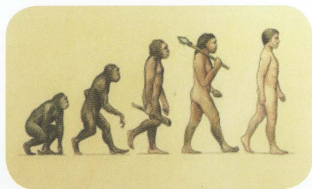
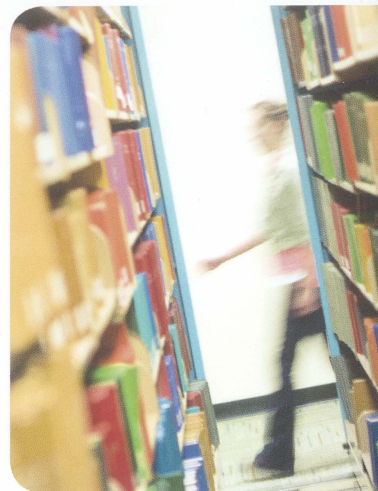


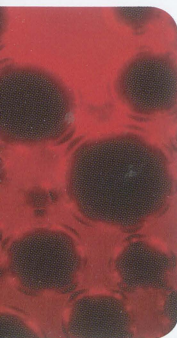
# McNair

RESEARCH REPORT

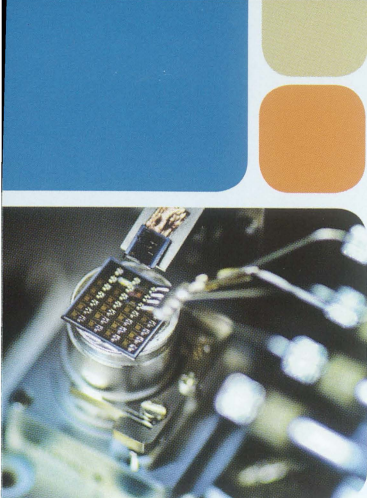
Summer/Fall 2014



Preparing Students for Careers  
in Research and Teaching







# About

## THE MCNAIR SCHOLARS PROGRAM

The McNair Scholars Program (officially known as the Ronald E. McNair Post-Baccalaureate Achievement Program) came to the campus of The University of Texas at Arlington in 1990. Created by the U.S. Congress in 1988, it is named after Dr. Ronald E. McNair, who perished with his fellow astronauts on the space shuttle *Challenger*.

The McNair program endeavors to assist talented undergraduates—either first-generation/low-income or underrepresented students—to prepare for graduate study leading to the Ph.D. and the professoriate. Since its beginning at the University, the McNair program has encouraged and assisted more than 300 students in various majors. Currently it works with a minimum of 34 students each academic year, providing seminars and classes on topics relating to graduate school and the GRE, a May institute to heighten scholars' understanding of the culture of research, and the opportunity to engage in a summer research internship as rising seniors. The program also provides guidance with the graduate school application process and travel funds to participate in conferences and visit prospective graduate programs.



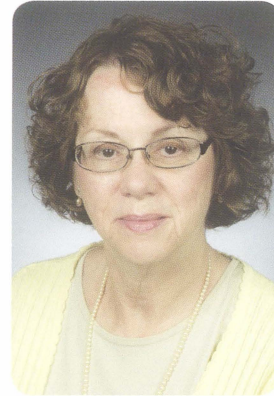
Dr. Ronald E. McNair, Scientist and Astronaut, 1950-1986



# Notes

## FROM THE DIRECTOR

Each year I am impressed by our interns' creativity and dedication during the McNair research internship experience. As they plan and then execute their projects during the spring and summer semesters, McNair Scholars surmount methodological challenges, deepen their understanding of their majors, and strengthen the writing and oral communication skills that will greatly assist them as future graduate students working toward their doctorates. Certainly, much of their success is due to the expert mentoring of UT Arlington faculty, representing a wide variety of disciplines. I would like to congratulate Scholars and mentors for their commitment to the research process and for a job well done! I would also like to thank the UTA community—particularly President Vistasp Karbhari, Provost Ronald Elsenbaumer, and Vice President for Research Carolyn Cason, in addition to deans, chairs, and faculty members—for their vigorous support of student excellence and for their ongoing commitment to the UT Arlington McNair Scholars Program.



Dr. Joan Reinhardt, Director

Joan W. Reinhardt, Ph.D.  
Director, McNair Scholars Program

### STAFF MEMBERS



Cheri Counts,  
Administrative Assistant

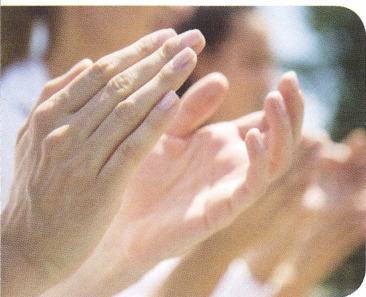


Shaw Hatley-Green, M.Ed.,  
Learning Specialist II  
*(through summer 2014)*



Natalie Stephens, M.Ed.,  
Learning Specialist II  
*(as of fall 2014)*





# Message

## FROM THE VICE PRESIDENT FOR RESEARCH

The 2014 American Academy of Arts and Sciences report *Restoring the Foundation: The Vital Role of Research in Preserving the American Dream* cogently captures the critical role of research—and those who do the research—in our world. A key observation the authors make is “Virtually every new technological product is traceable to a research discovery, often one pursued with no application in mind.”\*

The McNair Scholars Program plays an important role in preparing the researchers who will provide solutions to the world’s challenges. For promising students from low-income/first-generation or under-represented backgrounds, it is also a means to realize the dream of a good job and the opportunity for a better life than what their parents lived. Yes, it takes hard work; work that requires long hours of rigorous training with mentors. Yes, it takes dedication and persistence. But these efforts prepare the faculty members who will make discoveries that will shape our future. They will be the innovators and entrepreneurs who will develop the technologies that transform the results of those discoveries into improvements in health, education, and economic growth.

The University of Texas at Arlington is proud to be a supporter of the McNair Scholars Program. Those of us who have been privileged to work with McNair Scholars and to witness the transformation from students to scholars are impressed with their sophistication and, as mentors, take great pride in their accomplishments. My special thanks to the faculty who have mentored them.

Congratulations Scholars on your acceptance into the program. You have completed impressive work. It is work that portends an exciting future for you and for the promise your future contributions will make.

*\*American Academy of Arts and Sciences, Restoring the Foundation: The Vital Role of Research in Preserving the American Dream, p. 9 (Cambridge, MA: American Academy of Arts and Sciences, 2014).*

Dr. Carolyn Cason  
Vice President for Research, UT Arlington



Dr. Carolyn Cason,  
Vice President for Research



# Alumni

## EARNING POSTGRADUATE DEGREES

During the past year, the following McNair alumni acquired their postgraduate degrees:

**Aale Naqvi** (Ph.D., Electrical Engineering, UT Austin). While a doctoral student, Dr. Naqvi focused on Doppler radar and wind turbine scattering, publishing a number of articles on this subject. He is currently investigating various job opportunities focused on research.



Aale Naqvi



Froswa' Booker-Drew

**Froswa' Booker-Drew** (M.A., Humanities, Oklahoma City University; Ph.D., Leadership and Change, Antioch University). Dr. Booker-Drew currently holds adjunct status at UT Arlington in the Center for African American Studies, in addition to serving as National Community Engagement Director at World Vision, U.S. Programs. She was a workshop presenter at the United Nations in June 2013 on the "Access to Power" and participated in the International Dialogue on Relational Learning and Leadership Conference in October 2013. She recently published *Rules of Engagement: Making Connections Last*.



Michael Ukpong

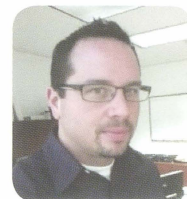


Sonya Lopez

**Michael Ukpong** (Ph.D., Microbiology, University of Oklahoma). The focus of Dr. Ukpong's graduate research was the optimization of industrial-grade biofuels, on which he both wrote articles and presented at conferences. In July, he and fiancée Monique Pouliot were married. Ukpong is currently teaching at North Arkansas College in Harrison.



Phillip E. Silva

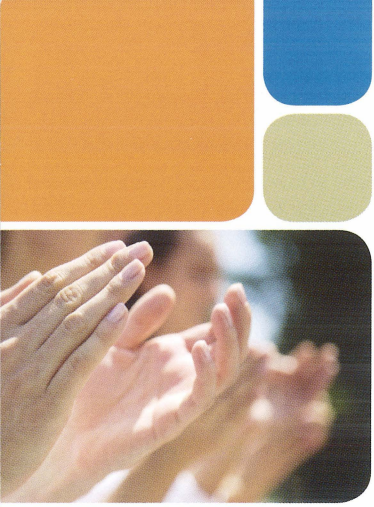


Alexander Wolfe

**Sonya Lopez** (M.D., UT Southwestern Medical School). Dr. Lopez (pictured here with fiancé Christian Caicedo) completed an international medical rotation in India in February 2014 and is currently an intern focusing on internal medicine at UT Southwestern Medical Center in Dallas.

**Phillip E. Silva** (M.S., Biology, UT Arlington; M.D., St. George's University). Dr. Silva completed his residency at UTSW Medical School with a fellowship in geriatric medicine and also served as a resident in family medicine there in 2013. He currently practices medicine in the city of Dallas.

**Alexander Wolfe** (J.D., Texas Wesleyan School of Law). Wolfe is currently in practice at Buckley and Madole P.C. in the Dallas/Fort Worth area, where he serves as managing attorney in the probate foreclosure section.



# Scholars

2014 INTERNS AND THEIR RESEARCH ABSTRACTS



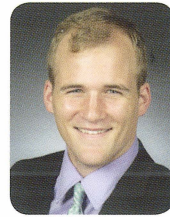
## WILLIAM ADDINGTON

Interdisciplinary Studies Major

### ***Enabling Civic Discourse: Community Group Inclusions in Arlington, Texas***

The ability of citizens to influence a democratic government to serve them most effectively has long been debated among scholars, politicians, and the public. Often scholars and observers assume that democracy should be strongest at the municipal level. However, in the United States, historically this has not been the case. Understanding the impediments to current community participation requires a multifaceted dissection of government institutional perspectives and individual motives for participation, as well as perceived effectiveness. In addition, it is necessary to examine existing patterns of interaction among organizations, individuals, and the government. The public is steadily concerned about the level at which its input is valued. In this research, ways in which the city of Arlington, Texas, interacts with the public are observed. A series of eight city council and planning and zoning meetings were observed and analyzed for numerous elements such as behavior, the way in which comments were expressed by government officials as well as the public, and the content of those comments. This study found that public meetings are a sufficient venue for gathering public input but changes are needed to increase quality participation. Doing so would improve the effectiveness of democracy at the local level and reduce the potential for unproductive decision making.

Mentor: Dr. Michan Connor, Interdisciplinary Studies (School of Urban and Public Affairs)



## MASON BARTELS

Biology Major

### ***Identification of the Broad- Horned Flour Beetle X Chromosome by Whole Genome Sequencing***

We sequenced the broad-horned flour beetle (*Gnatoceerus cornutus*) genome to establish the homology of sex chromosomes across approximately 140 million years of beetle evolution. We used the MiSeq sequencing platform to generate the approximately 25 million 300 base pair, paired-end reads. We then used CLC genomics workbench software to assemble the reads into contigs and mapped and compared our *G. cornutus* assembly to the previously published *Tribolium castaneum* genome. Based on differential read depth (i.e., the number of times each base was sequenced) in males, we found 98 contigs that were candidates for X-linkage. Among these 98 contigs, 72 mapped to the *Tribolium castaneum* X chromosome. And, perhaps of greater interest, we found four contigs that mapped to chromosome 5 of *Tribolium castaneum*. The 72 contigs that mapped to X and the four that mapped to chromosome 5 suggest that there has been a translocation between chromosome 5 and the X chromosome. Investigation into other species could reveal the direction of this translocation and potentially the selective pressures acting in *G. cornutus*, a species with sexually antagonistic morphology. As we collect and analyze more data on *G. cornutus*, we hope to resolve the identity of the Y chromosome and determine if it also has been conserved like the X.

Mentor: Dr. Jeffery Demuth, Department of Biology







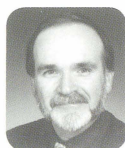
## COURTNEY BRODERICK

History, Philosophy Major

### ***The Texas Home Front During the Mexican-American War, 1846-1848***

The study of the Texas home front during the Mexican-American War, 1846-1848, is important not only because of Texas' proximity to Mexico, but also because the annexation of Texas to the United States was one of the most significant causes of the Mexican-American War. This research focuses on how the Mexican-American War contributed to fervent patriotism, with specific emphasis on the effect of military presence across the Texas home front. County organization and town growth continued during the years of war, and, in fact, the Mexican-American War actually contributed to the growth of certain Texas towns and counties. Additionally, the war affected Texas settlers economically, most of the time in a positive way. This research also argues that the Texas government continued to function normally during wartime, not only in county and town growth, but also in the matter of Indian affairs. Despite the assumption that Indian affairs were neglected, this research shows how they remained a priority for the Texas government during wartime, though the success of these efforts is debatable. The experiences of German immigrants, Tejanos, Native Americans, and Anglos are all examined, with observations about how the Mexican-American War contributed to the conditions of those settlers on the home front.

Mentor: Dr. Gerald Saxon,  
Department of History



## EMMANUEL Y. FORDJOUR

Biology Major

### ***Mutation Frequencies for Resistance to Rifaximin and Fusidic Acid in Clostridium difficile***

The emergence of epidemic strains of *Clostridium difficile*, such as B1/NAP1/027, has increased the severity and rates of recurrence of *C. difficile*-associated disease (CDAD) following metronidazole or vancomycin monotherapy. Recently, use of the rifamycin antibiotic rifaximin (RFX) as a chaser following vancomycin therapy was shown to be promising in reducing the incidence of CDAD recurrence. However, clinical use of Rifaximin is plagued by resistance emerging during therapy. Fusidic acid (FUS) is a fungus-derived antibiotic currently in clinical trials in the United States as treatment for Gram-positive infections.

Historically, antibiotic combination therapy has been employed to treat persistent bacterial infections and could reduce the risk of resistance emerging during therapy. However, multi-drug therapy remains under-examined in treating CDAD. Thus, we explored the efficacy of combining RFX and FUS against *C. difficile* by determining how frequent spontaneous resistant *C. difficile* mutants arise to RFX and FUS singly and in combination. RFX-resistant mutants emerged at a frequency of 10<sup>-8</sup>. However, resistant mutants were undetectable (mutation frequency <10<sup>-8</sup>) for selections with FUS alone and in combination with RFX. Overall, our results suggest that in combination, RFX potentiates the activity of FUS against *C. difficile*.

Mentor: Dr. Julian Hurdle,  
Department of Biology



## ISAAC FRIAS

Political Science, Spanish Major

### ***The Impact of the Illicit Drug Industry on Mexico's Democratization***

In Mexico, the drug problem and the war on drugs are contemporary issues made infamous by an increase in cartel presence, drug-related violence, and nondemocratic practices. However, it is important to note that the Mexican government has become more democratic in recent decades within the legislative, judicial, and executive branches through political competition and reform. This democratic progression occurred as Mexico simultaneously experienced an increase in levels of violence, in particular with recent elevated homicide statistics. The role of the Mexican cartels as major actors within the international drug industry facilitates illegal activity targeting structural democratic components such as government effectiveness, autonomy, and transparency, all pillars for democratic sustainability. The illicit drug industry negatively impacts state effectiveness by reducing internal security and causing economic instability. The cartels weaken state autonomy by violating Mexican sovereignty and encouraging corruption. In addition, the illegal drug business undermines transparency in the military (human rights) and again in the economy (money laundering). Thus, the promotion of conflict, corruption, and illegal practices by members of the illicit drug industry continues to create a negative impact on Mexico's transition toward a sustainable democracy.

Mentor: Dr. Dale Story,  
Department of Political Science





## VALENE GARR

Biochemistry Major

### ***Exploring Tissue Engineering Possibilities Using Autologous Progenitor Cells in the Peritoneum***

In vitro tissue models offer researchers an amazing platform to investigate solutions to long-standing medical problems' applications. The possibility of engineering regenerated tissues to better understand and treat human systems is a promise given from studies of autologous adult stem cells and progenitor cells. Using a murine peritoneal biomaterial implantation model, we have recently discovered that a large number of multipotent mesenchymal stem cells were recruited to the peritoneal cavity in mice with peritoneal catheter implants. Differentiation potential of these progenitor cells was tested and confirmed to adhere to osteogenic, adipogenic, myogenic, neurogenic, and possibly pancreatic lineages. Furthermore, we hypothesized that these progenitor cells could be differentiated into pancreatic lineages with collection from other locations in the body, such as bone marrow. Cell populations with characteristic identifying markers of the progenitor cells in the previous study were isolated from murine bone marrow and exposed to in vitro conditions to drive differentiation. Results of the investigation supported the idea. CD 34 negative autologous progenitor cells can be isolated from peritoneal and bone marrow sources and differentiated toward accepted lineages. We conducted several preliminary studies on the differentiation process and the isolation and culture of bone marrow-derived stem cells from mice, as well as explored peritoneal stem cells as a novel source for stem cell-based tissue engineering.

Mentor: Dr. Liping Tang,  
Department of Bioengineering



## STEPHANIE GUTIERREZ

Biology Major

### ***Examining Descriptive Patterns and Differences in College Students' Beliefs About the Nature of Science, Scientific Reasoning Ability, Religiosity,***

### ***Understanding of Evolution, and Acceptance of the Theory of Evolution***

Understanding evolution provides students with an underlying framework to the discipline of biology that is essential in understanding scientific concepts, yet most

researchers and educators find public understanding of evolution, in general, to be significantly deficient. The purposes of this study were to 1) examine patterns and differences, 2) explore interrelationships, and 3) determine the best predictive model among students' views about the nature of science, scientific reasoning ability, religiosity, and understanding of evolution to determine their impact on students' acceptance of evolution. This research was conducted at a large research public university in the southwestern United States on one hundred undergraduate students of diverse backgrounds enrolled in various liberal arts classes with differing academic majors and undergraduate levels. The study administered questionnaires measuring the students' understanding of evolution, views of the nature of science, understanding of evolution, religiosity, and acceptance of evolution. The results of this study found patterns in students' views about the nature of science based on ethnicity and scientific reasoning ability based on gender, as well as correlations between reasoning ability and understanding of evolution and views of nature of science and acceptance of evolution, among others. Lastly, the data concluded that views about the nature of science, religiosity, and understanding of evolution are the best predictors of acceptance of evolution. The results may help educators design better instruction and aid in students' learning processes by providing an understanding of how these factors may hinder or support students' acceptance of evolution.

Mentor: Dr. Ann Cavallo,  
Department of Curriculum and Instruction



## PETER HEDLESTON

English Major

### ***Pragmatism in Mark Twain's The Adventures of Huckleberry Finn***

Mark Twain's *Huck Finn* has over a century of literary interpretations, but few have noted Huck's pragmatism and none do a pragmatistic interpretation. A pragmatistic interpretation is important because it increases the usefulness of literary criticism. Pragmatism looks at the purpose of things; therefore, the pragmatistic method developed for this project looks at purpose in literature. This study interprets the novel with this new literary method, examining the philosophy of pragmatism from its beginnings with the lectures of William James, continues with a study of Richard Rorty's *Contingency, Irony, and Solidarity*, and finally extracts and further develops the terminology that Rorty created by applying it to Twain's literary masterpiece. In doing this, a new literary method of criticism is defined and used to interpret one of America's greatest pieces of literature. The





first section briefly explains the philosophy and how it will be applied to the novel. The next section takes a deeper look at pragmatism, detailing the terminology and ideas that can be used in literary criticism—concentrating on how to interpret characters and their beliefs. The work continues with an application of the defined vocabulary in a pragmatistic interpretation of Huck and his associates and concludes with a brief explanation about the work and how pragmatistic interpretation may be furthered and the conversation continued.



Mentor: Dr. Kathryn Warren,  
Department of English



## DOREEN HERNANDEZ

History Major

### **Mexican-American Child Migrant Workers in the Lower Rio Grande Valley from the 1960s to the 1980s**

Migrant and seasonal agricultural workers have always been vital to farmers to help cultivate, pick, and pack the produce that grows in the nation's fields. Migrant workers toiled under the scorching sun for long hours with very little pay picking the fruits and vegetables that fed millions of American families. Farm workers were forced to work in harsh conditions and travel thousands of miles looking for work, and were denied social welfare. When one thinks of a migrant worker, the image of a man or woman comes to mind, but we often forget that child migrant workers were alongside their parents on the farms. Thousands of children were forced to work in the fields, whether school was in session or not, and even if they were under the legal minimum working age. Despite the 1938 Federal Labor Standards Act, which for the first time regulated minimum age of employment and hours of work for children, they continued to work in the agricultural fields throughout the latter half of the 20th century. This paper describes the circumstances that Mexican-American child migrant workers faced while working in the Rio Grande Valley and across the country from the 1960s to 1980s.



Mentor: Dr. Cristina Salinas,  
Department of History



## JESSICA MARIA ISCH

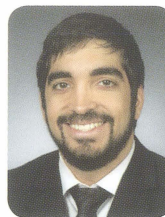
Spanish Major

### **A Comparative Analysis of Two English Translations of "No oyes ladrar los perros" by Juan Rulfo**

This research focuses on comparing two English translations of Juan Rulfo's short story "No oyes ladrar los perros" that appeared in the short story collection titled *El Llano en Llamas*, published in 1953. The translations examined are the only two English translations of this story published in the United States. The titles for the translations in English are "No Dogs Bark" by George D. Schade, published in 1967 from the book *The Burning Plain*, and Ilan Stavans' "You Don't Hear Dogs Barking" from the book *The Plain in Flames*, published in 2012. These translations were analyzed using Jean-Paul Vinay and Jean Darbelnet's comparative stylistics as the main theoretical framework. The purpose of this paper was to examine what kinds of modulation procedures (changes in point of view in a translation) were used by the two translators. In addition, the texts were analyzed to determine if there were any omissions in the translations and how these may have changed the language and tone of Juan Rulfo's short story, "No oyes ladrar los perros." The aim of the research was to compare and contrast any differences found and determine the impact on the reader of the choices made by the two translators. As a result, it was found that the translations did indeed change the point of view of the story to reflect the translators' own interpretations of "No oyes ladrar los perros."



Mentor: Dr. Marko Miletich, Department of  
Modern Languages (Spanish)



## CARLOS LARA

Physics Major

### **Applications of Higher-Derivative Klein-Gordon Equations in Flat and Curved Spacetime**

Quantum field theory and the general theory of relativity have resisted unification for decades. This research takes a step in that direction by deriving higher-derivative Klein-Gordon equations in flat spacetime, and then generalizing them to curved spacetime. Results show that solutions to these equations can be used to explain an unsolved problem in theoretical physics: quantum entanglement (nonlocality). Some solutions to the equations, known as tachyonic fields, involve particles moving with a speed greater than the

speed of light. Therefore, since quantum entanglement is a phenomenon in which two particles communicate their quantum states instantaneously across arbitrarily large distances, the potential application of higher-derivative Klein-Gordon equations in flat and curved spacetime to this phenomenon seems to be natural. Furthermore, results show that higher-derivative quantum field theories lead to extensions of conventional quantum theory. The research goal will be met by taking the non-relativistic limit of the derived equations and showing that they reduce to Schrodinger-like equations, which obey principles of Galilean relativity. The long-term purpose of this work is to discover a quantum theory of gravity, which is the holy grail of modern theoretical physics. Its formulation would be one of the greatest achievements of the human mind.

Mentor: Dr. Zdzislaw Musielak,  
Department of Physics



### LAWANDA MCKELVY

Communications Studies Major

#### ***The Impact of Internet-Based Communication on the Acculturation of Muslim Women in the United States***

This study examines the impact of Internet-based communication on acculturation of Muslim women in the United States. Grounded theory methodology (Glaser, 1992) and Sam and Berry's model of acculturation (2006) were used as theoretical and analytical frameworks. Semi-structured interviews were conducted with 10 Muslim women to learn about their media use and experiences in forming and maintaining relationships in the United States. The data indicates that Muslim women use a variety of Internet-based media such as Facebook, Skype, WhatsApp, Instagram, and Viber for communicating with family and friends locally and abroad. Participants reported using those types of media because the applications are already used by most people, are convenient to use, and allow communication with multiple people simultaneously. Religion and culture seem to be closely tied together in the everyday lives of these women. The data suggests that the participants attained the level of acculturation defined as integration. The participants used Internet-based communication to build and create relationships in their new communities. Those communication options also allowed them to stay connected with family and friends in their native countries. Being active in their communities through their religion seemed to also contribute to their acculturation.

Mentor: Dr. Karishma Chatterjee,  
Department of Communication



### OMOMAYOWA OLAWOYIN

Mathematics Major

#### ***Analysis of the Cognitive Level of Student Discourse Elicited By Teacher Response to Pivotal Teaching Moments***

The study of pivotal teaching moments (PTMs) is taking primary focus in the realm of mathematics education research. PTMs are described as critical instances within a lesson that are initiated by student interruptions and provide an avenue for teachers to modify instruction in a way that will affect students' understanding (Stockero & Von Zoest, 2013). How a teacher chooses to respond to these moments may influence the cognitive level(s) of student discussions in the classroom. While many researchers have focused on identifying specific PTMs and teacher responses to PTMs, very little is known about how these responses impact discourse. This study examines a three-level relationship between PTM types, how teachers respond to them, and the resulting student discourse. We focused on five types of PTMs and teacher responses in a set of third- and fourth-grade mathematics lessons and categorized student discourse using a classroom observation protocol. After conducting a one-way ANOVA and a Tukey-Kramer test on the data collected, it was found that teachers who pursued student thinking received a higher level of student discourse than teachers who ignored/dismissed PTMs, simply acknowledged them, or emphasized mathematics. Results of this study may prove helpful for identifying concrete ways that educators can increase the cognitive level of student discourse within their classrooms.

Mentor: Dr. Christopher Kribs-Zaleta,  
Department of Curriculum and Instruction,  
Department of Mathematics



### KRISTEN SEMENTO

Art History Major

#### ***Ceci N'est Pas Un Chien: A Discussion of the Contextual, Psychoanalytic, and Historical Provenance of Imagery in Luis Buñuel's Un Chien Andalou***

This research discusses the historical, contextual, and psychoanalytical provenance of imagery in Luis Buñuel and Salvador Dalí's 1929 surrealist film *Un Chien Andalou*. For the last 86 years, this iconic work of the French avant-garde has been the subject of international scholarship, a distinction that it owes to its graphic violence, eroticism, and discombobulating, non-linear plot. As a work of surrealism, the film is strongly associated with Freudian





psychoanalytic theory but has also been scrutinized with numerous other methodologies. Despite the breadth of analyses performed, *Un Chien Andalou's* actual message remains elusive. Although this research does not answer the question of meaning in the film, it evaluates the efficacy of such methodologies, with particular attention paid to the psychoanalytic method. In addition to a critique of psychoanalysis, this research also investigates the origin of the images by examining contextual and historical influences. This research analyzes a variety of possible sources for the film's startling imagery, from World War I to Romanticism to Buñuel's and Dalí's own biographies. After these various sources are evaluated for viability, they are synthesized to present an understanding of the film that engages and respects the directors' own known ideas and statements regarding this classic and iconic work of surrealist avant-garde cinema.



Mentor: Dr. Benjamin Lima,  
Department of Art and Art History



### BREANNE SOTERIS

Psychology Major

#### *The Effects of Midazolam on the Nucleus Accumbens in the Context of Pain*

The nucleus accumbens (NAc) is a part of the brain well known for its role in processing reward and aversion; however, noticeably more research has focused on the NAc in terms of pleasure, rather than pain and analgesia. The purpose of this research was to investigate the activity of the nucleus accumbens in response to pain while under the GABA-agonist midazolam. It was hypothesized that midazolam would attenuate the pain response. Electrodes were implanted into the left core of the NAc in 20 female Sprague-Dawley rats. Subjects were given a 5mg/kg intraperitoneal injection of midazolam ( $n=12$ ) or saline ( $n=8$ ). A subcutaneous injection of 1.5 percent formalin was then administered into the right or left hind paw. Contrary to the hypothesis, local field potential analyses revealed that midazolam significantly intensified the response of the NAc to pain on the right side of the body, for frequencies in the delta, theta, alpha, and beta bands. However, the saline group with the right-injection of formalin had significantly more responses in the gamma band than all other groups or

frequency bands. This suggests that the NAc processes pain in a contralateral fashion, and that midazolam facilitates the response between frequencies 0-30 Hz. Perhaps this information can be used to develop pain relief treatments that manipulate NAc activity to induce NAc-mediated analgesia.



Mentor: Dr. Yuan Bo Peng,  
Department of Psychology



### SAMANTHA WHITE

Psychology Major

#### *Prejudice Reduction through Contact Theory and Cognitive Dissonance: Deploying Dissonance with an Expectation of Contact Toward Muslims*

Over the past few decades, researchers have examined various methods of reducing prejudice. Although both contact research and dissonance research have each addressed prejudice reduction separately, no researcher has yet developed a way to combine cognitive dissonance and contact theory methods as a means of reducing prejudice. In this study, over 500 undergraduates from The University of Texas at Arlington completed a prescreening survey that measured attitudes toward Muslims. Thirteen men and 30 women who scored below average on Muslim attitudes were randomly assigned to one of two conditions: a high-choice condition (participants had a choice of choosing an out-group partner) and a low-choice condition (participants were assigned an out-group partner). Participants were then asked to fill out a demographic survey and a schedule sheet for the partner interaction, and to complete the main dependent variables. It was expected that those who chose to work with an out-group member would reduce their prejudice more so than those who did not choose to work with an out-group member. Muslim attitude scales were compared between high-choice ( $M = 6.78, SD = 1.24$ ) and low-choice conditions ( $M = 6.60, SD = 1.85$ ), but there are not yet any significant differences,  $t(41) = -.257, p = .190, d = -.0058$ . However, the data collection is ongoing; as of now the results are not yet significant.



Mentor: Dr. Jared Kenworthy,  
Department of Psychology

# Scholarships

AWARDED TO MCNAIR SCHOLARS

## Friends of the UTA Library McNair Scholarship Awards

At their November 7 meeting, the Friends of the UTA Library awarded two \$500 scholarships (and two plaques) to Emmanuel Fordjour, a biology major, and Kristen Semento, an art history major, for their McNair research presentations and papers. Fordjour's campus mentor is Julian Hurdle from the Biology Department (and Mark Wilcox from the University of Leeds), while Semento's is Benjamin Lima from the Art and Art History Department. The scholarship recipients are determined by the excellence of the scholars' oral research presentations and papers, as assessed by members of the Friends McNair Scholarship Committee: Melissa Deur, LaVerne Knezek, and Carol Lehman. The first Friends' McNair Scholarships were awarded in 2005.



Joan Reinhardt, Kristen Semento, Emmanuel Fordjour, and Melissa Deur

The McNair Scholars Program congratulates its 2014 scholarship winners for their excellent work and thanks the Friends of the UTA Library for its continued support of this program. Special thanks to Rebecca Bichel, dean of the UTA Library, and the current officers of the Friends of the UTA Library: Melissa Deur (president), Daniel Kauth (first vice president), Julie Alexander (second vice president), LaVerne Knezek (treasurer), Julie Grondin (secretary), and Kit Goodwin (parliamentarian).

## 2014 MCNAIR RESEARCH INTERNS (SUMMER BANQUET)



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