39. “Liebste, was kann denn uns scheiden”: Examining Robert and Clara Schumann’s Liebesfrühling in Relation to Nineteenth-Century Gender Roles**
 Stevie Garza, Department of Music, *Southwestern University*
- 8:25 **40. Theremin: Forerunner of Electric Music**
 Chris Hinojosa & James Pritchett, Department of Physics, *Southwestern University*
- 8:40 **41. A Note on Weighted Identric and Logarithmic Means**
 Hilari C. Tiedeman, Department of Mathematics, *Southwestern University*
- 8:55 **42. Technical Attributes as Predictors of Short-Term Common Stock Performance**
 Steven Kubans, Travis Casner, Katy Lucaszweski, & Kimberly Palmer, Department of Economics and Business, *Southwestern University*

ABSTRACTS: ORAL PRESENTATIONS

1. The Effect of mPOA Lesions on Paced Mating Behavior
Amanda Covington & Matthew Gilbert, Department of Psychology, *Southwestern University*
Sponsor: Fay Guarraci, PhD, Department of Psychology, *Southwestern University*

Previous research suggests that both electrical stimulation of the Medial Preoptic Area (MPOA) and peripheral activation of the NO/GMP pathway using PDE-5 inhibitors lead to genital arousal (Sato et al., 2001; Thusu et al., 1995). However, few studies have examined interactions between the MPOA and peripheral NO/GMP activation. The current study examines effects of bilateral lesions of the MPOA and administration of the PDE-5 inhibitor zaprinast (ZAP) on paced mating behavior and partner preference in female rats. Paced mating behavior tests showed an interaction trend between drug treatment and surgery for contact return latency (CRL) following intermissions ($F = 3.118$, $p = 0.086$). Post hoc analysis found that females took longer to return to the male after stimulation, but this effect was reduced by ZAP administration. Surgery also caused a significant increase in CRL following ejaculations ($F = 11.962$, $p = .002$). Partner preference testing showed a significant interaction for number of entries into the males compartment ($F = 10.484$, $p = .006$).
2. Relatedness and Alliance and Coalition Formation in Captive Chimpanzees
Shanon Claudio, Animal Behavior Program, *Southwestern University*
Sponsor: Steven Schapiro, Department of Psychology, *Southwestern University*

In social groups of chimpanzee, coalitions and alliances help determine an individual's ability to compete in the group and their dominance rank. Alliances and coalitions, especially for males, are often formed along kinship lines, with related individuals supporting one another. In the present study, six captive chimpanzee groups were divided into three categories based on their degree of maternal relatedness. Two groups were categorized as being highly related, two groups exhibited medium levels of relatedness, and the last two groups were considered to be characterized by low relatedness. The six groups ranged in size from 6 to 14 chimpanzees. Subjects were observed to evaluate their behavior, their location relative to other group members, and whether or not their behavior was socially directed. For socially-directed behavior, the age-sex class of the social partner was also recorded. Behavior was compared across the three levels of relatedness to determine whether relatedness affected behavior patterns. Analyses across levels of relatedness showed a statistically significant difference in time spent near or in contact with an adult female groupmate, $F(2, 91) = 3.97$, $p < 0.05$. The medium-related category differed significantly from both the low and highly related categories for this variable, suggesting that relatedness does influence some social activities in captive chimpanzees. The other variables analyzed, including grooming and play behavior, did not yield any statistically significant differences. This lack of effect may be due to our method of grouping by relatedness.

themselves or about others, detailing life experiences and personal histories. The Computer Science capstone class is creating a prototype of the web portal for an online oral history project in the field of computing education. In this poster, we will highlight how the project will provide tools for on-going evaluation of three aspects of web portal quality: content quality, quality of accessibility, and profiling web usage. Content quality includes a range of issues, from proper grammar to completeness of background information on each interview, such as date, location, name of interviewee, and name of interviewer. The search functions of the collection's database must produce sufficient and relevant results, as well as operate in a time-efficient manner. This also includes on-going evaluation of the content in the collection to ensure that it is balanced in terms of key factors such as gender, ethnicity, and nationality. Quality of accessibility includes issues such as ensuring that all hyperlinks function properly and that page design adheres to the guidelines outlined by the World Wide Web Consortium. Content should be usable in some form by all users, including those with special accessibility needs. The web portal must be compatible with the most popular internet browsers, as well as a range of media players. Profiling web portal use will be vital as the collection grows and evolves, for the purpose of understanding visitor profiles. By collecting detailed statistics (e.g., number of visitors, geographic distribution of visitors, time spent on each page, and users' search paths) the project will have a means for analyzing the site so that content can be delivered to users in the best way possible.

55. Managing Memories: The Computer Educators Oral History Project Administration and Content Management Systems
John T. Davis, Nathan Lindzey, Chris Scott, Department of Mathematics and Computer Science, *Southwestern University*
Sponsor: Vicki Alstrum, Department of Mathematics and Computer Science, *Southwestern University*

An oral history project is a collection of accounts from individuals, either about themselves or about others, detailing life experiences and personal histories. The Computer Science capstone class is creating a prototype of the web portal for an online oral history project in the field of computing education. This poster highlights the project's administration and content management tools. The administration and content management subsystem the Computing Educators Oral History Project (CEOHP) web portal demonstrates the principles of accessible user interface design, data security, and easy, intuitive content management and software maintenance. In all these areas the system will present the administrator or content manager with an interface that can be understood and used effectively without the need for extensive knowledge of the inner workings of the system. The learning curve must be as gentle as possible and allow an administrator to work effectively very quickly. Accessible user interfaces should be not only easy to use and intuitive, but also fully functional for those with access restrictions, including the visually

52. Physics Hurls
Joe Mattingly, Department of Physics, *Southwestern University*
Sponsor: Steven Alexander, Department of Physics, *Southwestern University*

My project is to create a floating arm trebuchet, which is a modern version of a medieval siege engine that resembles (but is much different than) a catapult. I have created a physical version out of wood that stands close to 8 feet tall. I have also created a CAD (computer aided design) version, which can be used to conduct stress analysis tests to aid the design process, the purpose being to engineer a more stable trebuchet that will not break given the stress it will experience. The CAD version will be a 3D model on the computer. For the presentation, I will have a laptop featuring the CAD design and stress analysis tests as well as a video of the trebuchet launching items such as cantaloupes. I will showcase a few principles of physics that show how the trebuchet was the most advanced siege engine of the medieval time period, as well as what makes the floating arm trebuchet a more efficient version.

53. From Words to Webpage: Presenting Oral Histories Online
Dan Parker, Hilari Tiedeman & Aaron Contreras, Department of Mathematics and Computer Science, *Southwestern University*
Sponsor: Vicki Alstrum, Department of Mathematics and Computer Science, *Southwestern University*

An oral history project is a collection of accounts from individuals, either about themselves or about others, detailing life experiences and personal histories. The Computer Science capstone class is creating a prototype of the web portal for an online oral history project in the field of computing education. In this poster, we will highlight the processes involved with turning an individual's story on audio file into something that can be easily accessed on the web portal. Among the ideas we will be focusing on are processing and collection use. Processing involves many aspects, but the main goal is to create a transcript of the interview and tag it appropriately to allow users to search within the text. Once processing is complete, it is necessary to arrange the information so that any user, no matter their reasons for searching the web portal, can easily find the information they need.

54. Spreading Stories with Efficiency and Aesthetics: The Evaluation of an Online Oral History Collection
David Luna, Ty Mitschke, & Jamonn Little, Department of Mathematics and Computer Science, *Southwestern University*
Sponsor: Vicki Almstrum, Department of Mathematics and Computer Science, *Southwestern University*

An oral history project is a collection of accounts from individuals, either about

Improvements in this method, such as accounting for paternal relatedness in addition to maternal relatedness, would likely provide both a more accurate representation of the degree of relatedness within groups and a more sensitive measure of the effects of relatedness on behavior patterns.

3. Effects of Anosmia on Female Rat Paced Mating Behavior and Mate Preference
Sarah McCracken, Department of Psychology, *Southwestern University*
Sponsor: Fay Guarraci, PhD, Department of Psychology, *Southwestern University*

The present study investigated how disruption of olfactory cues affects paced mating behavior and mate selection in rats. Fifteen female Long-Evans rats (*Rattus norvegicus*) were treated intranasally with either a 10% solution of ZnSO₄ or saline. Subjects were first trained in an odor discrimination task, tested for anosmia, and then tested for paced mating behavior. Female rats preferred one male rat to another, regardless of drug treatment, and spent more time with the preferred male rat. However, rats treated with ZnSO₄ took longer to return to a male rat after receiving either an intromission or an ejaculation than did saline-treated rats. Finally, rats treated with ZnSO₄ were less active than rats treated with saline. Disruption of olfactory cues affects both locomotor activity and sexual motivation. It is possible that sexual stimulation plays a larger part in determining mate preference than olfactory cues.

4. Weddell Seal World: Analysis of Weddell Seal Vocalizations
Cody Freas, Animal Behavior Program, *Southwestern University*
Sponsor: Jesse Purdy, PhD, Department of Psychology, *Southwestern University*

Weddell seals (*Leptonychotes weddellii*) are true seals measuring up to 9 1/2 feet and weighing more than 1200 pounds. They are the only mammal to live year-around in Antarctica. Weddell seals are highly vocal and it appears that their vocalizations play an important role in courtship behavior. Weddell seals produce twelve distinct calls that can be subdivided into 34 different Call Types (Thomas & Kuechle, 1982). These calls are categorized on the basis of frequency, duration, repetition rate, and the presence or absence of harmonics and/or auxiliary sounds. Males are more vocal than females and certain vocalizations are gender specific. Thomas and Kuechle (1982) used spectrograms to document the various call types, but for many it is difficult to appreciate these sounds through visual examination. A search of the World Wide Web revealed numerous sites that offered short clips of Weddell seal vocalizations and a few sites supplemented these clips with spectrograms. However, none attempted to provide sound clips of the major vocalizations produced by Weddell seals, spectrograms of such vocalizations, or film clips of Weddell seals under the ice producing these vocalizations. The goal of this project was to develop such a site. During the austral spring of 2002, Weddell seals were videotaped interacting under the ice and vocalizations were recorded. Interactions were video recorded with an underwater drop camera. Vocalizations were recorded using a Reson general use

hydrophone (TC 4032) and amplifier (EC 6070) that could detect sounds from 5 Hz to 120 kHz. Spectrograms were produced using G. W. Instruments SoundScope. Life history information, sounds, and video clips were placed on the web site using DreamWeaver. It is hoped that this site will provide a resource for researchers and a site where the public can better appreciate the wonderful world of Weddell seals.

5. Male Bonding: The Influence of Male Relationships in Captive Chimpanzee Social Groups
Mary Catherine Marenco, Department of Psychology, *Southwestern University*
Sponsor: Steven Schapiro, Department of Psychology, *Southwestern University*

In laboratories throughout the United States, groups of captive chimpanzees are housed for research which furthers our behavioral and medical knowledge. Many studies of wild populations of chimpanzees examine the importance of male-male bonds to group cohesiveness. Male-male interactions serve to maintain functional social communities and are of more critical importance to group cohesiveness in chimpanzees than female-female bonds. Communities are based around a core of adult males who spend the majority of their time together and generally interact with one another affiliatively. These strong relationships maintain the cooperation needed to organize hunts and to protect their territory and females from other groups. Considerably fewer data are available on the effects of male composition on interactions within captive social groups. Many primate facilities avoid housing multi-male groups for fear of increased aggression. To promote species-typical social conditions, which in turn allow for healthier subjects that yield more valid behavioral and medical data, a balance between affiliation and conflict among males must be achieved. However, the strategies to achieve such a balance are not particularly well characterized. The current study observed 54 chimpanzees living in five social groups at The University of Texas M. D. Anderson Cancer Center. Each social group was comprised of a different number of male chimpanzees. For 15 weeks observations were conducted and the frequencies of 15 behaviors were recorded for each male, with special emphasis placed on affiliative and aggressive behaviors. The results indicate that the number of affiliative and aggressive interactions per group was neither randomly nor equally distributed across groups. Importantly, higher numbers of males did not lead to increased total aggression but rather increased affiliative behaviors. Using these findings, facilities can empirically form and manage multi-male, multi-female chimpanzee social groups that mimic natural interaction patterns and encourage a more socially enriched existence.

6. Sex, Drugs, & CoCoa Puffs: Zinc Sulfate Administration and Mate Preference in Female Rats
James Le, Kuan Hsien Lee, Sarah McCracken, Department of Psychology, *Southwestern University*
Sponsor: Fay Guarraci, Department of Psychology, *Southwestern University*

The present study examined changes in female mate preference associated with peripherally-induced anosmia (i.e., the inability to smell). Experimenters utilized intranasal

for the submaximal effort. In conclusion, compromising one limb's ability to produce force increases the size of the bilateral deficit at maximal and submaximal intensities.

50. The Effects of Pre-Exercise Sports Drink Consumption on Substrate Utilization During Submaximal Exercise
Allison Hogan, Danny Coyne, John Martinez, Catherine Cunningham, Department of Kinesiology, *Southwestern University*
Sponsors: Jimmy Smith, & Scott McLean, Department of Kinesiology, *Southwestern University*

Though the effects of consuming sport drinks (SPDK) before, during, and after "competition-type" exercise are well documented, little is known concerning the effects on responses to exercise performed at lower intensities and durations typically utilized by the general public. The purpose of this study was to determine the effects of pre-exercise consumption of SPDK on substrate utilization during submaximal exercise in untrained individuals. Eight healthy, untrained college students (4 men, 4 women: mean (SD) age = 21 (1.5) yr, height = 172.0 (10.6) cm, mass = 67.7 (15.2) kg) participated in this study. After performing a maximal exercise test, each subject exercised for 45 min at 50% VO₂max under three conditions: no fluid consumed prior to exercise (NF), placebo consumed 30 min prior to exercise (PL), and SPDK consumed 30 min prior to exercise. Metabolic measures were made continuously throughout the 45 min exercise bouts. The mean (SD) respiratory exchange ratio (RER) measures during exercise for the NF, PL, and SPDK conditions were 0.93 (0.04), 0.95 (0.04), and 0.97 (0.02), respectively. The mean (SD) percent fat utilization during exercise for the NF, PB, and SD conditions were 21.9 (13.4), 17.8 (12.0), and 9.6 (6.6), respectively. The results of separate repeated-measures ANOVAs suggested that a significant difference existed among RER responses across the three conditions ($F = 3.57, p = 0.06$) with a modest effect size (0.34), and among percent fat utilization across the three conditions ($F = 4.15, p = 0.04$) with a modest effect size (0.37). Tukey post-hoc tests revealed a significant difference ($p < 0.05$) only between NF and SPDK for RER responses and fat utilization. These findings suggest that pre-exercise consumption of SPDK can decrease the reliance on fat as a substrate during low intensity exercise. This reduced reliance on fat is contraindicated for individuals utilizing exercise to maintain or lose body weight.

51. Economical Solar Water Heater
Pelham Keahey, Department of Physics, *Southwestern University*
Sponsor: Steven Alexander, Department of Physics, *Southwestern University*

With rising energy costs it is becoming increasingly necessary to use less fossil fuel. The whole idea behind this project is to take relatively every day materials and construct a durable and effective solar water heater. What separates this device from a typical solar water heater is its simplicity and low cost. My project will also determine if such a product is a viable economic benefit to a household of four.

to that of 5HP in order to determine the contribution of each residue. The binding affinity of each complex was measured using two methods, a peptidase activity assay and a cross-linking competition assay. The peptidase assay indicated that residue five (lysine analog) and 5HP induce similar peptidase activity and therefore have similar binding affinity. The competition assay indicated that both residue five (lysine analog) and residue three (leucine analog) competed with 5HP to prevent cross-linking. It can be surmised that residue three and five contribute the least to the binding affinity of 5HP.

48. San Gabriel River Trail: Environmental History
Bradley Hiatt, Aubrey Weeks, Kate Paisley, Ray Loving, Environmental Studies Program,
Southwestern University
Sponsor: Laura Hobgood-Oster, Department of Religion and Philosophy, *Southwestern University*

At a central point on the San Gabriel River Trail, a beautiful spring flows into the North San Gabriel River. This area is surrounded with a long human history as well as a long history of the flora and fauna. The Environmental Studies capstone is researching and weaving these histories together, and then creating and implementing a public information pedestal sign. It will be placed in the area as a form of public education for trail users. The poster presentation is a prototype of the pedestal sign. The 3M SGRT Grant supports this project.

49. Effect of Induced Functional Asymmetry on the Bilateral Deficit
L. April Long, Department of Kinesiology, *Southwestern University*
Sponsor: Scott McLean, Department of Kinesiology, *Southwestern University*

Asymmetrical force production in homologous limbs may affect the magnitude of the bilateral deficit, but this influence is not well understood. To determine the effect of an induced functional asymmetry on the bilateral deficit 20 participants (age 28.4 ± 11.7 years) completed unilateral and bilateral isometric elbow flexion trials at 100% and 50% of maximal effort with the forearms supinated and pronated. Eight subjects' ability to produce maximal isometric elbow flexion force was impaired when the forearm was pronated. For these subjects, unilateral maximum isometric elbow flexion force was reduced by $10.0 \pm 6.8\%$ in the dominant arm and $13.0 \pm 6.3\%$ in the non-dominant arm when pronated. Bilateral indices for these subjects were calculated for each bilateral condition at both intensities. The indices were compared using a 2×4 (intensity \times condition) repeated measures ANOVA. The results showed that maximal and submaximal effort bilateral indices were significantly less than zero ($p < 0.05$) for all conditions, indicating the presence of bilateral deficits, but none were significantly different from each other. Pronating the dominant arm increased the bilateral deficit by 5.5% (ES = .60) at maximal effort and 5.7% (ES = .47) at submaximal effort while pronating the non-dominant arm increased the deficit by 9.3% (ES = .56) only

administration of Zinc sulfate due to previous evidence of effective induction of peripheral anosmia (Boehm, Lazarus, & Aron, 1991). In behavioral test settings, female Long Evans rats controlled sexual stimulation by seeking and withdrawing from two sexually viable male rats in separate compartments. Each female rat received an intranasal injection of either Zinc sulfate or saline solution prior to participation in two behavioral tests. Following behavioral tests, a food-finding (CoCo puffs) task determined anosmic status. The male rat with which the female rat spent a greater percentage of time was designated as the preferred partner for that test. A repeated-measures analysis of variance (ANOVA) found that drug condition generally reduced the sexual receptivity and activity rates of female rats. However, the current results revealed that the female rats exhibited a preference for a male rat regardless of drug condition. Findings may imply interesting trends towards effects of the olfactory system on mate preference.

7. Salinity Tolerance of Tadpoles
Jessica Hua, Department of Biology, *Southwestern University*
Sponsor: Benjamin Pierce, Department of Biology, *Southwestern University*

Amphibians are generally considered to have limited tolerance to salinity, but surprisingly, little recent research has been done on the salinity tolerances of amphibians. This study investigated the effects of salinity on anuran larvae (tadpoles) found in central Texas. Results indicate that the lethal concentration for *Bufo nebulifer* is between 5 parts per thousand (ppt) and 10 ppt. For 10 ppt salinity, but not for 12.5 ppt, dry weight and survival time were significantly correlated. At 10 ppt and 12.5 ppt, there were significant differences among species in survival time: *Acris crepitans* was the most tolerant, followed by *Rana berlandieri*, and then *Bufo nebulifer*. Weight had no effect on tolerance among species. Growth rates were not significantly affected by sublethal concentrations of salinity. Sublethal concentrations of salinity had a significant effect on subsequent survival time at 12.5 ppt: Tadpoles exposed to 5 ppt but not 1 ppt were significantly less tolerant than those exposed to control solution. The recognition that amphibians worldwide are declining emphasizes the need to better understand how these animals respond to environmental stressors such as salinity.

8. Comparing Applesnails to Oranges: the Impact of Different Measuring Techniques on the Study of Pomacea
Abigail Youens, Department of Biology, *Southwestern University*
Sponsor: Romi L. Burks, Department of Biology, *Southwestern University*

Exotic invasive species threaten native species, especially in freshwater ecosystems. Applesnails (genus *Pomacea*)—large aquatic gastropods that can reach the size of an apple—have historically been global exotic invaders. These macrophagous snails cause considerable damage to plants, which raises both ecological and economic concern. *P. canaliculata* exhibits an extensive invasive history in Asia and recently established populations

in California and Arizona. A much less well-known exotic species, *P. insularum*, has invaded freshwater and brackish systems in the Houston, Texas, area. Very little ecological information exists about *P. insularum*. However, this larger applesnail may pose similar threats to those posed by *P. canaliculata*, thus warranting concern. In the present study, we analyzed body size relationships of *P. insularum* and the use of different body measurements within literature on *P. canaliculata* to explore methods to study this new exotic invasive species. Shell height, operculum width, and weight exhibited highly predictive relationships. We also tested the inter-measurer reliability of shell height and operculum width and argue that operculum width constitutes a more reliable measure. *P. canaliculata* researchers most often measure shell height, but operculum width may be better suited for study of the potential new invader *P. insularum*. When providing new information on a novel invasive species, establishing methodology may aid in later comparisons between studies.

9. Locating Jewish Identity in Poland: Thoughts and Photographs
Meghan Elliot, Department of Sociology and Anthropology, *Southwestern University*
Sponsor: Sandi Kawecka Nenga, Department of Sociology and Anthropology, *Southwestern University*

In 1938, Poland had the largest Jewish population worldwide. By 2005, this country had one of the smallest Jewish communities in the world (Grossman & Singer, 2005). How then do Jewish individuals in Poland construct their identity in a place where there are so few Jews? This research explores the Jewish identities of Jewish Polish youth between the ages of 18 and 35. It is based on nine in-depth interviews with Jewish Poles in three cities in Poland. Participants were asked to take pictures of "what it is like to be Jewish in Poland" before their interviews. Interviews, participant observation, and the photographs themselves were analyzed to investigate how Jewish Poles use place, either physical or symbolic, to construct their identities.

10. From Romance to Self-Realization: How College Women Construct a Self Through Romantic Relationships
Alice May Berthelsen, Department of Sociology and Anthropology, *Southwestern University*
Sponsor: Sandi Kawecka Nenga, Department of Sociology and Anthropology, *Southwestern University*

This study reflects how young college women construct their personal identities through romantic relationships. This is an important research topic because women in early adulthood are often faced with the task of creating their identities through work, family, and marriage, and thus it is critical that these processes are exposed and understood. The purpose of this study is to explore how women's identities are constructed within their current romantic relationships (if applicable) and also to see if they have changed over the course of their previous romantic relationships. To do so, ten in-depth interviews were conducted with women between the ages of 18 and 21 who attended a small private liberal

Sponsor: Lynn Guziec, Department of Chemistry and Biochemistry, *Southwestern University*

Dapsone, 4,4'-diaminodiphenyl sulfone, is an antibacterial drug most commonly prescribed for leprosy, yet has also been known to be effective against pathogenic diseases including strep throat, staff infection, pneumonia, and tuberculosis. Dapsone is administered in large doses and causes a build-up of toxins in the body, resulting in serious side effects. Our objective was to synthesize a seleno-analog of Dapsone, 4,4'-diaminodiphenylselenone, in hopes that the derivative would be more effective and less toxic. Previous seleno-derivatives, such as the anti-thyroidal selenium analog of Methimazole, have shown through biological studies to be more selective and potent in its mechanism of action. Two different approaches were used to try to form the desired product from a synthetic precursor, 4,4'-dinitrodiphenyl selenide. For both approaches, the difficulty of the reactions lie in selectively reducing the nitro groups while only oxidizing the selenium to achieve the Seleno-Dapsone. One approach, the oxidation route, involved completely oxidizing the selenium and subsequently reducing the nitro groups to the corresponding amines. The oxidation of the synthetic precursor to the selenone was successful, while the reduction of the nitro groups proves to be a challenge. The other method, the reduction route, required the reduction of the nitro groups before oxidizing the selenium. For the reduction method, the diamine compound was successfully synthesized and protected. The further oxidation of the selenium is still in progress. Further techniques to produce the Seleno-Dapsone are under investigation.

47. Residue Activity Contribution Study Using Glycine Replaced Peptoids
Troy Hutchens, Department of Chemistry and Biochemistry, *Southwestern University*
Sponsor: Chase Archer & Thomas Kodadek, *University of Texas Southwestern Medical Center*

Peptoids are small synthetic protein-binding compounds capable of disrupting protein interactions. Libraries of peptoids are screened by automated high-throughput processes for their ability to bind specific proteins. Peptoids identified in this way tend to form complexes with equilibrium dissociation constants (KDs) in the micromolar range. However, potential drugs require nanomolar KDs. Determination of the impact each residue has towards the binding affinity of a known hit enables less significant residues to be replaced and optimizes the binding of the peptoid. Effectively, this method has the potential to transform lower affinity hit compounds with micromolar KDs into higher affinity potential drugs with nanomolar KDs. Previous research identified a 5mer hit peptoid (5HP) which binds to the 26S proteasome. Cross-linking experiments indicated that 5HP binds non-competitively to a protein in one of the 19S regulatory particles and increases peptidase activity of the proteasome. Along with 5HP, five other analogous peptoids were synthesized via a "submonomer route" using a microwave-accelerated protocol. The derivative peptoids differed from 5HP solely in that one of the five residues was replaced with a glycine residue. The glycine substitution created peptoids in which there was effectively no side group in one residue per peptoid. The binding affinity of these "blank" side group peptoids was compared

ingredient based on my sense of taste. Mixtures that closely resemble Coke will survive and pass along their information to the next iteration. After a few iterations I expect that this process will converge and produce a drink that will be indistinguishable from Coke.

44. Direct Synthesis of Tamoxifen and Related Triaryl-substituted Alkenes via Two-Fold Extrusion Reactions

Ian R. Bothwell, Department of Chemistry and Biochemistry, *Southwestern University*
Sponsor: Frank Guziec, Department of Chemistry and Biochemistry, *Southwestern University*

Two-fold extrusion reactions have proven to be an effective means of synthesizing highly substituted, sterically hindered olefins. The mechanism for this reaction involves loss of sulfur and diatomic nitrogen from the 1,3,4-thiadiazoline intermediate formed by a 1,3-dipolar cycloaddition reaction between a thione and a diazo compound. In order to determine the synthetic potential of this reaction in the synthesis of biologically important molecules, we have applied it to the synthesis of the selective estrogen receptor modulator: tamoxifen. We have successfully produced a mixture of the cis and trans isomers of tamoxifen by combining the diazo derivative of propiophenone tosylhydrazone with 4-(2-dimethylaminoethoxy)thiobenzophenone. Current industrial procedures for tamoxifen synthesis generally require harsh conditions. Our synthetic route could prove to be advantageous over these methods with respect to the potential for direct synthesis of various tamoxifen metabolites under much milder conditions.

45. Theoretical Evaluation of Several Benzoquinone Mustards

Lindsay Jones, Department of Chemistry and Biochemistry, *Southwestern University*
Sponsors: Steven Alexander, Department of Physics, *Southwestern University*, & Frank Guziec, Department of Chemistry and Biochemistry, *Southwestern University*

Most solid tumors have regions of hypoxia because of poor vascularization. Several studies have shown that cells in colon and non-small cell lung cancers contain elevated levels of DT-diaphorase—a reductase enzyme. This suggests a possible strategy for developing anti-tumor drugs: find a bioreactive agent that can be administered as an inactive drug and is only activated by DT-diaphorase within hypoxic cells. The selectivity of bioreductive drugs depends largely upon the ability of molecular oxygen to reverse the activation process and the presence of elevated levels of these reductase enzymes in human tumors. Because they are normally stable unless activated by DT-diaphorase, quinones could form the basis of an ideal anti-tumor agent. We have also performed docking calculations on a series of benzoquinone nitrogen mustards with various 'meta' and 'para' substituents. There is good agreement between our binding energies and previously published kinetics data for the reductive activation of these compounds.

46. Synthesis of Seleno-Dapsone

Jessica Hoch & Kim Le, Department of Chemistry and Biochemistry, *Southwestern University*

arts college in Texas. Each interview lasted anywhere from thirty minutes to an hour and a half. Two of the respondents labeled themselves as lesbian, one labeled herself as bisexual, and the remaining seven were heterosexual. Most of the women utilized what I refer to as Self-Development Mechanisms that draw directly from self-concept theory's four basic principles: Reflected Appraisal, Social Comparison, Self-Attribution, and Psychological Centrality.

11. T.V. and Our U.S. Pride

William Faulk III, Department of Sociology and Anthropology, *Southwestern University*
Sponsor: Edward Kain, Department of Sociology and Anthropology, *Southwestern University*

This study looks at finding a potential pattern in television viewing and its effects on people's stance toward America, through secondary data analysis. The study was done using data collected from the NORC General Social Survey, which surveys American homes. Several criteria were used to establish what was meant by "feelings toward America." Past studies regarding television viewing and its effects on people's views have looked at television viewing and how it affects political views and party identification. Through the bivariate analysis there was a small but significant relationship between television viewing and respondents' pride and feelings toward America. Although when controlled for respondents' political views, age, how often they attend church, their income, and their level of education, that relationship disappears.

12. Religiosity and Attitudes toward the Civil Liberties of Nonconformists

Mary Kierst, Department of Sociology and Anthropology, *Southwestern University*
Sponsor: Edward Kain, Department of Sociology and Anthropology, *Southwestern University*

This study explores the correlation between religiosity and views on the civil liberties of nonconformists and, additionally, asks whether or not the correlation still exists when level of education is introduced as a control variable. A secondary analysis of data from the National Opinion Research Center General Social Survey provides data regarding three dimensions of respondents' religiosity, respondents' views on the civil liberties of Atheists and Communists, and respondents' level of education. Combined, the data show that religiosity is negatively related to support for the civil liberties of nonconformists. With the introduction of the control variable, the original bivariate relationship remains, though slightly weaker, with a few exceptions. Generally, the data show that education is the most important predictor of support for civil liberties and that with increased level of education, support for civil liberties also increases.

13. Americans' Perceptions of Blacks, Hispanics, and Jews: A study of the effects of education and age on attitudes toward minority groups

Sarah Fankhauser, Department of Sociology and Anthropology, *Southwestern University*
Sponsor: Edward Kain, Department of Sociology and Anthropology, *Southwestern University*

This paper examines three minority groups of the United States—Blacks, Hispanics, and Jews--and Americans' general attitudes toward each group, with relation to one another. These attitudes are uncovered through an exploratory study of Americans' perceptions of Blacks', Hispanics', and Jews' general everyday characteristics. Data collected by the National Opinion Research Center's General Social Survey will be used to measure Americans' general attitudes toward minority groups and their recorded perceptions of three variables concerning Blacks, Hispanics, and Jews: their attitudes toward work, their proneness to violence, and their intelligence levels. The researcher will first develop an index to accumulate these variables for each minority group, and synthesize them into one measure. This will be used to examine how positive or negative Americans' general perceptions of each group are, and to compare these with one another. The data indicate that education is an important factor in determining Americans' perceptions of Blacks and Hispanics, but not Jews. Age is found to play a significant role in influencing Americans' attitudes toward Blacks and Jews, but not toward Hispanics. Historical context and physical proximity are considered to play a large role in the above relationships.

14. Racial Integration within a Church Setting and Feelings towards Homosexuality
 Caroline Morris, Department of Sociology and Anthropology, *Southwestern University*
 Sponsor: Edward Kain, Department of Sociology and Anthropology, *Southwestern University*

This research seeks to examine the effects of racial integration on attitudes towards homosexual sex relations, specifically within the church context. A secondary analysis was performed on data from the National Opinion Research Center General Social Survey in varying years, pinpointing three major concepts: attitudes toward homosexual sex relations, racial integration within a church setting, and education. Additionally, the researcher analyzed the effects of age, church attendance, and strength of affiliation. In 1954, Gordon Allport derived the Intergroup Contact Theory which stated that intergroup contact leads to reduced prejudice if the contact situation operates under four conditions: 1) equal group status within the situation, 2) common goals, 3) intergroup cooperation, and 4) authority support (Pettigrew, 1998). This research takes this theory one step further by analyzing whether or not racial interaction, while decreasing racial prejudices, will have an additional effect on attitudes toward homosexuality. The researcher found that racially integrated churches are more likely to have more approving attitudes toward homosexual sex relations, although when controlling for education, the relationship was specified to those with High School or Bachelor degrees only. When performing regression analyses, the researcher found that while there is a significant relationship between the two variables, the strength of the association (in addition to the numerous other variables that affect attitudes towards homosexual relations) cannot be viewed as a valid extension of Allport's theory.

15. Screw You, We're from Texas: the Politics of Place and the Power to Resist in Texas Country Music

Jessica Freeman, Department of Chemistry and Biochemistry, *Southwestern University*
 Sponsor: Emily Niemeyer, Department of Chemistry and Biochemistry, *Southwestern University*

The consumption of tea has been correlated with many human health benefits including the prevention of certain types of cancer and heart disease. Although brewed tea is a complex chemical mixture, its high antioxidant levels are likely the source of its protective health properties. Theaflavins are a common group of antioxidants found in black tea, but their quantification by high performance liquid chromatography (HPLC) remains difficult due to complicated chromatograms and long analysis times. We have, therefore, developed an analytical method for the determination of theaflavins utilizing normal-phase HPLC. Using a silica column and nonpolar mobile phase, we have separated the four theaflavins commonly found in black tea (theaflavin, theaflavin-3-gallate, theaflavin-3'-gallate, and theaflavin-3,3'-digallate). We then used our new method to quantify theaflavins in several commercial varieties of black tea.

42. Preparations of New Anthrapyrazoles and a New Bis-Anthrapyrazole
 Kyle Marshall, Department of Chemistry and Biochemistry, *Southwestern University*
 Sponsor: Frank Guziec, Department of Chemistry and Biochemistry, *Southwestern University*

Anthrapyrazoles are planar molecules that have been studied as possible anticancer drugs. They exhibit their antitumor properties by intercalating into DNA. It has been hypothesized that the efficiency of anthrapyrazoles could be dramatically increased by connecting two molecules together with various linkers. A previously prepared compound of this type with a chlorine substituent has not shown significantly greater biological activity, but this may be due to a lack of solubility. Therefore, a new unsubstituted anthrapyrazole was prepared, as well as the corresponding bis-compound, using an anthraquinone precursor. The anthrapyrazole continued to show biological activity and it is hopeful that the bis-compound will have increased solubility and reactivity in comparison with its chlorinated analog.

43. Cracking the Cola Code
 Christy Bell, Department of Chemistry and Biochemistry, *Southwestern University*
 Sponsor: Steven Alexander, Department of Physics, *Southwestern University*

Many food and beverage companies rely on secret recipes. KFC uses a mix of 11 herbs and spices on their chicken, McDonalds puts a secret sauce on its hamburgers and the formula for Coke Cola is reportedly kept in a security vault in Atlanta, Georgia. These mixtures have proven difficult to decode because they require one to first identify the list of ingredients and then determine their correct proportion. I have designed a computer program that uses genetic algorithms to crack the secret behind the Coke Cola formula. Starting with a list of probable ingredients, the program will alter the proportion of each

39. Effects of Nitrogen Application on the Antioxidant Properties of Basil (*Ocimum basilicum* L.)
Phuong Minh Nguyen, Department of Chemistry and Biochemistry, *Southwestern University*
Sponsors: Emily Niemeyer, Department of Chemistry and Biochemistry, *Southwestern University* and Daniel Taub, Department of Biology, *Southwestern University*

Many herbs and spices have been shown to contain high levels of phenolic compounds with potent antioxidant properties. Because eating a phenolic-rich diet is associated with numerous health benefits, we have examined how varying nitrogen application during the plant growth cycle can affect the expression of phenolic compounds in one of the most common culinary herbs, basil (*Ocimum basilicum* L.). Nitrogen treatments were administered through either a slow-releasing fertilizer or a controlled nutrient solution and basil plants were harvested after one month of growth. The Folin-Ciocalteu method was then used to determine the total phenolic content in all basil samples. Anthocyanin levels were quantified in purple basil cultivars using a colorimetric assay against a cyanidin-3-glucoside standard. Antioxidant activities were determined using the DPPH (2,2-diphenyl-1-picrylhydrazyl) free radical scavenging assay. This presentation will compare how total phenolics, anthocyanins, and antioxidant activities change as a function of applied nitrogen for two basil cultivars (Sweet Thai, Dark Opal).

40. The Role of the MAPK/ERK Signal Transduction Pathway in the Over-Expression of Cathepsin L in Kirsten Ras-transformed Murine Fibroblasts
Alheli Garza, Department of Chemistry and Biochemistry, *Southwestern University*
Sponsor: Kerry Bruns, Department of Chemistry and Biochemistry, *Southwestern University*

Cathepsin L, a lysosomal cysteine protease, has been demonstrated to be over-expressed and improperly secreted from Kirsten sarcoma virus-transformed NIH 3T3 cells (Kbalb), but not in the normal cells (3T3). Determining the mechanism by which the over-expression occurs may provide insight into the role that cathepsin L has in tumorigenicity and pathologies such as cancer. We first reproduced Gottesman's findings using Western Blot analysis of various sub-cellular protein fractions of both Kbalb and 3T3 cells including soluble, post-mitochondrial particulate, and nuclear. The results were consistent with previous studies, showing the over-expression and secretion of cathepsin L in Kbalb cells. Expression levels of proteins along the MAPK/ERK growth and differentiation signal transduction pathway were also explored to determine their role in regulating the expression of cathepsin L. Results showed that differences in the expression of Raf and MEK1/2 between Kbalb and 3T3 cells exist; however, it is not clear how these differences are correlated to the over-expression of cathepsin L. In order to address the nature of this correlation, further studies concerning the possibility of chromatin remodeling were conducted and the results are in the process of being analyzed.

41. Analysis of Common Black Tea Theaflavins Using Normal-Phase High Performance Liquid Chromatography

- Nathan Turner, Department of Sociology and Anthropology, *Southwestern University*
Sponsor: Edward Kain, Department of Sociology and Anthropology, *Southwestern University*

Texas country (or Texas music as it is oftentimes referred to) is a new musical genre being performed in dancehalls and bars across the Lone Star State that defines itself, in part, by being highly critical of mainstream country, or "Nashville," country music. In interviews and live shows, Texas country artists challenge the emphasis on profit and marketing within the Nashville-based country music industry. In contrast, Texas artists offer a "Texas country authenticity" centered on rebellion, independence, hedonism, and a rugged male outlaw mentality. While publicly scorning mainstream music and its commercialization, Texas Music nonetheless itself still serves a variety of financial interests that seek to exploit Texas authenticity commercially to market clothing, alcohol, and other commodities, which may complicate Texas music's rebellion. In this paper I explore these contradictions and Texas music artists Kevin Fowler, Ray Wylie Hubbard, and Cross Canadian Ragweed as bearers of the genre. My analysis is based on 11 months of participant observation as a live music sound engineer in central Texas and over 2 years of experience with country music in Texas. I have also used informal interviews, hours of listening to records, exploration of published and online materials, and attended over 150+ performances. Texas country ultimately helps to tell the tale of how capitalism impacts modern music and how Adorno's concept of the culture industry may continue to inform cultural products today.

16. ZZZs to As: The Effects of Limited Sleep on Executive Functioning
Sally Redden, Leigh Mingle, & Shelly Tang, Department of Psychology, *Southwestern University*
Sponsor: Jacqueline Muir-Broaddus, Department of Psychology, *Southwestern University*

Adolescents are severely sleep-deprived as a group, yet inadequate sleep is known to have measurable effects on academic achievement and emotional experience (Wolfson & Carskadon, 1998). Less is known, however, about the effects of inadequate sleep on underlying cognitive processes, particularly the executive functions (EF), and self-regulation. Self-regulation—the ability to control emotions, thoughts, and impulses (Baumeister, 2003)—is a limited resource that is depleted through repeated use (Muraven et al., 1998). This depletion is greatest on tasks that require EF (Schmeichel et al., 2003), perhaps because self-regulation and EF draw on the same pool of resources (Baumeister, 2003). Given that sleep deprivation impairs performance on EF tasks (Nilsson et al., 2004), it is likely that sleep deprivation accentuates the negative impact of engaging in self-regulation. Hence, the purpose of this study is to investigate whether variations in sleep impair executive functioning and magnify the negative effects on executive functioning of engaging in self-regulation. College students completed two 45-minute testing sessions, once following limited sleep (≤ 4 hours) and once following adequate sleep (≥ 7 hours). Measures included a questionnaire and four published tests of EF (Tower of London, Stroop, Operation Span, and WAIS-III letter-number sequencing). The Stroop was repeated at the end of the session

to determine if the effects of self-regulation depletion are greater with limited sleep. Although data collection is ongoing, preliminary findings show that those with adequate sleep performed better on EF tasks than those with limited sleep. Also, Stroop results suggest that students with adequate sleep benefited from their experience with the task (i.e., showed a practice effect) whereas those with limited sleep did not. Practically speaking, this research will provide valuable information to college students whose sleep deprivation is often in the pursuit of academic achievement.

17. Why is Love Stressful?: Self-Expansion as a Partial Mediator of Passionate Love's Effect on the HPA-Axis

Aubri Paxson, Department of Psychology, *Southwestern University*

Sponsor: Traci Giuliano, Department of Psychology, *Southwestern University*

Individuals in early-stage passionate love, compared to those who are single or in long-term relationships, have higher levels of the stress hormone cortisol (Marazziti & Canale, 2004). The current study explored possible explanations for this finding, focusing particularly on the role that self-expansion (i.e., the motivation to engage in novel and/or arousing activities within a romantic relationship; Aron & Aron, 2006) plays in the link between passionate love and stress. In a lab experiment, a guided-imagery manipulation induced thoughts of either a participant's partner or friend; salivary cortisol samples were then assessed to determine stress levels. Consistent with the hypotheses, the results revealed that self-expansion is associated with high levels of passionate love and plays a unique role in the relationship between passionate love and stress. Implications for health outcomes for early stages of romantic relationships are discussed.

18. Emulating Ellen and Worshipping Will: An Interview Study of the Influence of Media Role Models on Gay, Lesbian, and Bisexual Identity

Sarah Gomillion, Department of Psychology, *Southwestern University*

Sponsor: Traci Giuliano, Department of Psychology, *Southwestern University*

The body of literature on role models suggests that role models have many positive benefits for individuals, including contributing to higher self-esteem, self-efficacy, and identity achievement. However, role models' specific effects on gay, lesbian, and bisexual (GLB) individuals have yet to be examined. To explore the influence of media role models on GLB individuals, 15 GLB participants (6 women and 9 men) were interviewed about the influence of the media on participants' identities. The interviews were an average of 32 minutes long and included questions about participants' coming out process, the media's relationship to participants' identities, the media's relationship to the GLB community, and general questions about the representation of GLB individuals in the media. A qualitative analysis of the interview data revealed that participants considered positive role models to be an important influence on their identities, such that they inspired participants, provided participants with a source of comfort, and helped normalize GLB identity for participants.

tumor cells with the ras oncogene is significant because this protease can degrade components of the extracellular matrix surrounding and anchoring these cells. This can allow these cancer cells to break away from the tumor and migrate into lymphatic and blood vessels, carrying them to normal tissues where a new tumor may form. Thus, the abnormal secretion of procathepsin-L is important in promoting a tumor's invasiveness and metastasis. The procathepsin-L synthesized by these cells does bear mannose-6-phosphate, a tag that normally targets enzymes to lysosomes, yet it is still secreted. Many adaptor proteins are involved in the trafficking mechanism, and abnormal levels of expression of these proteins due to mutated ras may be the reason why procathepsin-L is being improperly sorted. The levels of expression of rabaptin-5 and 14-3-3e were examined and compared in Kirsten-virus transformed murine fibroblasts and normal 3T3 murine fibroblasts. The levels of proteins containing phosphotyrosine were also examined, because growth factor receptors have phosphotyrosine residues. Though growth factor receptors are upstream of ras, their level of expression and regulation may be affected by ras. The results of phosphotyrosine and rabaptin-5 were inconclusive, but it seems that the transformed fibroblasts are overexpressing 14-3-3. 14-3-3 is implicated in the modulation of vesicular trafficking and exocytosis, so it seems possible that its overexpression may lead to the secretion of procathepsin-L.

38. The Sequence Context of Tamoxifen-DNA Adduct Formation and Adduct Impact on Polymerase Bypass

Michelle Martinez, Department of Chemistry and Biochemistry, *Southwestern University*

Sponsor: Maha Zewail-Foote, Department of Chemistry and Biochemistry, *Southwestern University*

Tamoxifen, a synthetic anti-estrogen chemotherapeutic agent, is used as an adjunct and/or preventive treatment for breast cancer. Tamoxifen use has been linked to increased incidence of endometrial cancer presumably due to the formation of metabolites which covalently modify the N2 of the DNA base pair guanine. These α - (N2-deoxyguanosinyl) tamoxifen adducts have demonstrated mutagenic properties. In vitro studies are performed with a model compound, α -Acetoxytamoxifen, which can form the adduct. Our experimental objectives are twofold: (1) To determine the sequence context and structural consequences of tamoxifen-DNA adduct formation and (2) to create an assay to determine the ability of polymerases to bypass TAM -DNA adducts and the impact of adducts on base pair insertion. A gel electrophoresis assay was used to examine the influence of flanking sequence on the reaction of tamoxifen with DNA. Preliminary results indicate that flanking sequences that are A/T rich result in high levels of covalent modification. In addition, the biological consequences of adduct formation are studied through an assay developed to determine the ability of various polymerases to bypass the tamoxifen-DNA lesion and to determine if the correct base is inserted opposite of the modified base. The assay can determine if different polymerases are able to bypass the lesion created by the adduct and determine if the correct base pair is inserted in the presence of an adduct.

superoxide radical. This photogenerated superoxide radical anion is a precursor to various reactive oxygen species (ROS). Characterizing the types of damage under specific reaction conditions can provide insight into the pathway responsible for damage, either from the formation of guanine radical cation or ROS. In order to quantitatively assess the general types of DNA damage that occur upon photoactivation of daunomycin, we used agarose gel electrophoresis to monitor the topology of supercoiled DNA to closed circular. DNA damage profiles were obtained using repair endonucleases specific for oxidative modifications. Our results show that irradiation of daunomycin leads to single strand breaks, oxidized purine residues, and abasic sites while modified pyrimidine bases were not detected.

36. DNA Cleavage Induced by Photoactivated Daunomycin and the Role of Reactive Oxygen Species

Radhika Kainthla, Department of Chemistry and Biochemistry, *Southwestern University*
Sponsor: Maha Zewail-Foote, Department of Chemistry and Biochemistry, *Southwestern University*

Photoexcitation of daunomycin, a widely used anthracycline antitumor agent, can lead to a transfer of an electron from a guanine to the drug, forming an anthracycline radical anion. Under aerobic conditions, the electron can be transferred to molecular oxygen forming a superoxide anion radical, which can be ultimately converted to DNA reactive oxygen species (ROS). Here, we examine the molecular mechanisms involved in DNA damage of photoactivated daunomycin and the role of dioxygen in this process. A plasmid relaxation assay is used to compare the level of DNA strand breaks that result from spontaneous DNA cleavage over time in the presence and absence of various scavengers for ROS. Photoactivation of DNA and daunomycin leads to the conversion of supercoiled DNA to nicked DNA in a time- and dose-dependent manner, and the extent of strand scission depends on the scavenger. In addition, the species responsible for DNA damage continues to cleave DNA even after irradiation has stopped. These results suggest that ROS may be involved in the formation of spontaneous strand breaks induced by photoactivated daunomycin.

37. The Improper Trafficking of Procathepsin-L in Transformed Murine Fibroblasts

Paul Barber, Department of Chemistry and Biochemistry, *Southwestern University*
Sponsor: Kerry Bruns, Department of Chemistry and Biochemistry, *Southwestern University*

Mutations in the ras family of oncogenes are very common, being found in 20% to 30% of all human tumors. The ras protein is a very important molecular switch for a variety of signal pathways, such as proliferation and apoptosis. Ras is a G protein; its activity can be turned on and off by binding and hydrolyzing GTP to GDP. Certain mutations in the Ras oncogene cause the ras protein to be constitutively active, constantly bound to GTP and unable to hydrolyze it. Thus, the mutated ras protein constantly sends downstream signals, producing a variety of effects like increased proliferation, decreased apoptosis, and the abnormal secretion of a protease, procathepsin-L. The secretion of the procathepsin-L by

Participants also discussed the negative effects of the media on their identities, including making them feel excluded from society (due to the relative absence of depictions of GLB individuals in the media) and limiting their identity expression (due to the narrow and stereotypical portrayal of GLB individuals in the media). These findings indicate that positive role models may confer many important benefits on GLB individuals and potentially may help foster GLB leaders and community role models. Thus, the representation of positive GLB role models in the media should increase in order to spread these benefits to a wide audience of GLB media users. Moreover, the present study suggests that stereotypical and limited depictions of GLB individuals should be eliminated so that GLB individuals can more easily develop their identities to their fullest potential.

19. Factors Influencing Eyewitness Reliability

Chris Green & Sally Redden, Department of Psychology, *Southwestern University*
Sponsor: Jacqueline Muir-Broaddus, Department of Psychology, *Southwestern University*

The American legal system relies on eyewitness testimony although it is often unreliable. In fact, mistaken eyewitness identification is one of the most important factors contributing to wrongful convictions (Devenport, Cutler, & Penrod, 1997; Kassin, Hosch, Tubb, & Memon, 2001; Wells & Olson, 2003), yet eyewitness confidence is often considered an important factor in determining reliability. For example, jurors are greatly influenced by the confidence level of witnesses when assessing their credibility (Bornstein & Zickafoose, 1999) and jurors are easily misled by untruthful witnesses who have high levels of confidence (Wells, Lindsay, & Ferguson, 1979). Studies of eyewitness confidence have largely focused on post-identification confidence, which is the witness' level of confidence after the identification is made. Very little research has been conducted on the reliability of pre-identification confidence. Using both types of confidence measures, this study empirically assessed the effects of several known eyewitness phenomena, including the presence of a weapon (Shaw & Skolnick, 2001), the presence of a salient or out-of-place object (Shaw & Skolnick, 1999), and gender bias (Wells & Olson, 2003). College students watched a short film of a simulated robbery and then rated their confidence in their ability to identify the suspects before providing descriptive details about the crime and picking the suspects out of a photo lineup. Finally, witnesses were asked to rate their confidence in the accuracy of their responses. Although data collection is still ongoing, the results are expected to show that pre-identification confidence will be a better predictor of accuracy than post-identification confidence, that witnesses will be more accurate in the identification of suspects of the same gender, and that the presence of a weapon will lower witness accuracy more than will the presence of a salient object.

20. Comparison of the Discriminative Stimulus Effects of DOM, MDL100907 and Ketanserin in Rats: Inverse Agonism?

Alison Unzeitig, Department of Biology, *Southwestern University*

Sponsor: Charles P. France, Department of Pharmacology, *UT Health Science Center at San Antonio*

The postsynaptic location of the serotonin_{2A} (5-HT_{2A}) receptors on cortical pyramidal cells, interneurons, and axon terminals suggest that the release of serotonin can produce a variety of alterations in excitation and inhibition within cortical circuitry and thus affect multiple cognitive processes. The present investigation examines the effects and manipulation of the 5-HT_{2A} receptor on co-administration with drugs known to act at this receptor. Agonist-antagonist and inverse agonist interactions are studied. The first experiment examines the effects of treatment with MDL 100907 (purported 5-HT_{2A} receptor inverse agonist), against the phenethylamine hallucinogen, 2,5-dimethoxy-4-methylamphetamine (DOM) (5-HT_{2A} receptor agonist), in rats trained to discriminate DOM from vehicle. A second experiment examines the effects of treatment with DOM against MDL 100907 in rats trained to discriminate MDL 100907 from vehicle. A third experiment examines the effects of treatment with ketanserin (purported 5-HT_{2A} receptor neutral antagonist), in the two groups of rats trained to discriminate DOM and MDL 100907. Using a two-lever, food-reinforced, fixed-ratio 5 drug discrimination procedure, separate groups of rats were trained to discriminate either 0.56 mg/kg DOM or 0.1 mg/kg MDL 100907 from vehicle. Neither MDL100907 nor ketanserin substituted for DOM and DOM did not substitute for MDL100907; however, there was cross-substitution between MDL100907 and ketanserin. The discriminative stimulus effects of DOM were antagonized by both MDL100907 and ketanserin and the discriminative stimulus effects of MDL100907 were antagonized by DOM. These studies demonstrate qualitatively different discriminative stimulus effects for 5-HT_{2A} receptor agonists and purported 5-HT_{2A} receptor antagonists/inverse agonists. Given the similarity in discriminative stimulus effects of ketanserin and MDL100907, it is possible that any inverse agonist activity of these compounds that might contribute to a discriminative stimulus effect is overshadowed by their ability to antagonize endogenous 5-HT.

21. The Curse of Copper: A Look at International Grassroots Resistance to the Transnational Companies We Rely On

Benjamin Johnson, Environmental Studies Program, *Southwestern University*
Sponsor: Melissa Johnson, Department of Sociology and Anthropology, *Southwestern University*

In this work I look at the community of Junin, Ecuador, that has been in an almost 20-year struggle against international mining companies trying to “exploitar” one of the largest remaining copper reserves in the world. The presentation is presented through the lens of the International Observer Program present in the area and takes a look at the way that the movement has successfully fought against multiple transnational companies with the help of both local and international support. The work concludes with a discussion of whether or not international aid is necessary in grassroots movements, especially when it involves oppressed/disfranchised groups and large multi-national organizations/corporations. I look

Au salts are powerful soft Lewis acids and readily activate alkynes, allenes, and alkenes toward attacks by a variety of nucleophiles. We have recently shown that in the presence of either cationic [Au(PPh₃)]⁺SbF₆⁻ or dichloro(pyridine-2-carboxylato)Au(III) propargylic esters can be converted into a range of synthetically important products. One of these reactions is a highly efficient and stereoselective formation of 2,3-indoline-fused cyclobutanes from propargylic 3-indoleacetates. Remarkably, these substrates show divergent reactivities under different reaction conditions and with trivalent Au catalysts. Herein, we report the progress of this study and a selective formation of 2,3-indoline-fused cyclopentenes.

34. The Effect of D-AlaGly on LexA Cleavage in *Escherichia coli*

Jason Burnham, Department of Biology and Department of Chemistry and Biochemistry, *Southwestern University*

Sponsors: Martín Gonzalez, Department of Biology, *Southwestern University*, Frank Guziec, & Lynn Guziec, Department of Chemistry and Biochemistry, *Southwestern University*

Bacteria have evolved numerous mechanisms to resist antibiotics, one of which involves the SOS response. In the presence of β -lactam antibiotics, the *Escherichia coli* dpiBA operon is induced and one of its gene products, DpiA, binds to DNA, blocking DNA replication, thus initiating the SOS response. This permits the bacteria to arrest cell division, and more specifically to disrupt cell wall synthesis, thereby avoiding the bactericidal effects of β -lactam antibiotics, which require active cell wall synthesis to be effective. Since the SOS response is an inducible response that requires the cleavage of LexA (a repressor protein that binds to the promoter region of the SOS genes and blocks their expression), the bactericidal effects of β -lactam antibiotics could be increased by blocking LexA cleavage. This was attempted using high concentrations of D-alanine glycine (D-AlaGly), which was thought to mimic the necessary contact points in the LexA active site. Experiments were carried out at different concentrations of D-AlaGly, in different media, and with different strains of *E. coli*. All results show that D-AlaGly has little, if any, stabilizing effect on LexA, most likely resulting from the fact that it is a readily hydrolyzed dipeptide. In order to address this issue, current work has focused on the thionation of L-AlaGly with Lawesson's reagent in the solvent hexamethylphosphoramide (HMPA). After the thionated dipeptide is synthesized in sufficient quantities, it will be tested in *E. coli* to see if it prevents LexA cleavage.

35. Characterization of DNA Damage Formed upon Photoactivated Daunomycin

Priyanka Kainthla, Department of Chemistry and Biochemistry, *Southwestern University*
Sponsor: Maha Zewail-Foote, Department of Chemistry and Biochemistry, *Southwestern University*

Daunomycin, a DNA intercalator, is a potent anthracycline antitumor drug used to treat different forms of leukemia. Photoirradiation leads to the formation of guanine cation radical and daunomycin anion radical, which can subsequently reduce molecular oxygen producing

5 minutes of 10-minute surveys. Position of the observer, which may influence accuracy, was examined in 110 roadside call surveys along 11 routes. The position of the observers during the call surveys did not have a significant effect on the number of species heard. Significantly greater numbers of species called during low moonlight in comparison to high moonlight. In contrast, *Acris crepitans* called significantly more often during high moonlight. These results suggest that observers should not wait before beginning anuran call surveys and they do not need to change positions during the surveys. To maximize the number of species detected, call surveys should be conducted under conditions of low moonlight.

32. Cytotoxicity of Anthrapyrazoles in Various Reproductive Cancer Cell Lines
Kurt C. Seilheimer and Carolina Boet, Department of Biology, *Southwestern University*
Sponsors: Maria Cuevas, Department of Biology, *Southwestern University*, and Frank Guziec, Department of Chemistry and Biochemistry, *Southwestern University*

Anthrapyrazoles are potent cytotoxic agents that intercalate into DNA, causing DNA strand breaks and inhibition of DNA synthesis and topoisomerase II. These compounds were developed in an attempt to lower the high cardiotoxic side effects seen with the use of anthracyclines. The objective of this study was to determine the cytotoxic effect of AP-10 and AP-11 on human MCF-7 (breast), HEC 1A (endometrial), SK-OV-3 (ovarian), and DU-145 (prostate) carcinoma cell lines. Cell cultures were treated for 1 hour with different concentrations (0.1 μ M-20.0 μ M) of AP-10 and AP-11. Cells were allowed to recover for 48 hours in fresh media, and cell viability was determined by MTS assay or trypan blue dye exclusion assay. The IC₅₀ of AP-10 on MCF-7, HEC 1A, SK-OV-3, and DU-145 was determined to be 1.5 μ M, 4.5 μ M, 3.55 μ M, and 0.4 μ M, respectively. Whereas the IC₅₀ of AP-11 on MCF-7, HEC 1A, SK-OV-3, and DU-145 was found to be 2.5 μ M, 7.65 μ M, 6.5 μ M, and 3.2 μ M, respectively. Using trypan dye exclusion assay we were able to confirm the cytotoxic effect of AP-10 and AP-11 distinguishing it from cell growth inhibition. To determine if cells were able to recover after exposure to AP-10 and AP-11, DU-145 cells were incubated in the presence of the IC₅₀ concentration. After exposure, fresh media was added daily for 5 days and cell growth compared to control. Although cells exposed to AP-10 and AP-11 were able to recover, they never attained the cell number observed in cultures that were never exposed to the compounds. Finally, based on DNA gel electrophoresis, apoptosis seems not to be the underlying cellular mechanism of AP-10 and AP-11's cytotoxic effect. In conclusion, our results demonstrate that AP-10 has a higher cytotoxic activity than AP-11, their cytotoxicity is indeed due to cell death at least in DU-145 cells, but apoptosis seems not to be involved.

33. Tandem Au-catalyzed 3,3-rearrangement-[3 + 2] cycloaddition of propargylic 3-indoleacetates
James M. Bradley, Department of Chemistry, *Southwestern University*
Sponsors: Myoung-Geun Song & Liming Zhang, Department of Chemistry, *University of Nevada at Reno*

at the pros and cons of international aid and will use other examples to make my point. The presentation will end with a discussion on how people can get involved with the movement in Junin and about the ways that we can alleviate the pressures on groups of people that are caused by our daily lives.

22. EcoVillage: Green Living at Southwestern
Benjamin Johnson, Aubrey Weeks, Ansa Copeland, Matt Glenn, Alex Rutledge and other members of Students for Environmental Activism and Knowledge, Environmental Studies Program, *Southwestern University*
Sponsors: Laura Hobgood-Oster, Department of Religion and Philosophy, *Southwestern University*; Melissa Johnson, Department of Sociology and Anthropology, *Southwestern University*

In the fall of 2006 the student organization SEAK, as well as faculty and staff, realized that on our campus there is a serious lack of environmental respect and protection. To try and improve the situation this group of people (let us call them all SEAK) decided to try and make an eco-friendly living community on campus that would include many different things. First, it would consist of different types of green architecture that is more economically efficient than current and proposed buildings on campus and does not hurt the environment as much. Second, it would include a permaculture garden that would be used to provide food for the campus as well as the surrounding community. A final aspect of the village would be a new type of community on campus that would foster intellectual growth and respect between human beings. To accomplish this goal, SEAK has been working with all aspects of the campus community in order to gather support and momentum. The organization applied for many grants to start composting systems, and in March 2007 started construction on a student-run organic community garden. The organization was even able to make two new student job positions to help with this project and other environmental initiatives around campus. This presentation is designed to inform the campus community about the project and to enlist people's support. The goal of the presentation is also to show the campus community and administration the importance of environmental issues on campus and in the world and to lobby the administration to officially come out with an environmental policy of the school. We also hope that Southwestern University will take a position that will put them at the forefront of higher education by making the environment a high priority issue.

23. How Taxing is TAKS Testing on Texas Teachers?
Amanda Wallace, Department of Education, *Southwestern University*
Sponsor: Michael Kamen, Department of Education, *Southwestern University*

This study will be conducted through interviews with several Texas public-school teachers in the Austin area. The teachers will be interviewed using a questionnaire that I have developed that highlights the issues I want to bring up during the interviews. The

questionnaire is fairly open-ended and should elicit personal opinions on high-stakes testing, TAKS preparatory materials and their place in the classroom, and other viewpoints about the issues surrounding the implementation of No Child Left Behind. The opinions expressed in this study will be reported without the use of any identifying information about the teachers involved so that they can provide their personal opinions on government policy without fear of repercussions.

24. Gender Inequality: Effects of Elementary School Science on Girls' Interest in Science
Kimberly Cavett, Department of Education, *Southwestern University*
Sponsor: Michael Kamen, Department of Education, *Southwestern University*

It appears that young male students hold a higher interest in science than female students. Does this mean that boys are "better" at science? Do they naturally like science more than girls? Males dominate science-based careers despite many studies' attempts to disprove gender difference myths that boys have an "edge" in science and math. Students in elementary grades, especially the lower ones, tend to hold highly stereotypical views of what careers men and women should pursue. This can greatly affect what students plan to do later in life. If a child believes only a man can be a scientist and that child is a girl, she is less likely to pursue any interest in science. If teachers are aware of this interest-gap between genders, they can work to narrow it. There is a need for research on how to promote the interest of girls in science starting in the primary grades.

25. Costs and Benefits of High Stakes Testing in Math
JoAnn Lawhorn, Department of Education, *Southwestern University*
Sponsor: Michael Kamen, Department of Education, *Southwestern University*

High stakes math testing is used to determine student progress toward meeting federally mandated goals. It is also used to predict a student's ability to be successful in college. For the student, these tests are tied to being promoted to the next grade level or being accepted into the college of their choice. For teachers the tests are used to measure their success or failure in the classroom. For administrators the tests can affect funding and other consequences for the school district such as reorganization. These consequences are what make the tests to be considered high stakes. The intentions of the tests are to ensure that all children are receiving a good education and are properly prepared to make a contribution to society. This research is designed to identify whether the tests are attaining their goals and to identify any benefits that students, teachers, or communities may be gaining as a result of testing. It will also investigate any roadblocks that may be generated by high stakes testing. For example, how are those involved dealing with the stress generated from the pressure to perform well on these tests? The research will identify costs to the students, teachers, and communities due to the high stakes nature of the tests.

contribute to MucAB's great capacity for mutagenesis and bring it to the attention of the current research. Various proteases associated with the degradation of UmuD'C components have been determined and we were interested in assessing the roles of these same proteases on MucAB protein regulation. Unexpectedly, the effects of the same proteases on MucAB components versus those on UmuD'C components suggest that the regulation of the two complexes differ. Therefore, the activity of MucAB proteins may also diverge from that of the UmuD'C proteins.

30. Atherogenesis as an Inflammatory Instability
Lindsey Abel, Department of Biology, *Southwestern University*
Sponsor: Jay Walton, Department of Biology, *Texas A&M University*

Atherosclerosis is a disease characterized by the build up of debris in the form of cholesterol and fatty deposits in the inner lining of the arterial wall. Previous research proposes that atherogenesis, the beginning stages of atherosclerosis, originates from localized inflammation. Modeling the initial inflammatory response of atherosclerosis may increase our understanding and ability to develop treatment for cardiovascular disease. In this study, a system of partial differential equations combines the effect of immune mechanisms and specific biochemical elements to analyze the early stages of the growth of a lesion. In particular, we look at the effect of chemoattractant and antioxidants on the development of a lesion. Antioxidants inhibit the formation of oxidized LDL while chemoattractant produce signals that amplify and localize the immune response at the site of the lesion. Computer simulations using the program Femlab are used to observe when the model remains in a stable, healthy equilibrium state. The simulations show antioxidants having little effect in maintaining a healthy state. However, chemoattractant strongly influences the localization of debris and causes the disease to quickly progress. In addition, the development of the lesion is extremely sensitive to the boundary condition and has an immediate impact in determining the progression of the lesion.

31. Effect of Disturbance, Position of Observer and Moonlight on Anuran Call Survey Efficiency
Jose Granda & Jessica Hua, Department of Biology, *Southwestern University*
Sponsor: Ben Pierce, Department of Biology, *Southwestern University*

Anuran (frog and toad) call surveys are being used widely to determine population densities of anurans. Little research has been done on the accuracy and efficiency of this methodology. Approach to the survey site potentially disturbs calling amphibians. This factor was examined in 230 roadside call surveys along 23 routes. On each route, 5 of the 10 surveys were randomly chosen as 10-minute surveys, which were divided into two 5-minute intervals. There was no significant difference in the number of species heard in the second 5 minutes in comparison to the first 5 minutes of a 10-minute survey, nor a significant difference in the number of species heard when comparing 5-minute surveys and the second

concentrations of 4-OH TAM and E2 (10 nM-100 uM). A moderate increase in percent survival was observed when cells were treated with low concentrations of 4-OH TAM on days 1 and 3 with complete inhibition seen at 100 uM. A similar trend was observed with E2 (10 nM to 1 uM) treatment on d1 and d2. However, on d2 of 4-OH TAM and on d3 of E2 treatment there was a progressive decrease in percent survival with increasing drug concentrations. To distinguish between the cytostatic and cytotoxic effect of 4-OH TAM and E2, dead cells were counted using trypan dye exclusion assay. Actual cell count showed cytotoxic effect only at 100 uM 4-OH TAM, with a 50% increase observed at 10 uM. E2 cytotoxic effect was observed at both concentrations. Our results indicate that apoptosis is the biological parameter associated with the cytotoxic effect of 100 uM 4-OH TAM and E2.

28. Defining the Lon Protease Recognition Sequence Responsible for UmuC Degradation
Julianne Stafford, Department of Biology, *Southwestern University*
Sponsor: Martín Gonzalez, Department of Biology, *Southwestern University*

Cells are constantly undergoing damage to their DNA, and in order to survive bacteria have developed mechanisms to repair damage in an error free manner. However, sometimes the nature of the damage is such that it cannot be repaired by error free mechanisms. In this case, some bacteria are able to utilize a repair mechanism called SOS mutagenesis, an error-prone mechanism of DNA repair that is a last resort for cell survival when the genome of a bacterial cell has undergone extensive damage in the form of DNA lesions. UmuC is an integral protein in SOS mutagenesis. UmuC, acting as a heterotrimer with UmuD', allows for DNA replication across DNA lesions and enables the cell to survive and pass on its genetic material. In order to turn off the SOS mutagenic response and ensure that it is only active when necessary (to avoid excessive mutations), UmuC is degraded by the Lon protease. A specific amino acid sequence, which is located somewhere between 50 and 20 amino acids from the extreme carboxyl-terminus of UmuC, targets UmuC for Lon degradation. Our current research has developed two approaches to precisely define the region of UmuC that functions as a Lon recognition sequence.

29. Regulation of MucAB: The Stability of MucA' in the Presence of Different Proteases
Kalyn Horst, Department of Biology, *Southwestern University*
Sponsor: Martín Gonzalez, Department of Biology, *Southwestern University*

Bacterial mutagenesis can occur when the DNA of an organism is altered in response to external damage (such as UV radiation) or following uptake and expression of foreign DNA. In *Escherichia coli*, damaged DNA can induce the error-prone repair mechanism termed SOS mutagenesis. In this response the UmuD'C proteins, which make up DNA Polymerase V, are regulated via protein degradation, although other transcriptional and posttranslational pathways for regulation also exist. The MucAB genes, which are similar in function to the umuDC genes, have been found to not only encode a more mutagenic DNA polymerase complex but are also located on a natural plasmid. Both of these characteristics

26. Cultural Context of Math Word Problems
Allie Stevenson, Department of Education, *Southwestern University*
Sponsor: Michael Kamen, Department of Education, *Southwestern University*

The purpose of this research is to investigate math textbook word problems to analyze their implicit and explicit cultural context. The text analysis explores the cultural assumptions embedded in math word problems in US textbooks as well as the degree to which the context, language, names, and type of problem is culturally responsive and relevant. Math is often assumed to be easily taught across cultures because of the general use of Arabic numbers and cross-cultural concepts. The Third International Math and Science Study revealed unexpected differences in teaching and assumptions about teaching and learning when classroom teachers from a number of countries were observed by international research teams. This study describes similar culturally-specific elements of math word problems and explores their impact on children's math learning and their impact on children's connections to cultural values. The impact of both culture and the context of specific mathematics skills and concepts on the nature of mathematics word problems are explored.

27. Schools of Low SES: Who, What and How it Effects
Katie Stancil, Department of Education, *Southwestern University*
Sponsor: Michael Kamen, Department of Education, *Southwestern University*

This study is proposed to answer the question, "What are the effects of a low socioeconomic status (SES) in the teaching and learning of mathematics in elementary schools, and how can educators' intervention influence a positive change in the performance and reputation of these schools?" Popular public belief has placed a detrimental stigma on schools of low SES which may contribute to the poorer levels of academic performance. Some standardized test statistics have also provided evidence that students in these schools often perform lower than their peers in higher SES communities. Further research has also linked a community's culture to its SES, which in turn is linked to the school and students within. It has also been shown, however, that teachers' influence and early intervention can help negate some of the more detrimental effects, whether created by public stigmas or true economic disadvantages. The current study intends to analyze the SES effects through a literature review of schools' and children's SES environments and the means various educators have taken in efforts to overcome potential obstacles. Further research, in the form of interviews of a variety of educators in the Austin area, intends to show the personal perspectives and experiences of the area's practicing educators. Both literature and interviews also reveal an examination of various ways educators and families have worked and can strive, through intervention, to surpass the possible detrimental factors. In uniting the literature and personal perspectives, the essence of the effects of a low SES on students and educators lead to a better understanding of the low SES obstacles and the means by which they can be overcome.

28. Speaking One's Mind: The Relationship Between Thought and Verbal Language
Sam Shannon, Department of Religion and Philosophy, *Southwestern University*
Sponsor: Alejandro de Acosta, Department of Religion and Philosophy, *Southwestern University*

Many philosophers have stated that verbal language is the primary indicator of intelligence in living beings, the most recent example being Alan Turing's famous test for artificial intelligence. Each thinker, from Descartes to Turing, has offered this statement without an explanation as to why this is the case; it has been taken for granted that language is somehow related to intelligence. In this paper, I attempt to describe the relationship between thought and language, showing that they are not only related, but co-dependent. The component parts of language, vocabulary and grammar, are both the forms and means of expressing the component parts of thought: conceptualization and understanding. In describing this relationship, I hope to bring to light a large part of what it means to be a thinking being, what it means to be human.

29. Guerillas in the Government: The Evolution of the National Liberation Movement--Tupamaro in Uruguay
Olivia Travieso, Latin American Studies Program, *Southwestern University*
Sponsor: Daniel Castro, Department of History, *Southwestern University*

The idea of resistance, rebellion and revolution has been rooted within Latin America for centuries, but came to the fore most prominently during the second half of the 20th century. These foquista/guevarista/maoist-inspired revolutions, however, remained confined to their rural settings. The idea of taking these guerilla warfare tactics and applying them to an urban environment was unimagined, unprecedented, and deemed impossible by most. This made the appearance of the National Liberation Movement—Tupamaro (MLN-T), urban guerillas from Montevideo, Uruguay, an exceptional and innovative uprising. Through the evolution of their organization they broke away from their revolutionary predecessors, and now comprise the largest and most influential political party in Uruguay's government. My study examines the trajectory of the MLN-T, taking into account their socio-political context, in an attempt to elucidate their decision to form a political party. It questions whether this integration into the democratic process signifies an abandonment of their revolutionary ideals or whether this is simply the next step toward achieving true revolutionary progress. To further probe their movement, my work also examines whether the Tupamaros have been absorbed by the system in Uruguay, or whether they are able to still maintain the "revolutionary" in their organization, as they usher in the 21st century.

30. Civic Involvement in Russia: An analysis of Motivators and Deterrents
D. Martin Stanberry, Department of Political Science, *Southwestern University*
Sponsor: Jennifer Suchland, Department of Political Science, *Southwestern University*

The UmuD'2C protein complex of *Escherichia coli* is required for SOS mutagenesis, a process triggered by DNA damage that allows replication of damaged DNA. UmuD'2C is a heterotrimer responsible for bypassing lesions in damaged DNA via translesion synthesis. This process is error-prone, inducing a striking number of pre-transcriptional mutations. Thus, mutagenesis must be kept to a minimum after environmental stress subsides. Previous studies show that GroE, DnaK, and DnaJ are responsible for folding and maintaining integrity of the UmuC subunit of the UmuD'2C holoenzyme. However, the effect of these proteins on the UmuD portion of the holoenzyme has not been determined. We have carried out a series of in vivo experiments investigating the roles of these heat shock proteins in UmuD2 dimer formation and UmuD degradation in *E. coli*. Our results suggest that DnaJ plays a major role in UmuD degradation, and DnaK and GroE play lesser roles. By assisting in regulating the activity of the UmuD protein, these heat shock proteins are critical in ensuring proper functioning of the SOS response in bacteria.

26. Claudin-3 expression in tight junctions of breast cancer and ovarian cancer cell lines.
Michelle Bouche & Bryce Foster, Department of Biology, *Southwestern University*
Sponsor: Maria Todd, Department of Biology, *Southwestern University*

Our research analyzes Claudin-3 expression levels in different breast cancer and ovarian cancer cell lines. Claudins (CLDNS) are a type of tight junction proteins found to have different expression levels in different cancers. Some CLDNS may have an over-expressed protein level in one cancer while having under-expressed levels in another type. In particular, Claudin-7 has a lower expression in invasive ductal carcinomas in comparison with normal breast epithelial. MDA-MB 157, MCF-7, SKV-03, and ES-2 were grown and protein was extracted. The levels of CLDN were quantified via Western Blot for MDA-MB 157, MCF-7, SKV-03, ES-2, OVCAR-3, MPA-1, MDA-MB 415, DU 4475, and HBL-100. The breast cancer cell lines were MDA-MB 157, MCF-7, MDA-MB 415, and DU 4475. The ovarian cancer cell lines were SKV-03, ES-2, OVCAR-3, and MPA-1. HBL-100 was a normal breast cell line that was used as a control. The levels and types of CLDN expression can be utilized as an effective diagnostic tool by differentiating between types of cancers.

27. Effects of 4-OH Tamoxifen and 17b-estradiol on the Human Cervical Cancer Cell Line HeLa
Erica Navaira, Department of Biology, *Southwestern University*
Sponsor: Maria Cuevas, Department of Biology, *Southwestern University*

Tamoxifen, used to treat breast cancer due to its anti-estrogen action, has been shown to increase the risk of developing cervical cancer in HPV positive women. The present study was designed to investigate the effect of 4-OH tamoxifen (4-OH TAM) and 17b-estradiol (E2) on the in vitro growth of the human cervical carcinoma cell line HeLa. Cells were cultured in media supplemented with 10% dextran-charcoal treated fetal bovine serum and various

robotic remote-controlled shark by equipping it with a camera and remote-controlled lights. The remote controlled lights allowed us to adjust the frequency of flashing which could be used to predict the onset of an attack. This procedure enabled us to simulate different subsystems of predatory behavior, including general search, chase, and attack. It was predicted that the conditioned response to a stimulus associated with a predator would depend on predator imminence. That is, a stimulus that predicts an immediate attack might condition c-starts, resulting in skittering and erratic movement, whereas stimuli that predict an attack after a longer period of time might elicit schooling behavior. In the experiment, paired and unpaired control groups were used to demonstrate that the defensive behaviors produced by Mummichogs are a result of a learned response and are not innate. Results are discussed in light of the role that learning plays in increasing fitness and in light of Timberlake's behavioral systems views.

24. A Meta-Analysis of the Effects of Rising CO2 Levels on the Nutritional Content of Staple Crops
 Brian Miller & Holly Allen, Department of Biology, *Southwestern University*
 Sponsor: Daniel Taub, Department of Biology, *Southwestern University*

CO2 levels are rising globally and are expected to continue rising during the century. Plants respond to increased CO2 levels by an increase in photosynthetic rates, leading to an increase in growth. However, along with this increase in growth, plants shift resource allocation towards the production of structural carbohydrates. Little is known about how this may alter the nutritional content of food crops. We conducted a statistics-based survey, or meta-analysis, of research literature comparing food crops grown in elevated and ambient CO2 levels to determine if CO2 levels affected nutritional content. Significant changes in protein content were observed in wheat (-10%), barley (-15%), rice (-10%), soybeans (-1%), and potato (-14%). Significant differences in the ratio of the elevated CO2 to ambient CO2 protein concentration were observed between certain CO2 enrichment environments in wheat and soybeans, with open-top chambers (OTC) exhibiting the largest CO2 effect. A significant difference between the effects of CO2 on plant growth in pots and on plant growth in the ground was observed under OTC environments for both wheat and soybeans. This difference was not observed under an analysis of all enrichment environments as a whole, indicating that the possible pot vs. ground artifact is most pronounced under OTC environments. While the magnitude of the observed reduction of increased CO2 levels in protein varied with experimental technique, definite reductions in CO2 were seen for most species, regardless of the experimental methods. Hence this research raises a substantial concern that rising CO2 levels may significantly reduce the protein content of important food crops.

25. Effects of Various Heat Shock Proteins in UmuD Degradation
 Caitlin Gibson, Teri Bean, Department of Biology, *Southwestern University*
 Sponsor: Martín Gonzalez, Department of Biology, *Southwestern University*

Civil society is the sphere that lies between the private and government arenas. It is here that citizens' interests are voiced in an attempt to check government authority. Many scholars and political authorities view civil society as a critical building block for emerging democratic states. While an organic and independent civil sector was prohibited in Tsarist and Soviet periods, the practice gained momentum during the era of perestroika as a means of expressing discontent. Unfortunately today, only 16 years after the collapse of the Soviet bloc, the size and influence of Russia's civil society seems to be declining. Data collected from discussions with members of the non-governmental organization (NGO) Soldiers' Mothers of St. Petersburg provide a framework for analyzing motivators and deterrents for civil engagement. This data, coupled with secondary sources, highlight significant aspects of citizen involvement in Russian civil society. Soldiers' Mothers is one of the most influential and respected NGO's in Russia. Understanding what influences their volunteers' and employees' involvement could clarify methods for increasing civic engagement. Several trends emerged from the data. Factors which motivated engagement were linked primarily to internal aspects of the organization, including leadership and group dynamics. In contrast, factors that often stifled civic involvement were related to external issues ranging from economic constraints in the household to resistance from the executive branch of the government. In order to strengthen democratic practices in Russia, civil society must become an effective check on the power of the government. It is with this in mind that we should work to uncover measures aimed to engage the population in the activities of the third sector. Understanding what influences citizens' motivation is critical for increasing involvement and the authority of Russian civil society.

31. Spain: A Transformation to Democracy, 1914 to Present
 Sarah M. Salinas, Department of Political Science, *Southwestern University*
 Sponsor: Robert Snyder, Department of Political Science, *Southwestern University*

Too often in political science, we look at text to portray to us situations other than that in which we live our day-to-day lives. In studying other countries, Spain—with its intricacies and long path from monarchy, through a period of dictatorship, and now, as a parliamentary monarchy—is a complicated and fascinating process. I seek, as a researcher and political scientist, to further investigate the events that led up to the failing of the first attempts at democracy, the Spanish Civil War, and now, to the extremely fragile situation the country still finds itself in. In doing so, issues of power, the political movements, and cultural contexts will provide the backdrop for analyzing and explaining how the political, cultural, and historical events all lead up to the modern state of today. To do so, texts from both American and Spanish scholars will be used to gain a deeper and more comprehensive understanding of the modern political sphere of today.

32. The Gentleman of the "Imperial Race": Constructions of Masculinity in Imperial Britain, 1870-1900.
 Sarah Morris, Department of History, *Southwestern University*

Sponsor: Elizabeth Green-Musselman, Department of History, *Southwestern University*

My research considers how constructs of imperial masculinity by British middle class men during the late Victorian era were conflicted, and even undermined, by contradictions inherent within notions of the ideal, civilized British man. Confidently promoting ambiguous views on civilization, imperial nationalism, and masculinity, British middle class men, whose voices dominated the public sphere, championed an often contradictory premise of national superiority, where the domesticated and civilized male existed alongside the virile adventurer in the imagined landscape of the imperial nation. Belied by a confident presentation, cultural constructions of a middle class masculine identity were extrapolated onto a broader conception of British national identity that contained strong elements of uncertainty and anxiety. I am exploring these anxieties, particularly as manifested by attempts to locate masculinity in variable environments, through popular literature, by authors like Kipling and Doyle, and through recurring tropes of fire imagery within these discursive artifacts. Fire, capable of crossing gendered boundaries and of embracing disparate elements, such as civility or barbarism, serves as a lens through which to view efforts to locate, articulate, and stabilize masculine identity, and thus to legitimize the middle class British man's claims of universal cultural superiority. My presentation will examine the bi-play between these elements of confidence and anxiety, ubiquity and dislocation through the depiction of the 1857 Indian Mutiny in two late Victorian literary works, Lord Robert's 41 Years in India and Arthur Conan Doyle's A Sign of Four. Memories of the Mutiny functioned as a stage upon which to enact variable forms of masculinity and to articulate present anxieties concerning the empire, national life, and the cultural position of the British male. By exploring motifs of invasion, dislocation, and suffocation within these stories, I will examine the tensions present within constructions of late Victorian imperial masculinity.

33. The United Nations and Female Genital Mutilation

Jacqueline M. Jeffcoat, Department of History, *Southwestern University*
Sponsor: Shana Bernstein, Department of History, *Southwestern University*

How has the topic of female genital mutilation (FGM) made its way into the U.S. court system where federal legislation prohibits its practice? The answer to this question is significant in that it highlights the way in which global systems of power affect the human rights of individuals on international, national, and local levels. By understanding this dilemma of difference, historians can better comprehend human rights history. Largely due to the numerous women's movements of the sixties, Western women's liberation of the seventies demanded increased political, economic and social equality. These demands were not limited to Western Europe or North America but included many attempts to address the status of women worldwide. Due to this, Western individuals and activist groups argued that practices producing harmful effects on women's well-being needed to be studied and researched. Therefore, the main scope of this paper, 1975-1995, shows how the United

Sponsor: Richard Osbaldiston, Department of Psychology, *Southwestern University*

The prevalence of mental health problems have been increasing significantly over the last decade. Paykel and Priest (1992) revealed that almost 20% of general practitioner consultees showed some sort of depressive symptoms. Although drug therapy and counseling are considered more popular approaches to mental healthcare, exercise has been found to have significant effects on symptoms of depression and on measures of perceived well-being (Craft & Landers, 1998). Several studies have established a connection between regular physical activity and higher scores of perceived well-being (Dixon, Mauzey, & Hall, 2003; Thirlaway & Benton, 1992). Regular exercise has also been shown to lower levels of anxiety (Szabo, 2003) and stress (King, Taylor, Haskell, 1993), and to enhance coping behavior (Kelsey, DeVellis, Begum, Belton, Hooten, & Campbell, 2006). However, no study to date has tested the effects of regular exercise on all of these measurements of mental well-being at one time. Also, with regard to the type of exercise that is most beneficial to mental well-being, there has been some debate. Some researchers advocate that aerobic exercise is most beneficial (Greist, Klein, Eischens, Faris, Gurman, & Morgan, 1979), whereas others maintain that anaerobic exercise is more beneficial (Thirlaway & Benton, 1992). To date, no study has explicitly tested the difference between these two types of exercise with regard to their effect on mental-well being. This study tested the effects of both aerobic and anaerobic exercise on a comprehensive set of mental well-being measures. The participants in this study were students enrolled in Fitness and Recreational Activity classes at Southwestern University. Each student completed measures of mental well-being each week for the duration of the semester. Repeated measures ANCOVA were used to analyze the results.

23. I AM A Real Shark!

Delia Shelton, Heather Decker & Leah Christian, Animal Behavior Program, *Southwestern University*
Sponsor: Jesse Purdy, Department of Psychology, *Southwestern University*

Behavior systems views attempt to understand the role of learning to enhance reproductive success within the context of the animal's evolutionary and developmental history (Domjan, 1994; Fanselow, 1994; Hogan, 1994). Behavior systems are species specific in that they are related to species characteristic processes, structures, and environments. In aversively-motivated situations, it has been suggested that the range of behaviors available to an animal becomes limited to the behaviors that have a phylogenetic history of enhancing survival and consequently reproductive success (Bolles, 1970; Timberlake, 1983, 1994). In the present study, we developed a behavioral systems view of the anti-predatory behavior of Mummichogs (*Fundulus heteroclitus*), a small fish found in the estuaries and shallow waters of the Gulf of Mexico. The Mummichog is subject to predation by a large number of predators, including triggerfish and sharks. To simulate a predatory attack we modified a

Consistent with the popular belief that women are infatuated with chocolate, Weingarten and Elston (1991) argue that women are physiologically driven to crave and eat chocolate (Rodin, Mancuso, Granger & Nelbach, 1991). However, research has also shown that relative to men, women are more embarrassed to purchase chocolate (Rozin, Bauer, & Catanese, 2003), are more self-conscious of their bodies and their health (Valois, Zullig, Huebner, & Drane, 2003), and are more likely to diet than are men (Wardle, et al., 2004). The current study sought to reconcile conflicting findings in the literature by observing the public snack choices of women and men. A total of 59 high school and college students (38 women, 21 men) in central Texas were unobtrusively observed as they used public vending machines. Our results supported the hypothesis that women are less likely than are men to purchase chocolate, apparently contradicting the popular belief that women are more fixated on chocolate than men are. Specifically, the proportion of men who purchased chocolate (38.1%) was almost three times that of women (13.2%). These findings indicate that women may suppress an urge to eat chocolate in an effort to maintain a perfect figure (Rozin et al., 2003; von Bothmer & Fridlund, 2005). However, because we did not observe these women's eating habits directly, it is possible that they are indulging in chocolate privately in order to avoid negative social ramifications (Lafay et al., 2000). To address this possibility, future research should observe women's eating habits directly or have women complete anonymous self-reports of their chocolate intake. Despite this limitation, the current study contradicts a popular stereotype and reveals that culture can distort individuals' perceptions of what is typical with respect to women's eating behaviors.

21. Factors Associated With Why Patients Miss Appointments

Blake Beckwith, Department of Psychology, *Southwestern University*
Sponsor: Richard Osbaldiston, Department of Psychology, *Southwestern University*

Patients who fail to show up to scheduled appointments cause inefficiencies in the health care system. The purpose of this study was to analyze the factors that may lead to patients missing appointments. Adult patients at five health care clinics near Georgetown, TX, were asked to complete surveys that measured demographic, logistical, psycho-emotional, and belief variables. Bivariate analyses of these data resulted in three significant conclusions. Patients who reported a lack of transportation were found to miss appointments most often; patients who had difficulty paying for their medical bills were found to miss appointments more often; and patients with a serious medical condition were found to miss appointments more often because of a fear of bad news. In contrast to previous studies, gender and beliefs concerning long waiting times, helpfulness of staff, and the amount of time doctors spend with patients did not predict the number of appointments patients missed or the reasons they had for missing appointments.

22. The Effect of Regular Exercise on Measures of Perceived Well-being: A Study of Fitness and Recreational Activities Classes

Chris Green, Department of Psychology, *Southwestern University*

Nations (U.N.), with pressure from activists, created a space where individuals from all over could gather and discuss the practice of FGM. Desiring to understand how the United Nations greatly affected the history of FGM by acting as a "forum-creator," I chose to focus my paper on the various events and opportunities created by the U.N. for the discussion of FGM. Through this research it becomes evident that the U.N. used its global systems of power to establish international, national, and even local understandings of FGM with regards to human rights. Organized in three sections, my paper explores the historiography of FGM, definitions of human rights and FGM, and the U.N.'s position as a "forum-creator" during 1975-1995. Developing from the notion of "dilemmas of difference," this historical study seeks to comprehend how global systems of power greatly shape our understanding of human rights worldwide.

34. Courtly Love in the Writing Center

Deann Armstrong, Department of English, *Southwestern University*
Sponsor: Elisabeth Piedmont-Marton, Department of English, *Southwestern University*

This paper anecdotally explores the ways in which Slavoj Zizek's theory of courtly love informs the practice of writing center consultations. Zizek stipulates that courtly love is essentially an etiquette-governed and masochistic game. I align the role of the Lady, as described by Zizek, with the role of the consultant and the role of suitor with that of consultee. Like the Lady and the suitor, the consultant and consultee negotiate veiled desires and self-perceptions while outwardly pursuing other contradictory objectives. After considering some related writing center theory on the role of desire in consultations, I explore the ramifications of viewing consultations as courtly love.

35. Close Consultation: Familiarity and the Small University's Writing Center

Bethany Leidlein, Department of English, *Southwestern University*
Sponsor: Elisabeth Piedmont-Marton, Department of English, *Southwestern University*

As a peer consultant at a small liberal arts university, I daily negotiate the challenges of maintaining professional rapport with consultees with whom I am very often at least somewhat acquainted. This paper examines the difficulties and benefits of paper critique and consultant/consultee interaction when familiarity meets professional removal.

36. The Christina Rossetti Project

Chelsea Williams, Department of English, *Southwestern University*
Sponsor: David Olson, Department of Communication Studies, *Southwestern University*

For the past century, Victorian poetess Christina Rossetti has been largely defined by two volumes of her work posthumously published and edited by her brother, William Michael Rossetti. However, these conceptions changed in 1990 when several of Christina's original manuscripts and notebooks were published; they revealed that William Michael had made

significant changes to much of her work, and he suppressed other pieces altogether because he thought they were too contradictory to the image of his sister as the ideal angel of the home that he wanted to preserve. According to Victorian scholar Terry Spaise, “with the 1990 publication of Rossetti’s previously unpublished work, we can see that, despite her apparent comfort with the traditional gender positions of her society on a religious/theoretical basis, she was highly critical of them on more realistic grounds” (Spaise 54). Since the publication of Rossetti’s original work 17 years ago, she has undergone a significant change in criticism. These issues are further complicated by arguments concerning the authorship of her manuscripts, as they contain the handwriting of both Christina and William Michael in addition to that of their mother, sister, and brother. It is therefore difficult to distinguish between Christina’s self-edits and those imposed on her work by her family members, as well as creating problems in determining the “legitimate” versions of many of Christina’s poems. In my project, I intend to research and report the key differences between her poems as they are in her manuscripts and as they appear in the volumes released by William Michael, to compare the ways in which she is critically understood previously to and after 1990, and to describe the problems these situations pose for editors and publishers.

37. Huang Gongwang’s Dwelling in the Fuchan Mountains: An Intimate Expression through Rhythm and Brushwork

Melanie Sowa, Department of Art, *Southwestern University*

Sponsor: Diana Tenckhoff, Department of Art, *Southwestern University*

Huang Gongwang was a prominent painter from the Late Yüan Dynasty who epitomized the shift to an expressive style of brushwork characteristic of that era. This paper will explore this shift within his painting, *Dwelling in the Fuchun Mountains* by: (1) examining the historical events of the Late Yüan Dynasty, (2) through close analysis of the compositional elements of the hand scroll, and (3) then by viewing the hand scroll in relation to major works of previous artists. *Dwelling in the Fuchun Mountains* is the only authenticated hand scroll of Huang Gongwang. He created this hand scroll during a tense period of foreign political rule when Chinese art was used as a retreat away from, as well as a reaction against, the Mongol regime. As a whole, the tumultuous period of the Yüan Dynasty caused a large change in the style and objective of art. Scholars had to look within themselves for identity and strength, which caused for more personal and expressive works of art. *Dwelling in the Fuchun Mountains* serves as an example of the cultivation of this change; it displays how the artists of this time were able to study the works of the past and apply the styles and motifs of those works in a new, expressive manner. The combination of this tension between the Chinese and their rulers, as well as the traumatic events of Huang Gongwang’s life, allowed him to utilize painting as a means of self-expression more completely and efficiently than any of his predecessors or contemporaries. Huang’s artistic shift within the context of the heavy tension and alienation felt by the Chinese literati towards the Mongol rulers and the culmination of Huang’s life events within this unstable society allowed him to create the deeply personal and highly expressive *Dwelling in the*

student-teacher relationships and on the bases of these perceptions (Skeen & Nielson, 1983). However, there is little research exploring other factors related to student-teacher relationships, such as the prevalence and moderators of student attraction to instructors. The current study sought to address this gap by asking 146 college students (83 women, 63 men) to complete a survey assessing the prevalence and basis of intellectual and romantic crushes on professors. Participants were asked to rate the extent to which their crushes were based upon the professor’s intellect, sense of humor, attentiveness, role model status, physical attractiveness, similarity to the student, interpersonal rapport, and similarity in academic field. The results revealed that intellectual crushes were more prevalent than romantic crushes, such that 62 of 146 participants (42.5%) reported having intellectual crushes, whereas only 21 of 146 participants (14.4%) reported having romantic crushes. The results also indicated gender differences in the prevalence of intellectual versus romantic crushes. That is, women reported significantly more intellectual crushes than romantic crushes, whereas men were equally likely to report intellectual and romantic crushes. Analysis of potential moderating variables revealed that intelligence was significantly more important in forming intellectual crushes than romantic crushes, whereas the attractiveness of the professor was more important in forming romantic crushes than intellectual crushes. The results suggest that, although student-teacher romances are considered inappropriate and unethical among students and teachers alike, attraction to professors is nonetheless prevalent in the university setting. Future research could examine differences in the perceived impropriety of the two types of crushes and could also explore potential effects of these crushes on student performance and on professor and course evaluations.

19. Adults’ Thoughts and Behavior Towards Underage Drinking

Rebecca Sanders & Becki Nagle, Department of Psychology, *Southwestern University*

Sponsor: Richard Osbaldiston, Department of Psychology, *Southwestern University*

Alcohol abuse can lead to life threatening situations such as car accidents, violence, suicide, drowning, poisonings, high risk sex, fetal alcohol syndrome, dependencies, and other dangerous situations. The purpose of this study is to assess adults’ thoughts and behaviors concerning underage drinking. Surveys were administered to 1300 adults by the Williamson County Coalition on Underage Drinking and by Southwestern students in several community health clinics. Important measures included whether adults think it is acceptable for minors to drink alcohol, their views of alcohol consumption in their own home, and the ways minors obtain alcohol. The majority of adults think it is unacceptable for minors to drink alcohol, prohibit underage drinking in their own home, and believe that minors obtain alcohol from older people. This research helps to identify who to target when developing programs to cut off the alcohol connection between legal drinkers and minors.

20. “Her-she” Snacks: The Relationship Between Gender and Chocolate Consumption

Hailey Ormand & Patrick Egan, Department of Psychology, *Southwestern University*

Sponsor: Traci Giuliano, Department of Psychology, *Southwestern University*

knew each other, the frequency of scenes with flirting and affection (from hip swinging to hair tossing and close contact dancing), and intimate scenes between characters. Variables for the portrayal of women included the number of women in each ad, how clothed the women were (variable levels included “naked or bikini,” “short skirt with arms bare,” “medium skirt and t-shirt,” and “fully covered”), and the comparison between the main female character and other female characters in how they relate to clothing and behavior. It was implied that though alcohol advertisements were more sexual than previous research shows, they do not have a statistically significant effect on how much people like the commercials or want to buy the advertised beverage. Through this, we hope to be able to use our knowledge to enlighten others on the commercials they watch and how such commercials work to persuade us.

17. Sex, Humor, and Good Times: What Really Makes Up Alcohol Advertisements
Leyka Ishibashi & Rob Atkinson, Department of Psychology, *Southwestern University*
Sponsor: Richard Osbaldiston, Department of Psychology, *Southwestern University*

From 2001 to 2005, alcohol companies spent over \$4.7 billion on advertisements for alcoholic beverages on television. The purpose of this study was to assess overall themes in alcohol advertisements. We looked at how over-glamorization of drinking and objectification of women made alcohol appealing, whether or not advertisements targeted youth, and the prevalence of messages to drink responsibly. The participants in the study were 17 Southwestern University Psychology students (5 male and 12 female). The participants evaluated the product depiction, characters, clothing, sex appeal, settings, and themes in 80 advertisements. It was hypothesized that alcohol advertisements would over-glamorize drinking, objectify women, target underage youth, and that there would be very few messages to drink responsibly. The study found that despite widespread belief, there was no evidence of over-glamorization of drinking in advertisements. We also found no evidence to support that women were objectified as a means of attracting viewers to purchase alcohol. Advertisements were not seen to particularly target youths; however, messages to drink responsibly were present in only 34% of the advertisements, and drink responsibility message as the main message were present in only 22% of the advertisements, supporting the hypothesis that very few alcohol advertisements present the message of drinking responsibly. Overall there was no proof that these general themes create appeal to advertisement viewers, but messages to drink responsibly were scarce suggesting a drink just for fun mentality.

18. Classroom Crushes: An Exploration in Student-Teacher Attraction
Emily L. Travis, Department of Psychology, *Southwestern University*
Sponsor: Traci Giuliano, Department of Psychology, *Southwestern University*

In the university setting, few topics are considered as taboo as are student-teacher romances. Much of the research in this area focuses on perceptions of impropriety in

Fuchun Mountains.

38. “Liebste, was kann denn uns scheiden”: Examining Robert and Clara Schumann’s Liebesfrühling in Relation to Nineteenth-Century Gender Roles
Stevie Garza, Department of Music, *Southwestern University*
Sponsor: John Michael Cooper, Department of Music, *Southwestern University*

Interest in the lives and compositional style of female composers has increased greatly over the last twenty years. With the growing consideration of feminist issues and their effect on the role of the woman in society, the works and lives of women composers, such as Clara Wieck Schumann and Fanny Mendelssohn-Hensel, are receiving much more attention from modern researchers. In their nineteenth-century German society, both women were significant figures in their musical worlds. Both were accomplished composers and performers, whether their venue was public or private. They were also linked to important male composers: Clara was married to Robert Schumann -- gifted writer, music critic, and composer; Fanny was the older sister of Felix Mendelssohn-Bartholdy -- an exceptional child prodigy who became a highly respected composer and conductor. Their male counterparts were very supportive of their musical efforts. The attitude towards women in relation to societal expectations, however, still pertained to each of them. By examining the nineteenth-century constructs of gender roles, the reflection of these attitudes are evident in the compositional style and professional identities of both female composers. In this presentation, I will focus particularly on the relationship of Clara and Robert Schumann and the presence of gender roles and the variations of their compositional styles in their only collaborative song cycle, *Zwölf Lieder aus F. Ruckerts Liebesfrühling*.

39. Theremin: Forerunner of Electric Music
Chris Hinojosa & James Pritchett, Department of Physics and Department of Music, *Southwestern University*
Sponsor: Bill O’Brien, Department of Physics, *Southwestern University*

The Theremin was the first electronic instrument ever created. It was invented in 1924 by the Russian scientist Leon Theremin in Leningrad. It took some years for the invention to make it to production, and in 1929 RCA manufactured the first commercial Theremin. The exterior looks of the Theremin have not changed much in its 80 years of existence. Most Theremins still consist of a medium-sized box with an antennae protruding from the top and a wire loop sticking out of an opposite side. The instrument is played by moving your hands further and closer to these two antennae to vary the pitch and volume of the output tone. The interior electrical components have undergone some renovations in the last century, but the basic theory or sound has not changed. Our Theremin consists of three oscillators which operate at a frequency of about 455kHz. A reference oscillator remains fixed while the pitch oscillator is varied by hand capacitance, and the output becomes a sum or difference between the two oscillators depending on relative frequencies. The volume

oscillator works in a very similar way. Many other semiconductors, capacitors, and resistors come together to create various filters in the system. Our Theremin was bought as a kit consisting of the electrical components and a small box enclosure. All the components were soldered onto a PC board and constructed in a small plastic box. The tuning process of this instrument consists of using a voltmeter, tiny plastic screwdrivers, a magnifying glass, and some earplugs to make the output signal sound as pleasant as possible. During our presentation the Theremin will be played and connected to an oscilloscope, a device that visually displays electrical signals, so that the music can be heard and 'seen'. Accompanying the explanation of the Theremin will be some music we composed with the instrument in our Music Technology class.

40. A Note on Weighted Identric and Logarithmic Means
Hilari C. Tiedeman, Department of Mathematics and Computer Science, *Southwestern University*
Sponsor: Kendall Richards, Department of Mathematics and Computer Science, *Southwestern University*

It is well known that the classical inequality relating bivariate forms of the arithmetic and geometric means can be refined via the logarithmic (L) and identric (I) means. Moreover, sharp power mean bounds are known that separate L and I. Using properties of the Gaussian hypergeometric function, generalizations of these inequalities involving weighted versions of L and I will be presented.

41. Technical Attributes as Predictors of Short-Term Common Stock Performance
Steven Kubans, Travis Casner, Katy Lucaszweski, & Kimberly Palmer, Department of Business and Economics, *Southwestern University*
Sponsor: A.J. Senchack, Department of Business and Economics, *Southwestern University*

Technical analysis is an important branch and investment style of security analysis that is used to analyze, value, and select common stocks. Empirical tests of technical analysis, however, are relatively scarce compared to studies of fundamental analysis, largely because most technical analytic techniques do not give objective, testable signals to determine when to buy or sell a stock. Moreover, those few empirical tests of technical techniques typically focus on how predictive a single measure is of future, short-term stock returns. In contrast, this study uses a methodology that combines three technical measures into a single composite performance index and is called a stock's "technical attribute (TA)." Briefly, a technical attribute combines information on a stock's relative price strength compared to its peers' and the market's price movements, and whether or not the stock is above its bullish support and bearish resistance line (i.e., in a bullish trend). To test the TA index, we created a sample of 150 stocks from the Value Line Investment Survey and divided them into two portfolios depending upon whether it had the highest TA (=5 or "5'er") or the lowest TA (=0 or "0'er") score. If the TA hypothesis is correct, then the 5'er stocks should

and their frequencies have changed over the past 25 years. Finn and Strickland (1982) found that the most common theme was sociability, whereas our study finds the most common theme to be humor. The most significant change since Finn and Strickland's (1982) study was the increased use of sexual connotations as a technique within modern alcohol advertisements. Further research is needed to examine the effect of advertising on underage drinking and the portrayal of women in our society.

15. Quantifying Adults' Thoughts and Behaviors toward Underage Drinking
Kash Sarkaria & Gem Nguyen, Department of Psychology, *Southwestern University*
Sponsor: Richard Osbaldiston, Department of Psychology, *Southwestern University*

Underage drinking is a problem in our society today because approximately 20% of teens drink and drive and about 15% of them drive after they have been binge drinking (Beck et al., 1995). These dangerous behaviors are facilitated by adults. An adult 21 years of age or older was the most common source of alcohol consumed on the last drinking occasion (Wagenaar, 1996). In determining why this occurrence is so high, parental attitudes and practices toward underage drinking have been shown to be an important influence on this trend. The present study examined adults' thoughts and behaviors toward underage drinking. It was predicted that adults' age and gender would correlate with their specific thoughts and behaviors on underage drinking. To test this hypothesis, a survey was administered to 1153 participants. Results showed that adults under age 30 (as compared to those 30 and older) believe that parents provide a safer drinking environment when they let their children and friends drink at home, are more accepting of underage drinkers consuming alcohol if they do not get too drunk, and are more accepting of underage drinkers consuming alcohol if they do not drive. Additionally, adult men view 20-year olds drinking 5 servings of beer or wine and underage drinkers consuming alcohol if they do not get too drunk as more acceptable than do women, and also do not view underage drinking as being as much of a problem as do women. This study provides insight into identifying who to target to develop a program to cut off the alcohol connection between legal drinkers and minors.

16. The Nature of Alcohol Advertising
Preston Morgan & Grant Cain, Department of Psychology, *Southwestern University*
Sponsor: Richard Osbaldiston, Department of Psychology, *Southwestern University*

Can women, scantily clad and sexually attractive, convince us to drink alcohol, or are our own opinions stronger than the commercials with which we are daily bombarded? The purpose of our research is to determine how alcohol advertisements may or may not use sex to sell their product. Participants watched 80 television alcohol advertisements and rated how much they would consider purchasing the advertised product. Researchers then performed a detailed analysis of the advertisements to determine the presence of sexual themes and the portrayal of women, which includes the behavior and clothing of the female characters. The variables for sexual themes revolved around whether or not sexual partners

Dogs have been a part of the daily lives of humans since domestication at least 15,000 years ago (Savolainen et al., 2002). The occurrence of problem behavior was found to be the primary reason that dogs were given up to animal shelters in the United States (Salman, Hutchison, & Ruch-Gallie, 2000). Numerous books have been written instructing owners to evaluate the personality of a dog before acquiring it as a pet (Bower & Bower, 1998; Coren, 1998; Hart & Hart, 1998). The current study determined whether or not the degree of similarity in personality between an owner and a dog was found to be correlated with the occurrence of problem behavior.

13. Adult's Thoughts and Behaviors Concerning Underage Drinking
Erin Dammann & Kelly McWhorter, Department of Psychology, *Southwestern University*
Sponsor: Richard Osbaldiston, Department of Psychology, *Southwestern University*

Underage drinking is one of the most prevalent and significant problems faced by society today. Thousands of deaths and millions of other accidents were caused by underage drinking in 2001 (Miller et al., 2006). Underage drinking accounts for more than 15% of alcohol sales each year (Miller et al., 2006). Parental attitudes and practices have been shown to influence underage drinking (Simons-Morton & Chen, 2005). However, parental attitudes may vary based on the sex and age of the parent, and no research has examined this effect. The present study evaluated adults' attitudes and behaviors toward underage drinking. Three different forms of the survey (electronic form, full-length paper form, and short form) were administered to a convenience sample of participants. There were 729 participants who completed the electronic form, 94 participants who completed the full-length paper form, and 332 participants who completed the short form. Younger adults believe that it is more difficult for underage drinkers to obtain alcohol, males think that it is more acceptable for underage drinkers to drink if they do not get too drunk, and males are more accepting of parents providing alcohol in their own homes to prevent underage drinkers from drinking in more risky situations or places. These findings suggest that male adults should be targeted in an underage drinking prevention program.

14. For Your Viewing Pleasure: Changes in Alcohol Advertisements Over Time
Billie Salazar & Michelle Biermacher, Department of Psychology, *Southwestern University*
Sponsor: Richard Osbaldiston, Department of Psychology, *Southwestern University*

Every day, 5,400 people under the age of 16 take their first drink of alcohol (The Center on Alcohol Marketing and Youth, 2006). Although correlation does not imply causation, Grube (1993) writes that youth may be encouraged to drink by the inappropriate messages about alcohol within advertisements. The present study seeks to compare the nature of alcohol marketing across time. Finn and Strickland (1982) analyzed alcohol advertisements to determine recurring themes. The current study analyzed advertisements to determine if the uses of themes and techniques have changed since Finn and Strickland's (1982) study in light of recent evidence suggesting that Finn and Strickland's (1982) themes

outperform both the O'er stocks and the overall stock market. A statistical analysis using two risk-adjusted performance indices will be used to determine any significant difference in performance between the two portfolios of stocks and the market. Additional hypotheses will test whether or not there is any relationship between a stock's technical attribute index, two fundamental measures (price-earnings multiple and market capitalization), and the two additional technical measures (Value Line's Timeliness Rating and IBD's Technical Rating).

ABSTRACTS: POSTERS AND CREATIVE WORKS

1. **Costume Design: Durang! Durang!**
Allison Dillard, Department of Theatre, *Southwestern University*
Sponsor: Kerry Bechtel, Department of Theatre, *Southwestern University*

In my poster presentation I will present my costume designs for the recent production of the show *Durang! Durang!* This will include my watercolored renderings and photographs of the actors wearing the costumes in performances of the show. This was my first mainstage show to design the costumes for and will show the process of design and rendering. The show *Durang! Durang!* was a performance of four plays written by Christopher Durang. Four student directors were chosen and all the designers were also students. The four plays were very different and were interesting projects to work on as a designer because our goal was to design for each play while also designing to make the play one cohesive production of four very different plays. It was a very interesting experience to work with an all-student production team and I learned more than in any class I could take. I will present my renderings and photographs to explain the design process and my color palettes and overall design choices.
2. **Attitudes About Elementary Mathematics**
Melissa Sheppard, Department of Education, *Southwestern University*
Sponsor: Michael Kamen, Department of Education, *Southwestern University*

This study explores elementary students and their attitudes towards mathematics. Research has documented a gender and racial gap in attitudes and achievement in mathematics, and this gap tends to grow as students become older. There have been attempts to close this gap, which have yielded mixed results, and it is evident that there is an ongoing need to understand children's attitudes towards mathematics. The study explores possible differences in attitudes based on race and gender, and provides options for ways to prevent negative attitudes from determining the success of a student.
3. **Alternate Worlds: Research into the Creation of a Fictional Universe**
Boze Herrington, Department of English, *Southwestern University*

Over the course of the last year, the presenter has done a vast amount of personal research in areas such as literature, history, religion, psychology, alchemy, geography, and anthropology, and as a consequence has amassed a fairly large sum of knowledge on each of these subjects. His intention in doing so was to acquire the kind of intellectual foundation which is necessary in the production of an ambitious creative work: the story of another world, very similar to ours in terms of its geographical development, but differing greatly in its customs, its laws, mythology, and origins. He has given almost all of his spare time to the

(13.50 %), whereas females showed an almost equal tendency to order a healthy (48.69 %) and an unhealthy (51.61 %) drink. Overall, the findings substantiate the hypothesis that females are more likely to order a healthy drink item than are males. The notion that women's food consumption is healthier than men's is consistent with previous research (Aruguete et al., 2006), and can potentially be explained by gender differences in health concerns (Wardle et al., 2004) as well as in body image (Rozin et al., 2003). These gender-associated consumption tendencies may have important implications in the marketing strategies of food and restaurant industries.

11. **Beyond the Podium: Evaluations of Professors as a Function of Student-Professor Interaction**
Braden D. Ackley & Rachel Osborne, Department of Psychology, *Southwestern University*
Sponsor: Traci Giuliano, Department of Psychology, *Southwestern University*

The development of healthy student-teacher relationships has become increasingly important, given research indicating a positive relationship between child development and student-teacher relationships (Ang, 2005; Hamre & Pianta, 2006). Specifically, positive student-teacher relationships have been associated with children's academic success, self-confidence, motivation, and decreased levels of anger and aggression (Ang, 2005; Hamre & Pianta, 2006). In addition, teachers who have good relationships with their students have been shown to be more involved in their students' social environments, as well as more encouraging and patient in the classroom (Hamre & Pianta, 2006). The present study sought to expand upon this research by exploring the relationship between student-teacher interaction and students' overall teacher evaluations. In general, it was hypothesized that students who reported more positive student-teacher interaction would be more likely to favorably evaluate their professors. Participants included 146 undergraduate students (63 men, 83 women) who volunteered to answer a questionnaire measuring personal, professor, and course characteristics. Three items ($\alpha = .75$) assessed the level of student-teacher interaction (e.g., how often the student interacted with their professor outside of class, and to what degree the professor made an effort to get to know the student personally), and nine items ($\alpha = .93$) measured overall professor effectiveness (e.g., professor's knowledge of the course subject and level of approachability). As predicted, a significant positive relationship was found between student-teacher interaction and students' overall evaluations of professors, $r(146) = .57, p < .01$. That is, the more personal interaction that occurred between students and teachers (as reported by students), the more favorably the students rated their professors. These findings suggest that building relationships with students is important to professors' overall effectiveness. Further research on student-teacher relationships is encouraged in order to understand additional factors that may contribute to students' overall satisfaction with professors.
12. **Good Dog or Bad Dog: Factors Relating to the Occurrence of Behavioral Problems in Canines**
Stephanie Russell, Animal Behavior Program, *Southwestern University*
Sponsor: Fay Guarraci, Department of Psychology, *Southwestern University*

Studies have suggested that there are outside factors relating to students' evaluations of professors (e.g., Addison, Best, & Warrington, 2006), one of which is humor in the classroom (e.g., Adamson, O'Kane, & Shevlin, 2005). However, previous research has ignored other factors, such as a professor's agreeableness. This omission is surprising given the apparent link between humor and agreeableness (e.g., Cann & Calhoun, 2001), which suggests that humor could be a component of agreeableness. The current study sought to address this gap by exploring whether professor agreeableness and student evaluations were related. Specifically, it was hypothesized that agreeableness would predict positive student feedback, such that agreeable professors would receive more favorable evaluations. As part of an anonymous survey, 146 college students (63 men, 83 women) were asked to rate the agreeableness of one of their professors and to evaluate that professor's teaching performance. The 4-item index assessing professor agreeableness ($\alpha = .79$) was based on adjectives that McCrae and Costa (1987) found to be correlated with the agreeableness trait of their five-factor model of personality. A 3-item index ($\alpha = .77$) measuring professors' humor was adapted from the Multidimensional Sense of Humor Scale (Thorson, Powell, Sarmany-Shculler, & Hampes, 1997); a 9-item index was used to assess the student's attitude towards the professor's teaching abilities ($\alpha = .93$). Consistent with predictions, the results revealed that agreeable professors received more positive student teaching evaluations, $r(144) = .77, p < .001$. Indeed, not only were those two factors related, they were more strongly related than were professor evaluations and professor humor, $r(144) = .56, p < .001$. The findings of the present study support the notion that there are factors related to student evaluations that are not directly related to the professor's teaching ability.

10. The Skinny on Coffee Drinkers: Gender Differences in Beverage Choice
Rachel Osborne & Braden D. Ackley, Department of Psychology, *Southwestern University*
Sponsor: Traci Giuliano, Department of Psychology, *Southwestern University*

The massive promotion of "diet-friendly" foods is a signal that society is pre-occupied with what is eaten. Indeed, a large body of research confirms that gender plays a key role in consumption habits. Specifically, women eat healthier than men and also perceive a stronger link between diet and health (Aruguete et al., 2006; Rozin et al., 2003). In order to further investigate the notion of gender-based consumption, a naturalistic observational study was conducted to compare the healthiness of male and female beverage choices. At a popular coffee venue, 96 patrons (34 males, 62 females) were unobtrusively observed while making a beverage order. A beverage was classified as healthy if it contained at least one healthy modification (e.g., substituting nonfat milk for regular milk), whereas a beverage was considered unhealthy if it was offered in a healthier version but was ordered without any modifiers. A chi-square test of independence revealed a significant relationship between gender and drink choice, $\chi^2(1, N = 96) = 10.60, p < .05$. As predicted, males were more likely to order the standard, unhealthy version of a drink (86.50 %) than a healthy version

task. The purpose of the presentation is twofold: first, it will show the kinds of knowledge required to create a work of such scope, and to return some of that knowledge back to the viewer through the method of teaching; second, it will present a study in the ways the creative work has taken shape in the last year, and the development of its various symbols, themes, and characters.

4. The Body Dialogues
Natalie Goodnow, Lindsey Smith, & Carolyn Acker, Feminist Studies Program, *Southwestern University*
Sponsor: Kathleen Juhl, Department of Theatre, *Southwestern University*

For the past eight years, Eve Ensler's *The Vagina Monologues* has been performed annually at Southwestern University, as on many college campuses across the nation. *The Vagina Monologues* is based on interviews conducted by Ensler, who traveled the country asking hundreds of women about their vaginas. It is a beautiful, powerful, and poignant text that denounces violence against women of all kinds: physical, emotional, and psychological, while also joyfully celebrating female sexuality. *The Body Dialogues* is inspired by, a tribute to, a reaction to, and sometimes against, *The Vagina Monologues*. We have used *The Vagina Monologues* as a place to begin asking questions. Why is a vagina so hard to talk about? What other sorts of bodies' stories might be hard to tell? Why? And why might they be worth telling? On the evenings of March 1, 2, and 3, an ensemble of 26 students shared some of those stories, all based in the truth of our lives, with our Southwestern community. But mostly, we've offered questions. Our poster will discuss the questions, answers, and stories we've found in the process of creating *The Body Dialogues*, and in the process of sharing it.

5. Listening to Silence: Social Class Dialogue on the University Campus
Meghan Elliott, Department of Sociology and Anthropology, *Southwestern University*
Sponsor: Sandi Nawecka Nenga, Department of Sociology and Anthropology, *Southwestern University*

This research focuses on the ways that meaningful discourse about social class is silenced on the university campus. To discover the processes by which class dialogue is stifled, I interviewed 29 students from varied class backgrounds at a small liberal arts institution about their on-campus experiences with social class. These interviews established three ways in which social class dialogue is systematically silenced: a lack of class awareness on the part of the student, a fear of judgment by other peers, and finally, conceptions that one's own social class is the result of idiosyncratic experiences. This paper proposes that the study of class dialogue must encompass an understanding of mechanisms of silence in order to reverse the institutionalized oppression of thousands of university students each year.

6. Trauma in Your Backyard: Social Networks and Their Impact on Victims, Criminals, and Communities
Christina Guardiola, Department of Sociology and Anthropology, *Southwestern University*
Sponsor: Melissa Johnson, Department of Sociology and Anthropology, *Southwestern University*

This paper examines an innovative community response to violence in the neighborhood of Wentworth, located along the outskirts of Durban, South Africa. The Trauma Center is housed in the local police station and aims to assist with the mental health needs of victims and perpetrators of violence, needs which the police are not trained to deal with. The Trauma Center works to form relationships between these people and the community and offers counseling services, support, and encouragement to search out the help they want/need. The Trauma Center has connections to the wider Durban area and access to clinics and organizations that offer specific services for various social issues. This paper shows how taking an active role in the life of criminals, victims, and the community benefits everyone and how this model of healing, while housed within the police station -- an apparatus of the state designed to remove criminals from society -- helps to create a stronger less violent community overall. In this way of thinking about criminality, the Trauma Center builds on the concept of reconciliation being implemented throughout South Africa to progress past their Apartheid history. This paper is based on four weeks of intensive research focused on the Trauma Center, including ten days of participant observation in the Trauma Center and interviews within the community of Wentworth, all contextualized within a three-month period of residence and participant observation in South Africa connected to a School for International Training Study Abroad program that focused on development and reconciliation.

7. Whole Foods and Farmers Markets: An examination of the social class connections to Organic food consumption.
Emily Calhoun, Department of Sociology and Anthropology, *Southwestern University*
Sponsor: Melissa Johnson, Department of Sociology and Anthropology, *Southwestern University*

What leads a person to reach for the organic milk in the dairy case? As organic products are becoming increasingly available and "trendy," showing up everywhere from Wal-Mart to the Whole Foods mega-store in Austin, Texas, the movement for "Big Organic" is simultaneously coming under greater scrutiny. This study is an attempt to understand the implications of social class on the consumption patterns of the burgeoning organic foods movement in order to greater inform the future of this movement. Motivation for this study grew from personal experiences living and working on various organic farms in New Mexico and Australia. Such experiences have provoked an examination of the individuals and groups responsible for making such a movement popular. Various methods were used in order to achieve this greater understanding. Formal and informal interviews were conducted along the

with observation at various markets and participant observation at farms. Understanding holistic perspective of the organic food movement was crucial to the success of this study, and therefore methodological breadth was necessary. The primary groups to be examined included those who frequent stores like Whole Foods and those who frequent local and regional farmers' markets.

8. Working with a Preferred EMS Partner Reduces Stress and Increases Perceived Social Support in Paramedics
Melanie Stanzer, Department of Psychology, *Southwestern University*
Sponsors: Fay Guarraci & Traci Giuliano, Department of Psychology, *Southwestern University*

Previous studies have shown that coworker support reduces stress, and that lower levels of stress are associated with fewer critical errors by paramedics. The current study explored paramedics' partner preferences and its relationship with social support and perceived general stress. To explore this question, 106 paramedics (38 women, 68 men) from services in Texas completed a questionnaire assessing their experiences and preferences as paramedics. In addition to measuring time spent working with paramedic and EMT-Basic partners, overall stress levels, and perceived social support, we assessed preference for a paramedic vs. an EMT-Basic partner (1 = *Strongly Prefer EMT-B*, 3 = *No Preference*, 5 = *Strongly Prefer Paramedic*) as well as potential reasons for preferring a paramedic partner. Four significant findings emerged. First, participants expressed an overall preference for working with a paramedic than with an EMT-Basic partner ($M = 3.69$ vs. $3.0/\text{No Preference}$), $t(105) = 13.36, p < .0001$. Second, preference for a paramedic partner was positively related to participants' agreement that a paramedic partner allows for simultaneously administration of ALS care, $r(106) = .29, p < .005$, and that a paramedic partner can make vital observations that participants might have missed, $r(106) = .25, p < .011$. Third, paramedics who worked a greater percentage of time with the skill level partner they preferred reported lower stress levels ($M = 2.09$) than those who spent more time with their non-preferred partner ($M = 2.30$), $t(86) = 2.27, p < .03$. Finally, the more time paramedics reported working with paramedic partners, the more social support they perceived, $r(99) = .36, p < .0001$. Our results highlight factors that contribute to paramedics' preference for working with other paramedics. Specifically, having a paramedic partner enhances perceived social support, increases opportunity to administer ALS care simultaneously, and decreases the chance of overlooking vital observations. In addition, working with a preferred partner predicts stress levels. Follow-up studies should investigate how stress and partner preference directly affect patient care.

9. Nice Guys (and Gals) Finish First: A Study of Professors' Agreeableness and Students' Evaluations
Hayley A. Humpert & Laura C. Thornton, Department of Psychology, *Southwestern University*
Sponsor: Traci Giuliano, Department of Psychology, *Southwestern University*