

Undergraduate Research and Creative

URCAS 2013 Presentation Sessions & Locations

11:30-1:30 pm

Poster Session I & Lunch Buffet, multisports forum of the Bryan Campus Life Center
70 poster presentations from all divisions

1:30 pm

Spanish Senior Seminar (-3:00 pm), Language Center
Intentional Community (-2:30 pm), Palmer 205
Ethnographers at Home and in the Field (-6:30pm), Buckman 110
St. Jude Summer Plus Fellows (-2:45 pm), FJB
Research in the Fine Arts, (-2:00 pm), Clough 410

2:00 pm

Understanding Water as an Environmental Issue, (-3:30pm), Buckman 108
Research in Economics, Law, and Politics (-3:00pm), Kennedy 208
Genetics, Biochemistry, and Molecular Biology I (-2:45 pm)

2:15pm

Johann Sebastian Bach's B-minor Mass (-4:00pm), Hassell 100

2:30pm

Quantitative and Computational Science I (-3:15pm), FJC

2:45pm

Four Views of Hamlet (-3:45pm), Palmer 205

3:00pm

Knowledge and Writing in the Ancient World (-4:00pm), Language Center
Research in Psychology (-3:30pm), Kennedy 205
Genetics, Biochemistry, and Molecular Biology II (-3:45pm), FJA

3:30pm

Social Challenges and Advocacy (-4:15pm), Buckman 108
Remembering Fort Pillow (-4:30pm), Barrett 034
Quantitative and Computational Science II (-4:30pm), FJC

4:00pm

Remembering the Great War (-4:45pm), Palmer 205
Research in Education and Housing Policy (-4:30pm), Kennedy 205
Conservation and the Environment (-4:20pm), FJA

4:30pm

Lost in Translation (-5:00pm), Buckman 108

4:30-6:00 pm

Video projects from Art 166, FJB
Poster Session II & Closing Reception, multisports forum of the Bryan Campus Life Center
70 poster presentations from all divisions

URCAS 2013 Presentation Schedule Overview
(Locations in parentheses after each session name)

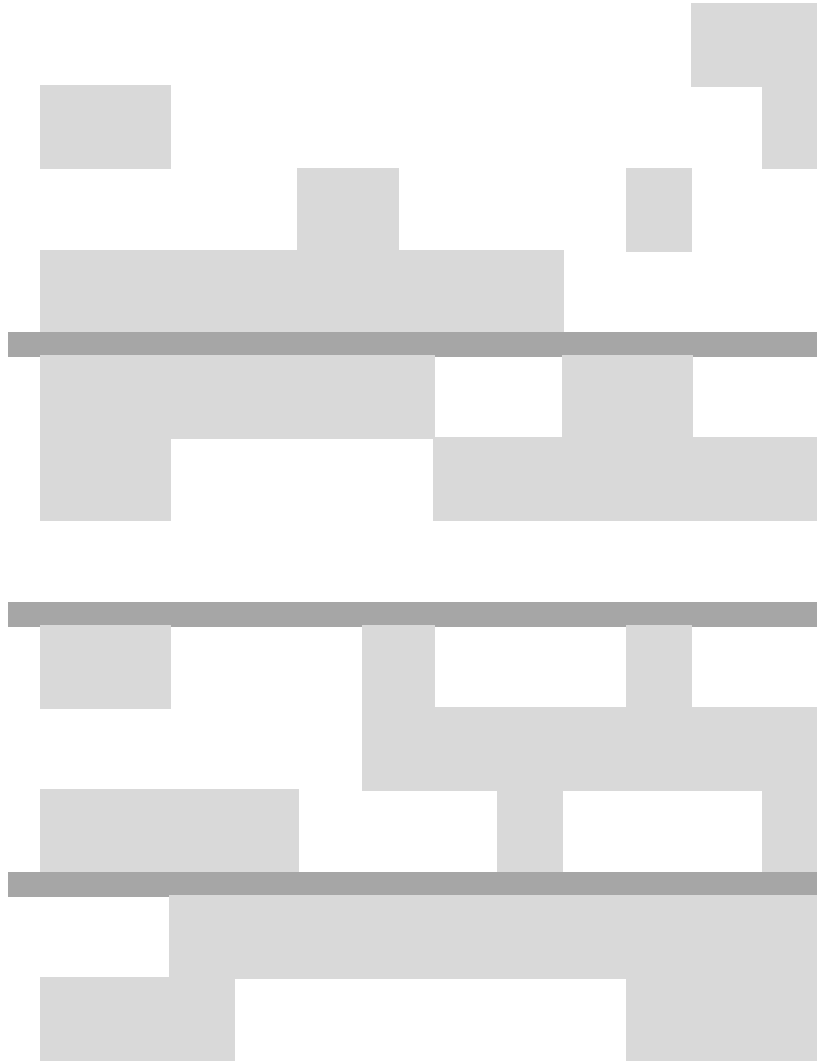


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HUMANITIES ORAL SESSIONS

Spanish Senior Seminar

Language Center

Session Chair: Clara Pascual-Argente

1:30 PM *Long Live the Queen: Borges, Games, and “Emma Zunz”*

Andrew Galow

Faculty Sponsor: Clara Pascual-Argente, Department of Modern Languages and Literatures

Scholarship on Jorge Luis Borges has long been interested in the Argentinian writer's exploration of play and games. In particular, critics have connected games in Borges' stories to Huizinga's classical approach to play and games in his famous work, *Homo Ludens*, explored the writer's connection with game theory and the emergence of postmodern thinking in the 20th century, and investigated the links between characters' names and chess pieces. Borges scholars have thoroughly addressed the metaphysical games shown in stories like *Tlon, Uqbar, Orbis Tertius*, and *The Library of Babel*, where male protagonists inexorably fail in their doomed quest for knowledge. However, this form of criticism has not extended to his story, “Emma Zunz,” which presents us with a winning, female protagonist, a stark contrast with Borges' usual formula of men who lose their metaphysical games. In this paper, I read “Emma Zunz” as a game of chess from the point of view of postmodern theories on play and games as they apply to literary structures. This perspective will enrich our understanding of Borges's playful writing.

1:45 PM *Airing the Laundry in a Butcher Shop: Everyday Comic Violence in El día de la bestia (dir. Álex de la*

fascist government memorialized these events from the point of view of the winners and worked to repress any competing version coming from the defeated. Spain's transition to democracy brought about the so-called "pacto del olvido" (Pact of Forgetting), which left behind the Francoist collective memory but did not attempt to create any alternative. Although Méndez's book is relatively new, scholars have begun to analyze its relevance to the construction of an alternative memory of those events. These critics have not addressed, however, the relationship to the collective memory of a key feature in the book: its use of intertextuality through the inclusion of literary quotes and references. Using Maurice Halbwachs and Jan Assmann's studies on collective/cultural memory, I will show that there is a connection between the use of literary references and the changing role of the narrator within each story, both of which are significant to the construction of a collective memory of the defeated.

2:30 PM *Mexican Orphans: Reading El laberinto de la soledad (Octavio Paz, 1950) in Comala*

Ines Tamaddon

Faculty Sponsor: Clara Pascual-Argente, Department of Modern Languages and Literatures

In his influential collection of essays *El laberinto de la soledad*, published in 1950, Octavio Paz constructs an image of 'the Mexican' as a detached and distrusting character, insecure about his heritage, unable to accept neither his past nor present, and an orphan of his own country. Despite the crucial thread that the image of the orphan weaves throughout the essays, critics have yet to analyze this theme or the family relations presented in the text. The importance of this image is particularly highlighted when *El laberinto* is read against *Pedro Páramo*, published five years later, in 1955. The story of an orphan on his journey to find his father, *Pedro Páramo* is a novel written by Juan Rulfo that illustrates the struggle of past and present, and the living and the dead in the rural Mexican town of Comala. In this paper, I will connect Doris Sommer's work, *Foundational Fictions*, which describes the relationship between patriotism and family romance in nineteenth-century Latin America, to Paz and Rulfo's construction of 'the Mexican' as an orphan, asking which historical circumstances encouraged the use of family relations as the root of the 'orphaned' Mexican identity in both works.

2:45 PM *Language and Power in Julio Ramón Ribeyro's Short Stories*

Jared Williams

Faculty Sponsor: Clara Pascual-Argente, Depa

like securing manpower and equipment, Athens still employed strategies based on common knowledge to advance its naval agenda. Several Athenian public documents and speeches related to the navy acknowledge this strategy with statements of "hortatory intention"—acknowledgements that an action is being taken "so that all will know" something. These sources are concerned with how public action would affect common knowledge and with what consequences that knowledge would have for the navy.

3:15 PM *The Writing on the Walls: Looking at Political and Social Graffiti in Ancient Pompeii*

Rachel Strug

Faculty Sponsor: David Sick, Department of Greek and Roman Studies

The graffiti found on buildings throughout the ancient Roman city of Pompeii has been an intriguing topic for both scholars and tourists for centuries. The writing style, word choice and content of the graffiti reveal different aspects of the culture of Pompeii prior to the city being buried under the volcanic ash of Mount Vesuvius' eruption in 79 AD. Although devastating to the people of Pompeii, the volcanic ash resulted in the preservation of many artifacts, including graffiti writings that continue to shed light on the ancient culture of Pompeii. The inscriptions found covering houses, businesses, and walls of the amphitheater spark questions regarding the authors, the intended audience, and the underlying significance of the graffiti. Due to the diversity of the population of Pompeii, the writings illustrate a wide cross-section of contemporary thought in the city. I will explore why the graffiti is not truly indicative of the political life and climate of the time, but does, in fact, shed light on the social lives, customs, and interests of the common people of the city prior to the cataclysmic Vesuvius eruption.

3:30 PM *From Vir to Woman: Catullus' Progressively Passive Personality within the Lesbia Cycle*

Nicholas Jensen

Faculty Sponsor: David Sick, Department of Greek and Roman Studies

2:15 PM Memphis' Urban Water System Predicts Future Growth

Laura Brown

Faculty Sponsor: Jeffrey Jackson, Department of History

Memphis' urban water system is an integral part of the city's future development and vitality. Memphis' drinking water comes from the Memphis Aquifer. Sand, found naturally in this aquifer, serves as a natural filter for contaminants such as lead, nitrate, and copper giving Memphis a reputation for having superior drinking water. However, the superiority of the city's water system is not full-circle. In 2010, the city violated the Clean Water Act after investigations reported 1,170 sanitation systems overflows. In overflow situations, wastewater treatment plants dispose raw sewage into the Mississippi River. Subsequent to these findings, the EPA sued the city of Memphis over 1.29 million dollars in fines. The city settled with federal and state government offices with an agreement to renovate ten percent of sewer infrastructure yearly. This project will investigate social, economical, and environmental impacts of the sewer spills and renovations to assess the sustainability of Memphis' urban water system. Sustainability will be measured using a systems analysis approach from a study funded by Stockholm Water Company addressing three main areas: a) flexibility and functional robustness, b) be adapted to local conditions, and c) ease of understanding to encourage responsible behavior by users. The vitality of the city depends on its ability to provide both drinking water and appropriate sanitation facilities to industries and residents without compromising the environment, welfare of its citizens, or the water supply of future generations.

Water

3:00 PM “*What the Frack?*”

Megan Matthews

Faculty Sponsor: Jeffrey Jackson, Department of History

Hydraulic fracturing is the process by which people are able to collect more oil and natural gas from previously drilled wells. This process, also known as “fracking,” is very intensive and involves the use of large amounts of water and potentially harmful chemicals. Fracking has become widely associated with negative environmental issues including contaminated ground water, lower water tables, damage of aquatic habitats, and increases in earthquakes. In Central Arkansas five different claims from residents were made against the practice of fracking. These claims were made on the belief that harmful chemicals had leaked into the drinking water, as well as the increase in earthquakes was because of the local fracking and had caused rising prices in earthquake insurance. Some research presented by a private research company has shown that local fracking in Central Arkansas has not caused these problems. Using Central Arkansas as a case study, this research project will show the complexity and importance of a cost benefit analysis regarding hydraulic fracturing. In addition, this research project will explore ways to manage the potential risks brought with fracking.

Social Challenges and Advocacy

Buckman 108

Session Chair: Kelsey Wolf

3:30 PM

of middle schoolers once a week as a platform for cultural differences. I will also chart out the write-ups I composed while abroad detailing the cultural patterns I noticed in the south of France and how they differed from my

Undergraduate Research and Creative

SOCIAL SCIENCE ORAL SESSIONS

Research in Psychology

Kennedy 205

Session Chair: Kim Gerecke

3:00 PM *“After this I learned...” Moral and Cultural Voices in Chinese Children’s Personal Narratives about Peer Conflict*

Jiawen Li

Faculty Sponsor: Marsha Walton, Department of Psychology

Bruner (1990) proposed that sharing personal narratives is critical to social and moral development. Stories are told when something goes awry in human interaction. As we tell stories, we attempt to position ourselves vis-à-vis the other actors in our stories, those listening to our story, and the standards and norms of our larger cultural traditions (Bamberg, 2003). Although considerable work has examined parent-child narrative practices in China, no studies have looked at conflict narratives in Chinese elementary schoolers. We have studied 152 stories by Chinese 4th – 6th graders about “a conflict that really happened to you.” Quantitative results showed unexpected grade effects, with fifth graders exceeding the older and younger children in their reports of moral lessons, puzzlement and positive resolution of their conflicts. They were the most skilled appropriators of mainstream culture and values that approximate Confucian teachings. Qualitative analyses revealed children’s use of other resources such as popular culture to form distinctive cultural voices. Both quantitative and qualitative analyses guide our discussion of children’s use of narrative to position the self vis-à-vis cultural traditions undergoing rapid change in China.

3:15 PM *Neuroprotective effects of intranasally administered insulin against chronic-restraint stress induced oxidative stress in the cortex and hippocampus of mice*

Madeline R. Scott, Megan Ververis

Faculty Sponsor: Kim Gerecke, Department of Psychology

Neurodegenerative disorders are becoming an increasingly large problem in our current society, and as of yet there is no known cure. Oxidative stress is a common toxic mechanism across these disorders, and can be caused by physical and/or psychological stress. Chronic restraint stress (CRS) is one method of inducing oxidative stress in animal models. Insulin has been shown to be beneficial within both human and animal models of neurodegeneration,

me to ask several questions: Why are the majority of education reform initiatives formed and executed without input from the teachers and parents within the affected communities? Does this contribute to why these reform initiatives are unsuccessful on multiple levels? These issues have a common answer: community-based education reform. Community-based reform can be defined as any reform that occurs inside a particular community instigated by teachers, local leaders, parents or engaged community members. From this working definition, I analyzed research discussing aspects of community-based education reform and case studies where this type of reform is implemented and discovered the key components necessary for successful reform.

4:15 PM *Public Housing Here and There: An Analysis of American and Dutch Solutions*

Robert Cook

Faculty Sponsor: Elizabeth Thomas, Department of Psychology

The terms “public housing” and “the projects” in the United States conjure a number of negative social stereotypes and associations of crime, poverty, drug use, and urban blight. Social scientists, citizens, and policy makers consistently frame public housing as a national social problem in need of serious repair and revitalization. This is not always the case around the world. In the Netherlands, 32% of the nation’s housing stock is publicly owned, and in some cities, like Amsterdam, upwards of 55% of the population lives in these dwellings. Similarly, there is little social disdain for these residents and their residences. The purpose of this project is to examine the difference between these two country’s public housing systems; specifically how the building design, tenant selection, and funding structures each government has

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themselves as the “guardians of democracy.” Yet, this self-defined mission and its justification of military interventions has caused only harm to democratization. By comparing the ideologies and missions of both militaries and by studying the several interventions made on behalf of the military, I will demonstrate how the armed forces have caused harm to democratization in Turkey and Argentina.

2:30 PM *Socializing Politics: The Historical Social Construction of Political Parties in Cameroon*

Jonathan Sokoll

Faculty Sponsor: Steve Ceccoli, Department of International Studies

Multi-party politics opened up again in Cameroon in 1990/1 after a nearly 25 year hiatus. President Paul Biya’s party the Cameroon People’s Democratic Movement (CPDM) and the Social Democratic Front (SDF) emerged as the major parties. Presidential election data from 1992 demonstrates a clear regional divide between the parties: the Social Democratic Front garnished the most support in West Cameroon and the CPDM in the remainder. The primary difference between these two regions begin an ethnographic divide between English speakers in west Cameroon and French speakers in the East and North. The formalization of a bi-lingual government in the Cameroonian constitution ensures that formal institutional or legal discrimination against speakers of a certain language such as English is illegal. We can consider then that the creation of the SDF not as a product of some form of formalized legal discrimination, but rather we can consider the SDF as the product of a difference in linguistic identity. This difference was polarized and propagated the presence of a predominately French speaking government enshrined in Paul Biya’s ruling political party the CPDM. The dominance of the CPDM of government jobs and policy created a ‘in-group’ of French speakers and an ‘out-group’ of English speakers. When opposition parties were legalized, the ‘out-group’ of English speakers whose voice had previously been repressed rallied under the SDF banner to champion their cause. We can then explain the emergence of political parties in Cameroon as a product of the difference between in and out group mentalities. Notes: I think this year’s proposal would set up a good base for expanding the paper and my overall idea. I think I could easily begin to loop back to historical institutional vis-a-vis social constructivism and talk about how the ‘in-group’s’ mentality was and is socialized by a legacy of historical colonial institutions (British and French rule). I think the two arguments would dovetail nicely. We can talk more in depth about this.

discovered that the people that work at and visit the Antique Warehouse Mall are as equally diverse and interesting as the antique treasures found on the shelves. Additionally, those varying personalities and styles complement each other, creating one harmonious collective. On my journey to gain a fuller appreciation of the ethnographic process, I ultimately developed a greater understanding of community while witnessing the warmth and familiarity between employees and customers of the Antique Warehouse Mall.

1:42 PM *Fresh Food, Fresh Atmosphere: Trolley Stop Market*

Danielle Jones

Faculty Sponsor: Susan Kus, Department of Anthropology and Sociology

When studying a cultural scene, the ethnographic method becomes integral in discovering the underlying rules and nuances of an unfamiliar place. Ethnography is a practice used by anthropologists and sociologists allowing them to delve into a social scene, through both active participation and participant observation. I chose Trolley Stop Market as the site of my ethnographic site because it is a restaurant with a mission. The owners, also farmers, use as many products from local farms in their food as they can. Goods such as honey, coffee, fresh cut meats and milk can be found on display. They also support local artisans in showcasing their work varying from jewelry and purses to hand-turned wooden bowls. Despite the popular misconception that healthy and sustainable food choices are for the wealthy Trolley Stop Market has many meals under \$10 and their economically and ethnically diverse array of customers, of all ages, reflect their welcoming attitude. I have seen young families, teenage girls, scruffy-looking 20-somethings and older couples come to Trolley Stop Market to enjoy their tasty food made from ingredients that have been grown with care. Trolley Stop Market consciously supports the local community while inherently creating a community of its own.

1:54 PM *Buried in Burke's Books: An Ethnography*

Jacob Powers

Faculty Sponsor: Susan Kus, Department of Anthropology and Sociology

As a student of anthropology and sociology I utilized the ethnographic method of participant-observation to gain a closer understanding of a local cultural scene that I was unfamiliar with prior to the study. My cultural scene was Burke's Bookstore, a secondhand bookshop in the Cooper Young community of Memphis, Tennessee. Through participant-observation, I situated myself within the bookstore as a customer in order to observe the cultural scene from the inside. As a customer in the store, I observed the interactions between people and the effects the physical setting and material culture have on their behavior by noticing patterns and looking for social norms within the setting. This presentation will focus on the use of bookstore space by customers, considering the customer's perspective as well. It is my intention to examine which areas of the shop customers gravitate toward and how these areas may be linked to their age, race, gender, and class.

Undergraduate Research and Creative

4:09 PM *Talking in Silence: A Cultural Exploration of American Sign Language and Deaf Culture*

Annika Wuerfel

Faculty Sponsor: Susan Kus, Department of Anthropology and Sociology

Understanding and appreciating different cultures is a crucial aspect in learning about one's own life. Employing the ethnographic method allows anthropologists to observe, interview, participate within a cultural scene, and consequently gain appreciation for cultures that are different from their own. In my ethnography, I studied American Sign Language and attended Sunday church services at a deaf church in Memphis in order to explore deaf culture. The purpose of my study was to learn how to sign and, through participant observation, gain a better understanding of the daily lives of people who are deaf. Throughout my study, I came to realize the sheer number of complexities and intricacies that are present in sign language versus that of spoken English. I also formed bonds with several of the deaf church members and gained a greater understanding for what it is like to be deaf. Through this experience, not only have I learned about a different cultural scene but I have also begun to look at and analyze my own cultural situatedness using a newfound perspective.

4:21 PM *"The Deli" Serves More Than American Fare: An Ethnographic Study of a Community Gathering Spot*

Huntley Hudgins

Faculty Sponsor: Susan Kus, Department of Anthropology and Sociology

create strong bonds between its participants, and how a familial ambiance can be a source of support and encouragement to its members.

5:12 PM *Once Upon A Farm: An Ethnographic Study of the Memphis Zoo Farm and Bird Exhibits*

Emileigh Pope

Faculty Sponsor: Susan Kus, Department of Anthropology and Sociology

The ethnographic method, the backbone of fieldwork in anthropology, attempts to integrate a person into the culture of another, through participant-observation, and to allow him or her to take the time to appreciate the other culture's complexities, beliefs, and attitudes, through the lens of that specific culture. While people may assume that fieldwork must be done in exotic places that is not necessarily true for we are continuously surrounded by others in contemporary society. I undertook an ethnographic study at the Memphis Zoo farm and birds' exhibits, and immersed myself in the daily life of a zookeeper, through acting as a regular volunteer. Many zoo visitors do not realize the dedication and work that goes on behind the scenes so that the zoo will run successfully. Throughout this semester long study, I have discovered that it is the people who have dedicated their lives to the preservation and welfare of animals that deserve the highest respect from the general public. Unfortunately, because they are "behind

of this non-profit ultimately compelled me to reflect on my own cultural logic, worldviews, beliefs and values. My interactions with the volunteers, workers and patients allowed me to explore the motivations that led to their personal choice to work at a reproductive health clinic while also exposing the challenges that such work posed. I hope to give my audience the means to understand and appreciate the services that Choices offers despite the various forms of opposition it faces, as well as local involvement with this organization and the communities it has helped create.

6:00 PM *Kicked Into Shape: An Ethnographic Study at Memphis Judo & Jujitsu Fitness Kickboxing*

Virginia Whitman

Faculty Sponsor: Susan Kus, Department of Anthropology and Sociology

I conducted the following research using the ethnographic method, which serves as a primary tool for many anthropologists and sociologists. The ethnographic method requires an ethnographer to experience another culture or cultural scene, the purpose of which is to force the researcher into awareness of the similarities and dissimilarities of the culture studied and his or her own culture. The ethnographer must also remain in a specific ethnographic site for a long enough amount of time so as to be able to discern the particulars of said location. The ultimate goal using this method is to gain insight to and an understanding of a unique culture or cultural scene. The cultural scene for my research project is the Memphis Judo & Jujitsu Fitness Kickboxing studio. I attended several classes a week, most at varying hours. During these classes I have noticed a trend in the gender demographic of the participants: the majority of student are women, most times double the number of male students. An interesting direction for the research would be to understand why this trend occurs. My study explores this trend in terms of understanding what social, financial, and health implications compel people to attend these classes.

6:12 PM *The Zoo Crew: Human Culture Behind the Gates of Memphis' Own Animal Kingdom*

Becca Martin

Faculty Sponsor: Susan Kus, Department of Anthropology and Sociology

Going to work takes on a whole new meaning when there are 270 other species at the office. Through the ethnographic method of participant observation, this study attempts to understand the cultural scene existing inside the Memphis Zoo. Ethnography is an essential methodology of cultural anthropology; the ethnographer gains a richer understanding of a culture or cultural scene, and by recounting her or his experience in writing or in a public presentation, others can gain a richer understanding of human cultural variation. During my study at the zoo, fieldwork consisted of both volunteering and weekly visits as a patron. Some sit in offices and answer phones, others make sure the animals get fed, but regardless of position, “the zoo crew” is characterized by true passion. I will discuss the intricate structure and organization of the zoo’s micro-society, providing a perspective of the zoo as a place of work, rather than an every-now-and-then site of entertainment. This is a cultural scene worth getting to know; after all, we are all animals.

NATURAL SCIENCE ORAL SESSIONS

Genetics, Biochemistry, and Molecular Biology I

FJA

Session Chair: Christopher Grubb

2:15 PM

imprinting. We have constructed a Ler x Col mapping population in the background of a homozygous reporter to isolate and characterize the genes responsible for Polycomb targeting.

2:30 PM *Probing the Active Site of LpxC in Gram-negative Bacteria through the Synthesis of Natural Substrate Analogues*

Sarah N. Malkowski, Christopher S. Grubb

Faculty Sponsor: Larry Peterson, Department of Chemistry

Despite the pronounced advances in the health industry, there still remains the challenge of treating microbial diseases, such as bacterial infections. Bacterial infections can be contracted in hospitals and many are multi-drug resistant, making it imperative to develop new and effective antibacterial therapies. Among the culprits of these infections are Gram-negative bacteria, which are increasingly resistant to antibiotics due to the presence of an outer membrane. Lipid A is an integral component of the outer membrane and is responsible for the viability and growth of Gram-negative bacteria. In the biosynthetic pathway of Lipid A, the enzyme LpxC is responsible for catalyzing the committed step of the mechanism. If LpxC is inhibited, preventing the production of Lipid A, then the compromised outer membrane would reduce bacterial survival. Previous work investigating LpxC has revealed information about key features of the active site and critical residues of interaction. We are currently synthesizing natural substrate analogues as inhibitors in order to probe the active site of LpxC. Our inhibitors feature a zinc

St. Jude's Summer Plus Fellows

FJB

Session Chair: Ann Viano

1:15 PM *The Investigation of AF9, a Potential Regulator of HSC Specification, in Definitive Hematopoiesis*
Harrison Daniel, Shannon McKinney-Freeman, Department of Hematology, St. Jude Children's Research Hospital

Faculty Sponsor: Laura Luque de Johnson, Department of Biology

The capability of embryonic stem cells (ESCs) and induced pluripotent stem cells (iPSCs) to differentiate into various progeny has powerful implications clinically. The generation of hematopoietic stem cells (HSCs) from ESCs could greatly enhance the donor pool for bone marrow transplants by increasing the availability of HSCs for clinical use. In order to effectively derive transplantable HSCs from ESCs, key aspects of hematopoietic development, particularly definitive hematopoiesis, must be recapitulated in culture. In this study, a systematic serum free differentiation protocol was established in order to evaluate AF9, a novel regulator of HSC specification, in definitive hematopoiesis through overexpression at different developmental steps. The Tet-On inducible system was utilized to evaluate AF9's role in hematopoietic development. Prior to evaluating AF9's role, we attempted to confirm the presence of human AF9 cDNA in the parental Ainv15 parental ESC line. Due to issues with the tool, the Tet-On system was redesigned using the A2lox.cre ESC line and the p2lox plasmid. This system provides enhanced targeting efficiency in comparison to Ainv15 ESC line. Currently, we are in the process of redesigning the Tet-On system to evaluate AF9's potential role in regulating HSC specification.

1:30 PM *Evaluation of Salidroside Analogs as Potential Anticancer Therapeutic Agents*

Maggie Cupit, Adaris Rodríguez-Cortés, Taotao Ling, Fatima Rivas, Department of Chemical Biology and Therapeutics, St. Jude Children's Research Hospital

Faculty Sponsor: Mauricio Cafiero, Department of Chemistry

Heightened cell migration is a hallmark of metastatic cancer cells. Metastasis is the process whereby cancer cells leave primary tumors and form secondary tumors at a distant site on the body. Cancer cells acquire the ability to metastasize by transitioning from an epithelial to a mesenchymal cellular phenotype. Some of the known transition triggers are intra-tumor hypoxia, growth factor signaling and cell-cell interaction, among others. This biological process intensifies the aggressiveness of a tumor, and is the leading cause of recurrence and death in cancer patients. Therefore, the development of drugs that specifically inhibit tumor metastasis is crucial for the improvement of cancer treatment. *Rhodiola crenulata* is a medicinal plant containing phenylpropanoids and monoterpene glycosides, which have shown antitumor properties. One of its main components is a tyrosol glucoside known as salidroside. Herein, we disclose our studies on *Rhodiola crenulata* extracts, and our focus salidroside compound library whose biological activity has been tested using a cellular monolayer scratch wound migration assay. Biologically active fractions and synthetic compounds were purified and characterized utilizing column chromatography, UPLC-MS, and NMR techniques. Our promising findings as well as our future synthetic studies will be discussed.

1:45 PM *Evaluation of *Jatropha Isabelli* Natural Products and their Synthetic Analogs as Potential Antimalarial Therapeutic Agents*

Megan Hotard, Victor Hadi, Taotao Ling, Fatima Rivas, Department of Chemical Biology and Therapeutics, St. Jude Children's Research Hospital

Faculty Sponsor: Dhammika Muesse, Department of Chemistry

Malaria, a life-threatening disease caused by the *Plasmodium falciparum* parasite, is a global health concern. Due to a lack of scaffold diversity in current treatments, drug resistance to malaria is increasing. For example, the K1 strain of *Plasmodium falciparum* is known to have resistance to the current chloroquine treatments. New molecular scaffolds are desperately needed to combat drug resistance in malaria. Due to the rich scaffold diversity found in natural products, we screened a library of fractionated terrestrial natural products to identify new potential therapeutic leads. We discovered that jatrophone, extracted from *Jatropha isabelli*, exerts significant activity against *Plasmodium falciparum* strains 3D7 and K1. A focused jatrophone-scaffold library was synthesized to evaluate jatrophone's mode of action and identify more selective analogs. Compounds 25 (imidazole-1-carbothioate jatrophone) and 32 (aromatic C-7 jatrophone) of this natural product-inspired compound library exhibited EC50

values in the micromolar range, indicating their potential as new antimalarial therapeutic agents against the 3D7 and K1 strains.

2:00 PM

Undergraduate Research and Creative

3:45 PM *Enhancing Atomic Current in Energetically-Gapped Optical Lattices*

Jake Magness, Ronald A Pepino

Faculty Sponsor: Ronald Pepino, Department of Physics

The interference of counterpropagating laser beams forms standing waves of light. These standing waves make up what is known as an optical lattice, a perfect, defect-free "light crystal" capable of trapping ultracold atoms. Due to quantum tunneling phenomena, these ultracold atoms can be transported from one lattice site to another. As such,

struggles and glory, was so integral to the bettering of social and economic conditions for Mexican peoples and re-constructing a Mexican identity within the United States.

1:45 AM *Comic Books: The Stage of the Page*

Chase Robert Ring

Faculty Sponsor: Dave Mason, Department of Theatre

The theatre of today is too caught up in tradition to actually make anything of itself. Audience members show up, are asked to unwrap their candy, turn off their phones, and be quiet for the next two hours while they watch what they have defined as “theatre.” With this project, I am determined to open up the idea of what “theatre” is by exploring the medium of comic books. By combining colorful characters and inaudible dialogue, the comic book tells a narrative that, nevertheless, manages to tell one cohe

an unknown certainly indicate his personal investment. But C.P.E. Bach's efforts to produce the Mass in B minor also involve a desire to establish his father's legacy as one of the greatest composers of his or any generation. Thus, C.P.E. Bach's performance of the Mass in B minor in many ways becomes his love letter to his father.

Bach's B-Minor Mass POSTER SESSIONS

#1 Bach's B Minor Mass: Form and Context

Lumina Waters, Zachary Wolfe

Faculty Sponsor: Mona Kreitner, Department of Music

The Mass in B Minor is considered by many to be one of Bach's greatest works, and even one of the greatest classical pieces of all time. Analysis of this collection of pieces can give us a window to help us understand not only music and life in the time it was composed, but music itself. In our research, we plan to analyze the compositional and structural elements of the piece. We will discuss theoretical form, the context of the piece at its time of creation, its relation to the social, political, and cultural climate, and its relationship with other church music. We will also be discussing the changes in compositional style between each part, as its individual pieces were written over a large portion of Bach's life.

#2 Motive and Purpose: J.S. Bach's B Minor Mass

Elisabeth Peel

Faculty Sponsor: Mona Kreitner, Department of Music

Johann Sebastian Bach is well-known for his compositions, including his Mass in B Minor, which he finished writing only months before his death in 1750. As a Lutheran, the composition of a Catholic Mass was an unusual choice for Bach, and his motivation and purpose for writing such a piece is the topic of debate amongst musicologists. This project will provide a possible explanation for the composition of the Mass. To do so, I not only examine the Mass in chronological context with Bach's other works but also place the B Minor Mass in historical context beside pieces written by Bach's contemporaries. Also taken into account are personal documents and letters written by and to Johann Sebastian Bach during his later years. By investigating personal documents, musical trends, and significant historical forces of the early 18th century, I will conclude with my own interpretation of Bach's motive behind the composition of his Mass in B Minor.

#3 Connections between compositional decisions in J.S. Bach's B Minor Mass and his external influences

Lauren Smith

Faculty Sponsor: Mona Kreitner, Department of Music

My research concerns the origin and construction of Bach's B minor Mass, BWV 232. The entire mass was completed in 1749; some parts of this mass were taken from previous works of Bach, while other sections were newly composed specifically for this mass. My research is an attempt to discover which pieces of the Mass are borrowed and why they were used, and show how all of these were put together for one large-scale piece of music.

#6 Bach's Mysterious B Minor Mass

Carolyn Baker

Faculty Sponsor: Mona Krei

St. Jude Summer Plus Fellowships

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4 Location and Visual Features of Medulloblastoma Molecular Subtypes by MRI

Lauren Stokes, Robert Ogg, Matt Scoggins, Translational Imaging Research, Department of Radiological Sciences, St. Jude Children's Research Hospital; Amber Owens, School of Dentistry, The University of Tennessee Health Sciences Center; A. Gajjar, Department of Oncology, St. Jude Children's Research Hospital
Faculty Sponsor: Darlene Loprete, Department of Chemistry

Medulloblastoma is the most common malignant brain tumor in children. There are four molecular subtypes of medulloblastoma. Research has uncovered the developmental origins of two of the four subtypes, Sonic-hedgehog and Wnt, but little is known about Groups 3 and 4. A previous study comparing Sonic-hedgehog and Wnt subtypes showed that these tumors exhibit different localization patterns in the posterior cranial fossa based on different developmental origins. This research project focused on quantitative analysis of tumor localization in subtypes 3 and 4, based on landmark coordinates in a standard brain space. Analysis of the localization features of these subtypes did not reveal any significant differences so a qualitative approach was taken to further analyze each subtype based on visual appearances of the tumors. This qualitative approach resulted in the definition of multiple subgroups for each subtype based on visual appearance of the tumors. These results show that each subtype has unique characteristics that may be linked to differences in developmental origins. Ongoing research is investigating

deveoopmmenr(i)6.2(g)-5.2(in

u(m)12.6-v6)-4(f)

45ig5t

iu(m)12.6-v6

i5

#9b *Breast Tumor Kinase (Brk/PTK6) and HIF-1 are co-expressed in human triple negative breast tumors*

Alexander Croft

Faculty Sponsor: Gary Lindquester, Department of Biology

Triple negative breast cancers are known to be more aggressive and are typically associated with a poor prognosis when compared to hormone receptor positive breast cancers. These tumors are shown to abundantly express Met receptors and contain high constitutive levels of hypoxia inducible factor 1-alpha (HIF-1a)—a key mediator of cellular hypoxic stress that is known to be indicative of higher metastasis risk and is clinically predicative of patient relapse. Breast tumor kinase (Brk; protein tyrosine kinase 6) is a soluble tyrosine kinase that is over expressed in a majority of triple negative breast tumors and is crucial in the mediation of anchorage independent tumor growth and Human Growth Factor (HGF)-induced cell migration. Although previously studied, there are few immunohistochemical studies investigating the potential co-expression of Brk and HIF-1a in human triple negative tumors. Herein, immunohistochemistry is utilized to probe for co-expression between Brk and HIF-1a by cross-examining triple negative tumor sections that we know to express both Brk and HIF-1a and sections in which one or both factors are knocked down. Co-expression between Brk and HIF-1a may provide new effective approaches for the treatment of triple negative breast cancers by targeting Brk or HIF-1a.

Social Sciences

10 *Evaluating the consequences of teaching white students about white privilege on their awareness of privilege for others, privilege for themselves personally, and their justifications for the existence of privilege*

Harrison Adams

Faculty Sponsor: Chris Wetzel, Department of Psychology

White Privilege refers to the unearned advantages people receive from having a white ethnicity/race. It does not

13 *Examining the consequences of teaching white students about white privilege on white Disadvantage General, white Disadvantage Personal, and white Pride*

17 Evaluating the consequences of teaching white students about white privilege on white guilt, personal remorse, and collective remorse

Fred Lankford

Faculty Sponsor: Chris Wetzel, Department of Psychology

White Privilege refers to the unearned advantages people receive from having a white ethnicity/race. It does not necessarily result from racism or discrimination, and it can occur without racial oppression. White guilt is the result of individuals learning about either their advantages or others' disadvantages, and it's accompanied by feelings of shame and remorse. Collective guilt is guilt over how one's racial group has behaved, whereas personal guilt is a feeling of remorse for one's actions or for being so advantaged over others. I compared a computer game to two educational videos on how they would influence these 3 related attitudes. I randomly assigned white students to

21 *Rhodes College HOPE VI Evaluation Team: Senior Residents and Phase One of Cleaborn Pointe*

Anne Herman, Helen Huettner, Rachel Kauffman

Faculty Sponsor: Heather Jamerson, Department of Anthropology and Sociology

HOPE VI (Housing Opportunities for People Everywhere) was launched in 1992 as one of the nation's most comprehensive programs for the renovation of public housing in the U.S. Since 1996, Memphis has been awarded five HOPE VI grants, totaling almost \$148 million, to replace severely distressed public housing units with mixed income housing communities and to provide relocation and case management services to displaced residents. The primary purpose of this evaluation is to meet the objectives of the Housing and Urban Development (HUD) requirements of all HOPE VI-related redevelopment. The specifics of this project include an analysis of the Cleaborn Pointe redevelopment site, a senior building in Memphis, Tennessee, and the seniors from Cleaborn Homes, who are eligible to live in this building. We will assess the needs and goals of both Memphis Hope and Urban Strategies and senior citizens by conducting interviews with these seniors (making note that the seniors who lived in Cleaborn Homes were reassigned to either Section 8 housing, public housing, or have moved into a private residence in the interim time).

22 *The Language of Learning: Cultural insight into the system of Education in Dakar, Senegal*

Rebecca Ouellette,

Faculty Sponsor: Susan Kus, Department of Anthropology and Sociology

Living in a country with seven official national languages, communication barriers are inevitable. My experience studying for four months in Dakar, Senegal allowed me to see the ways in which this nation, formerly colonized by France, has adapted and developed into political and economic stability while still maintaining a fascinating pre-colonial cultural identity. During my time in Senegal, I had the opportunity to teach English in a public elementary school. While French is the major national language, the majority of students in Dakar speak the native language of Wolof in their households. Through this internship, as well as my travels throughout the country, I was able to perform an informal study of the system of education as a reflection of the relationship between pre and post-colonial Senegal. Though I focused mainly on the public educational system in Dakar, I also had the opportunity to better understand the contribution of Koranic schools to the religious education in the community. My experience in classes as well as living with my host family and everyday interactions allowed me to see that education of language and culture comes not only from a classroom, but in observing, questioning, and going outside of one's comfort zone.

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for writing, along with how the children view the program and their willingness to participate for future sessions. Suggestions for future “special projects” aimed at increasing interest and knowledge of writing are offered to improve the nature of the program and the process of teaching according to best practices and feedback from the participants of the program.

25 *Narrative Coherence as a Buffer against Victimization among Children Rejected by Peers*

Bhavna Kansal, Cara Guthrie, Rollins College Faculty co-sponsor: Alice Davidson, Department of Psychology, Rollins College

Faculty Sponsor: Marsha Walton, Department of Psychology

Failure to form peer relationships leaves children vulnerable to adjustment problems during middle childhood, and children not successful in establishing positive ties are at risk for victimization. The ability to create a coherent narrative account is critical for drawing one into a shared narrative practice and for holding one’s own in the world of shifting alliances that characterize children’s peer relations. We examined whether children rejected by peers experienced different levels of victimization depending on narrative skills in stories about peer conflict. A sample of elementary school children wrote stories about “a conflict with a classmate that really happened to you,” and narrative coherence was assessed according to a coding scheme widely used in narrative research (Baker-Ward et al, 2007). Social preference and peer victimization were assessed by asking classmates to nominate children they liked, disliked, and those often teased or picked on. Hierarchical linear regression models indicated that children with relatively low preference scores but high coherence were less likely to be victimized compared to children who were similarly disliked, but had low coherence. Findings support the view that narratives draw children into a shared practice of evaluating conflict, which may be especially important for children who are disliked.

26 *Evaluation of the Cypress Middle School Guitar Club*

Anne Rhynes, Jasmine Tate

Faculty Sponsor: Elizabeth Thomas, Department of Psychology

We have designed and are conducting a participatory evaluation of the Cypress Guitar Club which was founded three years ago by Rhodes Professor and Director of The Curb Institute, Dr. John Bass. Here, Rhodes students work with students at Cypress Middle School in an afterschool program focused on building interest and skills in music. We will be addressing the following initial questions: How do Rhodes students understand their role as teachers/mentors in the guitar club? How does their participation contribute to their personal development and goals for the future? Why do middle school guitar club members participate? What do the club members experience and what difference does it make in their lives? How can Rhodes sustain and build the guitar club over time at Cypress Middle School? What are the core features of the program that could be replicated at other schools in Memphis? We will answer these questions after observing and participating in the Guitar Club in order to learn how the program operates and to see first-hand how the club is run. We will conduct interviews with the students, instructors, and program director to understand their feelings about the program, expectations of the program, and to hear suggestions for possible improvements to the Guitar Club. Using a participatory research method, we will allow students to conduct co-interviews with us and to assist with making some of the questions for an interview of the instructors of the Guitar Club. We will code all interviews for common themes and answers. In the end, we will have a report that can be used by The Curb Institute to sustain and build the program, and that will contribute to music outreach and education in Memphis.

27 *An Evaluation of the Parenting with Hope Program*

Jasmine Tate, Amy Handleman, and Anne Rhynes

Faculty Sponsor: Janet Panter, Department of Psychology

Perea Preschool provides an active learning environment where children become self-confident, creative and socially well-adjusted. This environment prepares children for academic success through readiness, health and safety, and spiritual awareness. To best prepare these children for future endeavors, Perea requires the parents to volunteer at the school for a minimum of three hours a month. One optional component of the parent volunteer hours is a Parenting with Hope class taught by Ms. Alicia Norman and Ms. Allison Garneau. The purpose of this study was to assess the effectiveness of the class using a survey we created to examine the attitudes of participants toward the class, its influence on their parenting practices, and whether teachers see changes in parent attitudes and/or behavior

28 *The Cypress Walkability Project: Understanding Students Active Transportation*

Nicholas Gilgenbach, Ryan Landry, Annika Wuerfel, and Megan Zann

Faculty Sponsor: Elizabeth Thomas, Department of Psychology

The Cypress Walkability Project facilitates collaboration with Livable Memphis in hopes of improving children's access to public transportation and active transport throughout schools and neighborhoods. Specifically, the goal of the project is to address the walkability issues that students at Cypress Middle school encounter on a daily basis. Many of these students walk to school, and there are a number of challenges, including potential injury from motorized vehicles, ambiguously marked crosswalks, and sidewalks in disrepair. In order to address these concerns, this participatory research project utilizes mapping, surveys, and informal interviews with three sixth-grade students who actively commute to and from school. The information from these interviews allows for alterations to The Livable Memphis Walkability Toolkit. These revisions make the toolkit more functional and more usable for children. GIS mapping is also used in order to graphically represent data for the school district and make comparisons between neighborhoods. We aim to present our findings to the Board of Directors for Livable Memphis and to the city of Memphis at the project's conclusion in order to reveal how resourceful children can be in research, to raise awareness regarding the issues of walkability, and to apply our findings to the Memphis community.

29 The influence of post-stress food anticipation and consumption on psychophysiological recovery from mental stress in women with binge eating disorder: preliminary findings

Liz Bigus, Annika Wuerfel, and Rebecca Klatzkin

Faculty Sponsor: Rebecca Klatzkin, Department of Psychology

Although the underlying mechanisms of binge eating disorder (BED) have not been determined, stress has been implicated as a major contributor. It has yet to be elucidated whether stress-induced binge eating aids in

This research investigated the role of emotional valence in speech production using a picture-word interference task. Participants named target pictures superimposed with distractor words whose valences were taboo, negative, positive, or neutral. Distractor words were either phonologically-related or unrelated to the target picture. Neutral filler pictures were presented after every target to investigate potential carryover effects from emotional trials. Picture naming times were slowest when target pictures were accompanied by taboo words relative to all other distractors. Distractor valence also interacted with phonological relatedness, where target pictures were named faster when accompanied by phonological compared to unrelated distractors, and phonological facilitation was largest when distractors were taboo words. These findings suggest that strong emotional words slow speech production and that emotion can also specifically influence the phonological encoding stage.

32 Perception of Parent Volunteer Program at Perea Preschool

Hannah Chimowitz, Danielle Lenz, Emily Jordan, Rhodes College

Faculty Sponsor: Janet Panter, Department of Psychology

Parental involvement in children's schools is closely associated with student's academic achievement, improved attendance and positive attitudes towards school. The implementation of and perceptions of parental involvement programs are currently critical issues. This study examined parent and teacher perceptions of parent participation at

against the necessities of war, and in the battle for national survival, the United States had to minimize racial tensions at home in order to achieve victory abroad.

35 *La Crisis: Teaching Survival English in Spain's failing Economy*

Maria Raffanti

Faculty Sponsor: Alberto del Pozo Martinez, Department of Modern Languages and Literatures

Spain's ongoing economic turmoil has left the country with a staggering unemployment rate. In the spring of 2012,

Captive animals in zoos often exhibit stereotypical behaviors and have higher cortisol levels than their wild counterparts, and California sea lions (*Zalophus californianus*) are no exception. A variety of research has shown enrichment activities and objects significantly decrease cortisol levels and the display of stereotypical behaviors in captive animals. We collected behavioral and location data of two California sea lions, Chloe and Callie, housed at the Memphis Zoo, in order to investigate to what extent a sea lion show influences California sea lion behavior. During shows, Chloe spent the majority of her time (mean \pm standard error) performing show behaviors (0.53 ± 0.01), while Callie spent her time between three activities: swimming underwater (0.25 ± 0.05), sitting (0.27 ± 0.09), and performing show behaviors (0.30 ± 0.01). Before and after shows, both sea lions spent most time swimming underwater: Chloe (0.49 ± 0.04) and Callie (0.59 ± 0.06). We also found exhibit use differed before and after shows when compared to exhibit use during shows. On the whole, the variety and frequency of behaviors exhibited before and after shows appeared fairly random, which suggests the sea lions do not suffer from chronic stress.

*# 39 Aggression, altruism, and sexual behavior in the captive vampire bat (*Desmodus rotundus*) at the Memphis Zoo.*

Allison Julien, Matthew Roberts, Sarah Boyle

Faculty Sponsor: Sarah Boyle, Department of Biology

We collected affiliative, aggressive, and sexual behavioral data on the common vampire bat (*Desmodus rotundus*)

forebrain and midbrain regions of males involved in behavioral interactions (no behavior, copulation, or biting) relative to control males. Within-group analyses showed increased neural activity in similar regions for male-female sexual interactions, but only in the ventral tegmental area for male-male aggressive interactions. Further analyses of additional catecholaminergic brain regions are ongoing to determine their involvement in social behavior regulation.

42 *Synthesis of Dopamine Analogues to Investigate the Selectivity of Human Cytosolic Sulfotransferase SULT1A3*

Noah Brown, Gabrielle E. Bailey

Faculty Sponsor: Larry Peterson, Department of Chemistry

Human cytosolic sulfotransferases (SULTs) are responsible for the metabolic deactivation and excretion of endogenous and xenobiotic substrates. The 13 identified human SULTs have broad overlapping substrate specificity but have been demonstrated to possess strict regioselectivity for particular substrates. SULT1A3 is responsible for sulfonating both endogenous catecholamines (dopamine) and simple phenols and carcinogens. To investigate the chemical features of dopamine that allow for this selectivity, a series of seven analogues were synthesized with different substituents at the 6-position. These analogues were chosen for their varying resonance and inductive effects. The electron donating analogues synthesized in addition to the purchased 6-hydroxydopamine were 6-ethenyldopamine and the cyclized 1,2,3,4-tetrahydroisoquinoline. For electron withdrawing properties dopamine analogues with iodo, carboxyl, cyano, and nitro substituents were synthesized. The synthesis of these analogous compounds and preliminary sulfotransferase activity will be discussed.

43 *Qualitative chemical analysis of pigments from Olmec pictographs in southern Mexico*

Joseph McPeak

Faculty Sponsor: Jon Russ, Department of Chemistry

Pictographs in the Middle Formative site of Oxtotitlán were systematically analyzed using a portable XRF system to determine the primary pigment materials. Additionally, small paint chips from selected artifacts under a National Geographic /Waite research grant were collected for additional analyses. A lack of manganese suggested that charcoal was used to produce the pigment. Several black paints at the site were considered viable for C-14 dating.

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qualitative types of interaction dynamics, and how the dynamics of each population depends on the model parameters.

50 *Finding the Resistance of Strings and Fibers Using a Faraday Ice Pail*

Tyler Andrews, Dr. Shubho Banerjee, Dr. Brent Hoffmeister, Zain Kinnare, and Cameron Thurston

Faculty Sponsor: Brent Hoffmeister, Department of Physics

"Many materials such as polymer fibers have ultra-high resistances. We are developing a system to measure such ultra-high resistances. In our system, a charged metal sphere is suspended by a fiber in a Faraday Ice Pail apparatus connected to a instructional-grade electrometer. Data are collected as the sphere discharges through the fiber to ground over a period of several seconds to determine the RC time constant. The resistance R of the fiber can be determined if the capacitance C of the system is known. Preliminary data suggest that the system can measure resistances greater than 1000 teraohms."

51 *Electrostatic Force Between a Charged Sphere and a Grounded Plane*

Stefan McCarty, Dr. Shubho Banerjee, Evan Nelsen, Rhodes College

Faculty Sponsor: Shubho Banerjee, Department of Physics

When a charged sphere is relatively far away from an infinite grounded conducting plane, the electrostatic force between them can be accurately described using Coulomb's Law. When the sphere is very close to the plane, however, the actual force becomes much larger than what Coulomb's Law predicts. We constructed an approximate formula for this electrostatic force that is accurate to within 0.4% at all distances. Our approximate formula compares favorably to the best approximate formula found in literature which is accurate to within 5.2% at all distances.

52 *Pack hierarchy of captive wolves utilizing behavior and spatial analysis*

Phillip Lyons, Kimber Jones, Sarah Boyle, and Andy Kouba

Faculty Sponsor: Sarah Boyle, Department of Biology

Wild wolves (*Canis lupus*) maintain a hierarchy between pack members via ritualized fights and body language. Captive wolves devote more time to resting and exhibit less of the diversity of behaviors than wild wolves. The relationship between behaviors and exhibit area remains largely unexplored. The Memphis Zoo houses a pack of 4 Grey Wolves. Behavioral data were collected in accordance with an ethogram and locational data were recorded on an exhibit map created using ArcGIS. Both data types were collected from September 2012 to March 2013 for 160 hours. All occurrences of ritualized aggression and dominance were recorded. A pack hierarchy was observed that will be confirmed by calculating the dominance coefficient. Analysis of GIS data points will determine how each

Faculty Sponsor: Carolyn Jaslow, Department of Biology

56 *The Effect of Different Light Wavelengths on Stomata Width of Pansy Plants*

Gizman Abdijabar, Morgan Fuller, Mohib Khan, Mariko Krause, Monali Lipman

Faculty Sponsor: Rachel Jab

Anna Stachura, Elizabeth Butch, Scott Snyder, Department of Radiological Sciences, St. Jude Children's Research Hospital

Faculty Sponsor: Terry Hill, Department of Biology

Positron Emission Tomography (PETye

Consortium (CPIC), a collaboration between PharmGKB and NIH's Pharmacogenomics Research Network, was established to provide standardized, freely available guidelines to aid in the adoption of pharmacogenetics into patient care. Consortium members make therapeutic recommendations based on extensive literature review, with standardized systems for grading evidence and strength of recommendations. This evidence is then translated into explicit guidelines for clinicians to understand and implement into care. Each guideline is written for a single drug or drug class/gene pair, utilizing a tiered scale for pheno

within the three categories, many answers did not. The implications of this are that criteria for leadership are probably far more complex than what Weber suggested.

11 *Internship Experience at the Memphis Child Advocacy Center*

Allison Yu,

Faculty Sponsor: Anna Smith, Department of Political Science

The Memphis Child Advocacy Center is a non-profit organization that serves the Shelby County area and provides services to children and their families to receive counseling, interviews, and a team review when an allegation of

current benefits Nextdoor gives to the neighborhood as well as provide a loose action plan or future ideas that will help Nextdoor become more incorporated into the VECA community. First and foremost, Nextdoor provides a medium for instantaneous interaction between community members. Nextdoor can help organize neighborhood block events, update neighbors on crime reports, serve as a localized Craigslist, and integrate local businesses into the community. All of these functions will increase connectivity between community members resulting in a stronger, healthier neighborhood association. The poster itself will include screen shots and accompanied directions to provide a “How-to” guide for new Nextdoor users. I will also translate this into a small booklet to put in the VECA office.

Elle Wiggins, Ellen Alpaugh, and Josie Kusalus

Faculty Sponsor: Marsha Walton, Department of Psychology

Previous research has indicated that important developments in communication awareness occur during middle childhood. Our research seeks to discover if a relationship exists between these skills and the success children have in establishing positive peer relationships. Children's awareness of communication and perspective-taking abilities are demonstrated in their use of reported speech. Participants included 3rd, 4th, and 5th grade students attending a university-affiliated public elementary school. The children were given 30 minutes to write a personal narrative about a conflict they had with a peer. Additionally, each student was given a likeability rating by their peers that identified the number of friends each child had in their classroom. We coded for instances of direct, indirect, or mixed reported speech and determined whether the speech was attributed to the self, an adult, or another child. We anticipate that children who use direct quotation of their peers will have more positive peer relations, as it is an indicator of children's attentiveness to language. We believe that these specific variables indicate an increased ability to take on different perspectives, which would allow the child to negotiate peer conflicts and maintain friendships.

18 Implementing Film and Media in the Classroom

David Bergen

Faculty Sponsor: Jeanne Wilson, Department of Psychology; Education

The current generation of middle and high school students is growing up in an increasing technological society. As film has shown to be psychologically capable of penetrating the human mind by communicating with its audience, filmmakers and scholars alike have begun to develop educational and analytical value to the medium. We now have the technologno,(a)IT-0.007e00.080-9 0.0010.007eeetha900a04rh-s6((a)ITast)ory,

volunteers come and go, there are a few individuals who have been involved since the 1970s. It is necessary to capture the stories of individuals such as Dr. Mike Kirby and Mary Wilder so generations to come can understand

24 Deaf Literacy 2: ASL in Undergraduate Education

Chloé Smith

Faculty Sponsor: Lori Garner, Department of English

As Sherman and Phyllis Wilcox have shown, “although ASL has a long and rich history in America, and scholarly research on ASL is in its fourth decade, ASL has been slow to garner any degree of status in the academic community” (Jacobowitz, 2005). However, ASL has now become the 5th most taught foreign language in United

rhetorical analysis can be put to any modern speech as well as ancient speech, calculating “logical” versus “illogical” pathways with regards to each side while bypassing bias. Therefore while this paper is designed to help others analyze the Melian Dialogue directly, it is also designed to aid in one’s thought process when objectively looking at any speech.

28 Abriendo Puertas: Latino Student Success

Maria Raffanti

Faculty Sponsor: Elizabeth Pettinaroli, Department of Modern Languages and Literatures

Latinos are the fastest sector of student population growth in the United States. In order to build stronger communities and achieve success, it is imperative to increase high education attainment of Latino students. Latino

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no match for species. A phylogenetic analysis of the DNA sequences will be constructed to further characterize this unknown Hepatozoon species. If the species is found to be closely related to the African parasite, this could indicate that an exotic species was introduced through an unknown mechanism to Overton Park.

35 *The Prevalence of Gambierdiscus sp. in the Caribbean Sea*

Patricia Pyda, Keara Fenzel, Hamilton College

Faculty Sponsor: Sarah Boyle, Department of Biology

Ciguatera Fish Poisoning (CFP) is a foodborne illness caused by the consumption of certain contaminated reef fish. Symptoms affect the gastrointestinal and neurological systems and can persist for weeks or years. The ciguatoxin,

Ashlyn Cahill, Matthew Grisham, Laura Luque de Johnson

Faculty Sponsor: Laura Luque de Johnson, Department of Biology

Urban environments are increasingly more common than natural habitats. Parasites have complex life cycles that can be disrupted by urbanization. In this study we look at the effects of urbanization on avian parasites and the effects to avian health. We focus our efforts on three genera of blood parasites; Haemoproteus, Plasmodium, and Leucocytozoons that infect avian hosts. Blood samples were collected from various local bird species. These samples were then analyzed by using both microscopy and molecular assays. Images of blood smears were captured via light microscopy and scanned for the presence of parasites. Corresponding samples were then assayed using DNA extraction and amplification of the mitochondrial cytochrome B gene via a nested PCR to identify the parasite's species. Together, these techniques will evaluate the presence or absence of parasites within the local avian population. Analyzing parasitic episodes and assessing their impact on local avian species would help understand how urbanization is affecting avian health.

40 *Development of Religious Congrega*

43 *A Model Representing the Changing Viewpoints of the US Population on Same –Sex Marriage in terms of Political Affiliations*

Rachael Pewitt, Lauren Smith

Faculty Sponsor: Carolyn Jaslow, Department of Biology

48 *Does Stomatal Density Differ Between the Adaxial Side of Leaves On Top of a Bush and the Adaxial Side of Leaves on the Bottom of a Bush?*

Connor Schratz, Ahmun Zafar, Lexi Perkins, Anna Stratton-Brook

Faculty Sponsor: Carolyn Jaslow, Department of Biology

49 *Do Crickets Show a Preference for Darker Environments?*

Doug Fetterman, Emily Hayward, Radhika Puri, Jessica Ramey

Faculty Sponsor: Carolyn Jaslow, Department of Biology

50 *Home Field Advantage: Do Crayfish Become More Aggressive When Accustomed to Their Environment?*

Alex Hooven, Kyle Jenkins, Katie Lutat, Mike Stierer

Faculty Sponsor: Carolyn Jaslow, Department of Biology

51 *Crawfish Preference between Sheltered and Exposed Environments*

Chloe Meriwether, Kate Morrison, Will Murphy, Will Porter

Faculty Sponsor: Carolyn Jaslow, Department of Biology

52 *Does Salt Affect Duckweed Growth?*

Brian Lenny, Rosh Rao, Cailey Wagner, John Coleman

Faculty Sponsor: Terry Hill, Department of Biology

53 *Does Temperature Affect the Mating Behavior of Crickets?*

Megan Denny, Annie Hohlt, Katie Jaffe, Mallory Perry, Hayden Schill

Faculty Sponsor: Terry Hill, Department of Biology

54 *Will Duckweed Grown in Various NaCl Concentrations Show Effects in Stomata Aperture?*

Maggie Jones, Corrie Moore, Michael Schoeller, Ashley Truong

Faculty Sponsor: Terry Hill, Department of Biology

55 *How Tolerant is Duckweed to Varying pH Levels in Water?*

Alexandra Lasko, Ainsley Pittman, Allie Zeidan, Juhi Srivastava

Faculty Sponsor: Terry Hill, Department of Biology

56 *Is Cricket Chirping Affected by Temperature?*

Martha Abbott, Connor Cook, Noor Eltayech, Andres Miller, Leah Wisniewski

Faculty Sponsor: Terry Hill, Department of Biology

57 *The Effect of Spatial Limitations on Crawfish Aggression*

Judith Denham, Cydney Johnson, Brandon Smith, Caleb Herndon

Faculty Sponsor: Lynda Miller, Department of Biology

58 *Crayfish Male Dominance Relation to Mating*

Allison Bowen, Samory Diaby, Ross Nosaville

Faculty Sponsor: Lynda Miller, Department of Biology

59 *Testing Sucrose Concentration Preference in *Pieris rapae**

Mitch Trychta, Arthur Willis, Rachel Detamore, Madeline Plaster, Tony Perez

Faculty Sponsor: Lynda Miller, Department of Biology

60 *The Effects of Pregnancy on Aggression in Female Crayfish*

Sophie Costa, Jamie Austin, Patrick Scoggins, Oliver Davidson

Faculty Sponsor: Lynda Miller, Department of Biology

61 *The Effect of Light on Cricket (*Acheta domesticus*) Choice of Environment*
Lauren Edmond, Blair Drum, Luke Newman, Charlease Cannon
Faculty Sponsor: Lynda Miller, Department of Biology

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