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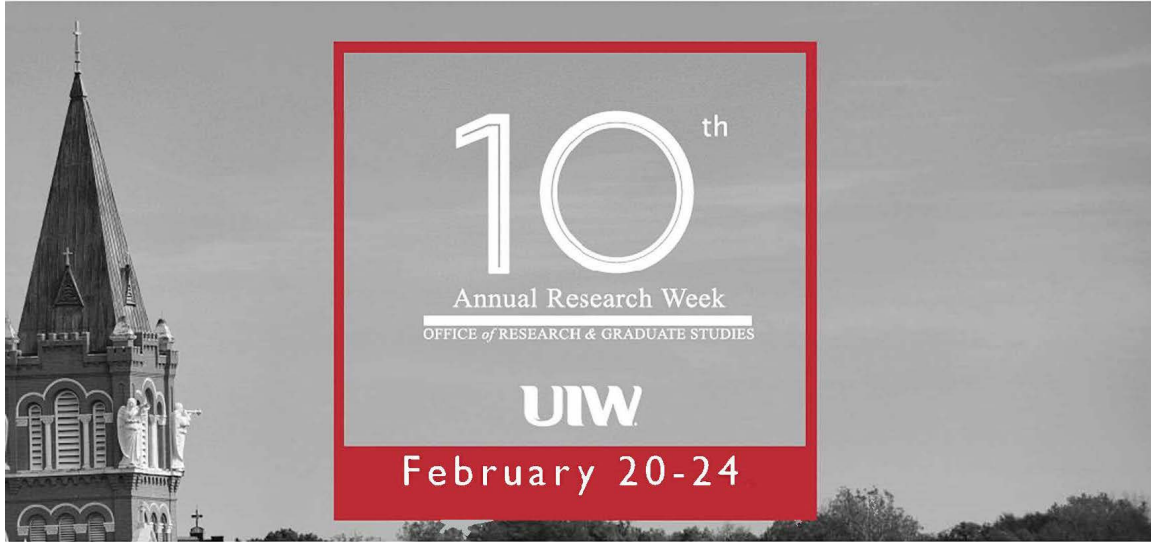
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RESEARCH RECONSIDERED: A
DECADE OF INUIRY
Event Proceedings: Spring 2017

“Research must continue to be the centerpiece of intellectual life, and our commitment to research must grow, because our problems are growing.”

- Ernest L. Boyer



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SCHEDULE OF EVENTS

MONDAY, FEBRUARY 20

Moody Professor Lecture

12:15 pm • Mabee Library Auditorium • Reception to Follow

12:15 pm- 12:45 pm • Dr. John Perry
The Power of Perception
University of the Incarnate Word

TUESDAY, FEBRUARY 21

Research Week Welcome

12:00 pm- 1:00 pm • Rosenberg Sky Room • Lunch Reception

12:00 pm- 12:10 pm • Dr. Osman Özturgut
Dean's Welcome

12:10 pm- 12:15 pm • Dr. Michael Frye
Introduction of Keynote Speaker

12:15 pm- 1:00 pm • Tomas E. Goldaracena
From Discovery to Application: The Undergraduate Research Experience

Podium Presentations

1:00 pm- 4:10 pm • Rosenberg Sky Room

1:00 pm- 1:20 pm • Dr. Wanita Mercer
A Case for Spiritual Change Readiness: A Correlational Study

1:25 pm- 1:45 pm • Elisabeth Hand
Music Therapy with Survivors of Trauma: Gender Implications

1:50 pm- 2:10 pm • Jordan Wetz, Dr. A. Philip Aitsebaomo, & Dr. Carlos Garcia
Effect of Ozone Exposure of Cone Photoreceptors

2:15 pm- 2:35 pm • Dr. Danielle J. Alsandor & Dr. Leslie Martinez

Critical Issues Facing Underrepresented College Students at an HSI as Identified by Student Affairs Educators and Professional Staff

2:40 pm- 3:00 pm • Dr. Michael Mcguire, Dr. Shishu Zhang, Dr. Catalina Zarate, & Mega Martinez

Bexar County's Reentry Program: A Cost Benefit Analysis

3:05 pm- 3:25 pm • Sr. Martha Ann Kirk & Ivan Acevedo
Documenting a "Living Legacy" On-line: Carla De Sola

3:25 pm- 3:45 pm • Gabriela Bogran
Sophia: The Feminine Holy Spirit

3:50 pm- 4:10 pm • Dr. Shishu Zhang & Dr. Gregory J. Soukoup
The Impact of Religious Regulation on International Health, Wealth, and Happiness

WEDNESDAY, FEBRUARY 22

Podium Presentations

11:00 am- 2:15 pm • Rosenberg Sky Room • Light Lunch Reception

11:00 am- 11:20 Am • Dr. Zenon Culverhouse
Socrates' Stingray Effect: Diagnosing Silence in Philosophical Discussion

11:25 am- 11:45 am • Alan Amaya, Kelley Magill, & Lakiesha Jackson
Analyzing the Protein-Protein Interaction Network of TNF-Alpha

11:50 am- 12:10 pm • Frank Cassidy
An Evidence-based Learning Study

12:15 pm- 1:00 pm • Tomas E. Goldaracena, Dr. Michael Frye, & Dr. Sreerenjini Nair
Multi Autonomous Vehicle Collaboration: Interactive Demo

1:05 pm- 1:25 pm • Margarita Mcauliffe
Impacts of Officer Use of Force: A Multi-case Study

1:30 pm- 1:50 pm • Dr. Sreedevi Ande, Dr. Okan Caglayan, & Erik Coronado
Girls in Engineering, Math and Science (GEMS) Camp at the University of the Incarnate Word

Poster Presentations

2:00 pm- 5:00 pm • Rosenberg Sky Room

Multiple Projects

Moody Professor Lecture

5:00 pm- 6:00 pm • Rosenberg Sky Room • Reception to Follow

5:00 pm • Dr. Malcolm Ree

Statistical Failure or Why I Didn't Get the Expected Results

Our Lady of the Lake University

THURSDAY, FEBRUARY 23

Podium Presentations

11:50 am- 2:15 pm • Rosenberg Sky Room • Light Lunch Reception

11:50 am- 12:10 pm • Dr. Veronica G. Martinez-Acosta

Sand in my Shoes: A Sabbatical at the Marine Biological Laboratory

12:15 pm- 12:35 pm • Scarlett Pacheco

The Mythic in the Mundane: Sacrifice and Tragic Hero in Sarah Orne Jewett's A White Heron

12:40 pm- 1:00 pm • Kristina Lopez

Nest Characteristics and Behavior in Captive Turtles

1:05 pm- 1:25 pm • Paul Huron

*Development of a Signal Analysis Identification Program for Aircraft/Disaster Visualization by
Converting Audio Signals using Fourier Transform Algorithms*

1:30 pm- 1:50 pm • Dr. Christopher Edelman

Plu-who? Research in the History of Philosophy: What it is and Why we do it

1:55 pm- 2:15 pm • Dr. Joshua Robbins, Robert Cavazos, Andi Silva, & Zane Evans

Erasing to Remember: Reclaiming Traumatic Narratives through Erasure

Thursday Night Live

6:00 pm • Seddon Recital Hall • Wine and Cheese Reception to Follow

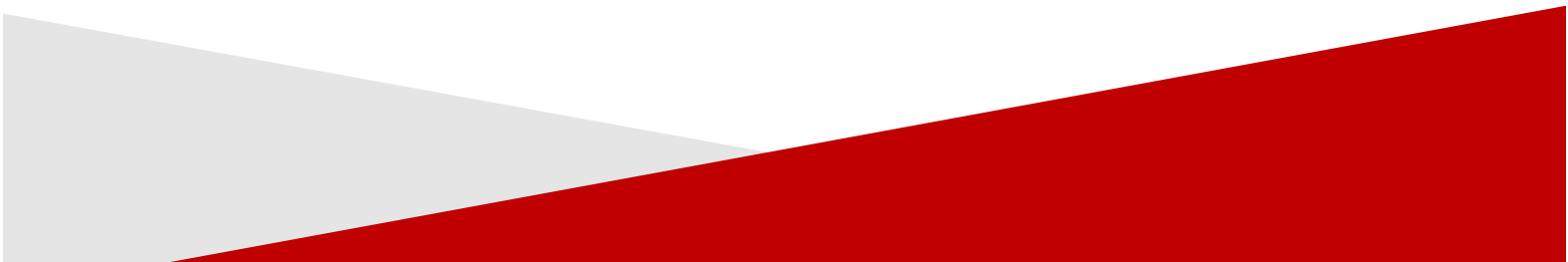
FRIDAY, FEBRUARY 24

Fulbright Scholar Panel Discussion

3:00 pm • Mabee Library Special Collections • RSVP only Event

3:00 pm- 4:00 pm • Dr. Pat Lemay Burr, Dr. Brian McBurnett, & Dr. Randall Nadeau
Discover How You Can Make an Impact Abroad!

The Core Fulbright U.S. Scholar Program application opens February 1. Come hear from faculty as they share their experiences with the Fulbright Program and advice on what to expect in the application process.



DISCOVERY

Boyer (1990) states that the “scholarship of discovery, at its best, contributes not only to the stock of human knowledge but also to the intellectual climate of a college or university” (p.17).

THE OFFICE OF RESEARCH & GRADUATE STUDIES

In collaboration with the UIW global community, the Office of Research and Graduate Studies provides strategic direction, support, and oversight to post-baccalaureate education and research at UIW. In support of the university's mission, we develop policies and procedures for post-baccalaureate education and research and ensure quality and compliance. We promote responsive, engaged scholarship and enhancement of academic and research integrity.

We accomplish our mission through education, research, creative activities, and service while being good stewards of the resources entrusted to us.

Why Research is Important

Dr .Osman Özturgut

Dean, Office of Research And Graduate Studies



Our mission emphasizes responsive, engaged scholarship and service-orientation. Through responsive, engaged scholarship, we focus on the intersectionality of teaching, research, and service as a way to respond to the needs of the communities we are involved in, both in local and global contexts. We believe the intersectionality among three responsibilities of higher education produces knowledge and higher thinking skills, enhances civic engagement, and results in positive social change.

We know that much of what we do in our daily lives is based on common sense. We make sense of our actions, behaviors, values through what we have learnt from others or what we have learnt through personal experience or observation. However, sometimes, common sense is not the best approach. We encounter conflicting theories about what is best or what works in a particular situation. What works in one situation or for one condition might be ineffective or even dangerous in another, or when combined with other measures. Common sense approaches may overlook the impact of external factors which may contribute to what is observed.

The truth is that we cannot really begin to imagine what the world will be like in 10 years. We do know it will be fundamentally different from today; and we can be sure that it will be different because of science, technology and innovation which will almost certainly start out in the university research environment. Research is not only critical to the economic and social development of society; it is also critical to the mission of our University.

Some research benefits are obvious - for example, benefits of an economic kind (a new product, technology or service), a social kind (increased knowledge of relevance to policy makers), of an environmental kind (improved techniques to ensure sustainable food production), of a cultural kind (increased understanding of cultural values or social approaches) or of a health kind (a better understanding of the causes of medical conditions or better means of delivering health services). For some research the benefit may not be so obvious. As Albert Einstein remarked: “If we knew what it was we were doing, it would not be called research, would it?”

Nevertheless, it is this research which is the foundation for knowledge that makes possible so much of the innovation and application that provides wider benefit. Universities are the principal strength of our innovation system. At UIW, we take pride in our research and know that through our search for and communication of truth, we become stronger in educating “concerned and enlightened citizens within the global community.”

From Discovery to Application: The Undergraduate Research Experience

Tomás E. Goldaracena

Keynote Speaker



Tomás E. Goldaracena is an engineering student, originally from Ciudad Valles, San Luis Potosi, Mexico. He has worked as Lead Research Assistant at UIW's Autonomous Vehicle Systems lab for three years, conducting research on collaborative controls, and biologically inspired robotic behavior. He served as founder and president of the Engineering and Physics Club for two years, has been acting member of UIW's Math club, and co-captain of the UIW Club Soccer team. He has worked towards inspiring young women to pursue STEM education through programs such as MiniGems, and coached the First Lego League robotics team at the Ella Austin Community center for two years. Tomás currently works as an engineer for Quanser.

TEACHING

Boyer (1990) defines the scholarship of teaching as “not only transmitting knowledge, but transforming and extending it as well” (p.24).

THE MOODY PROFESSORSHIP

This award was established in 1971 at UIW and Our Lady of the Lake University through a grant made to the two institutions by the Moody Foundation. Each year a faculty member is named Moody Professor from each institution. The awarding of the Moody Professorship reflects a high level of scholarship, teaching excellence, and community service attained by the recipient. This is the highest faculty honor bestowed by UIW. The Moody Professors must deliver two public lectures. At UIW, the Moody Professor also delivers the Graduation Address in December. The Moody Professor receives a stipend of \$3000 and a faculty development award of \$2000, which may be spent as they designate upon approval of the Provost.



The Power of Perception

Dr. John Perry



Dr. John Perry is a full professor teaching undergraduate and graduate courses in writing and speech in the Department of Communication Arts in the School of Media and Design. He also served previously for twenty years as chair of the speech department.

A challenging professor with the heart of a true teacher, Dr. Perry demonstrates compassion and inspires his students to excellence. He builds relationships, and his faith in his students' abilities uncovers their hidden talents.

In addition to his regular teaching responsibilities, Dr. Perry is often seen giving presentations to other schools and divisions within UIW. Whether the presentation is for the graduate support center, physical therapy, pharmacy school or first year engagement, his boundless energy and love of craft inspires students, faculty and staff to improve their writing and interpersonal communication skills.

Homage given to Dr. Perry by Dr. Trey Guinn, assistant professor in communication arts reflects Dr. Perry's dedication to UIW students, "Dr. Perry goes the extra mile, stays the extra hour, and gives of himself selflessly time and again. He is friendly, eccentric, quick with a smile in all settings, and exhibits the attributes and characteristics of a Moody professor in his daily life. Whether it is in the classroom, his writing, his socializing on- and off-campus, Dr. Perry inspires and motivates students through this high level of scholarship and teaching excellence."

He authored numerous articles ranging from *Educational Theatre Journal*, *Quarterly Journal of Speech and English Journal* to *Early American Life History Magazine* and *Texas Heritage*. Currently conducting an independent research on the Third Reich, he has written for magazines such as *Naval History* (published by the U.S. Naval Academy), *WWII History*, *World at War*, *Military History*, and a cover story for *Veterans of Foreign Wars*.

To his credit he has over thirty refereed publications. Perry has written four books: *Texas: An Illustrated History*, *James A. Herne: The American Ibsen*, *Jack London: An American Myth*, and a collection of Jack London stories published by CBS. These works have been praised by four Pulitzer Prize winners: Justin Kaplan, Paul Green, James A. Michener, and Arthur M. Schlesinger, Jr., house historian for President John F. Kennedy. His books have been reviewed in magazines such as *Choice*, *Publisher's Weekly*, *American Journal of History*, *The New Yorker*, and *New York Times Book Review*.

A prolific writer and scholar, Dr. Perry holds a B.S. in speech and an M.A. in drama from Syracuse University. He earned his Ph.D. in Speech Communication from Southern Illinois University. There, he was appointed special doctoral assistant. Additional graduate studies include both the University of Rochester and University of Oxford in England.

Statistical Failure or Why I Didn't Get the Expected Results

Dr. Malcolm Ree



Malcolm Ree is Professor of Leadership Studies at Our Lady of the Lake University in San Antonio Texas. Prior to this, he was the Senior Scientist at the Air Force Research Laboratory at Brooks Air Force Base. He was associated with the Human Effectiveness Directorate and had responsibility for the technical program for the selection and classification of all Air Force enlisted personnel and for the selection of pilots, navigators and other aircrew members. For ten years he was the chief psychometrician of the Armed Services Vocational Aptitude Battery which is administered more than one million times a year.

Dr. Ree received his Ph.D. from the University of Pennsylvania in Statistics and Psychometrics. He has written more than 75 articles in refereed journals and more than 100 Air Force Technical Reports as well as more than a dozen chapters for both applied and scholarly books. Currently, he serves on the editorial review board of several scholarly journals. He is the former book review editor of the *Journal of Educational and Behavioral Statistics*.

APPLICATION

According to Boyer (1990) the scholarship of application is a process of scholarly service in which “theory and practice virtually interact, and one renews the other” (p. 23).

DEMONSTRATION OF MULTI-AUTONOMOUS VEHICLE COLLABORATION

The Multi-Autonomous Vehicle Collaboration demonstration will be conducted by student researchers from the Autonomous Vehicles Systems Laboratory, and will consist of several experiments involving autonomous ground and air vehicles, a two degree of freedom helicopter, and a haptic feedback device. Both the ground and air vehicle demonstrations will be controlled by an indoor camera tracking system which will allow all the vehicles to navigate accurately and safely. The demonstrations will consist of missions involving single and multiple ground vehicles collaborating together as well as a single air vehicle flight demonstration.

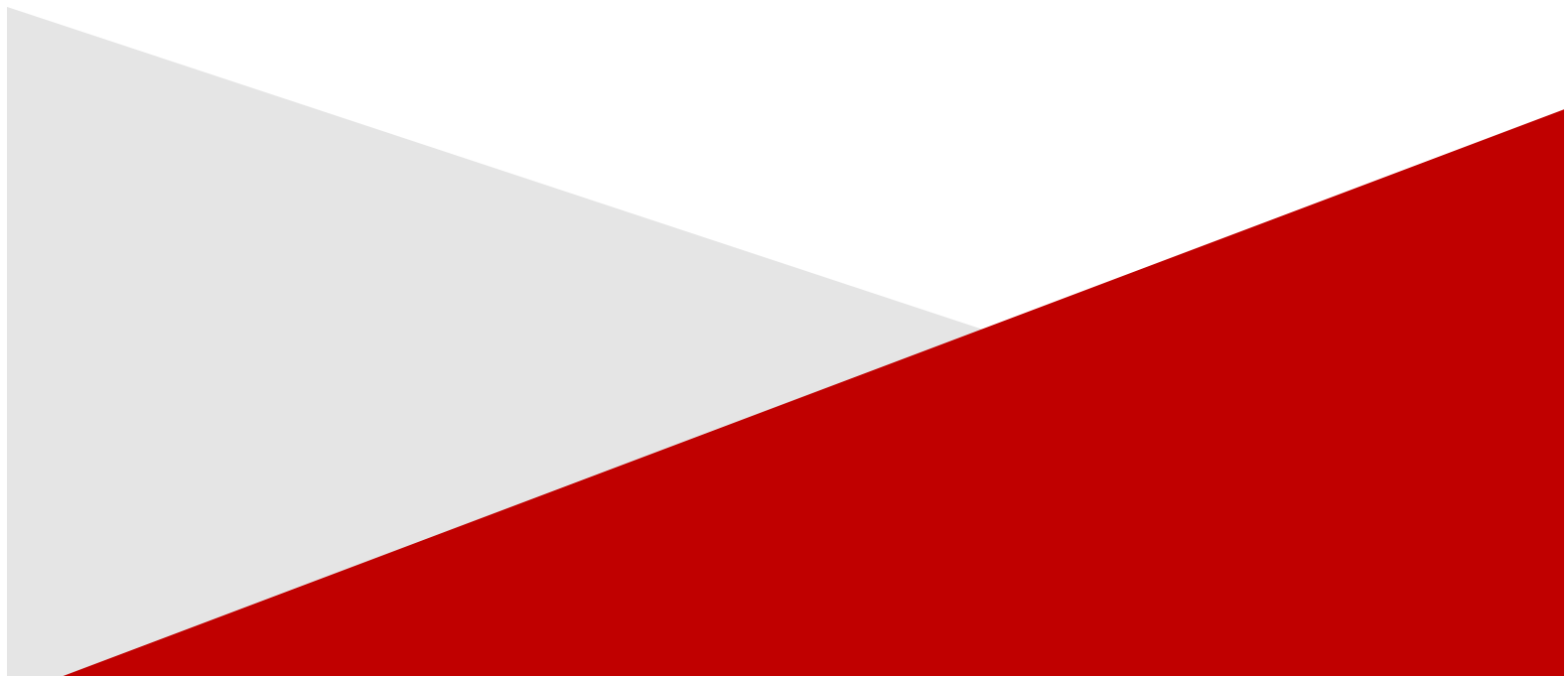


INTEGRATION

Boyer (1990) describes the scholarship of integration as “making connections across the disciplines, placing the specialties in larger context, illuminating data in a revealing way, often educating non specialists, too” (p. 18) as a way to enhance original research that “seeks to interpret, draw together, and bring new insight” (p.19).

THE COLLEGE OF HUMANITIES, ARTS, AND SOCIAL SCIENCES

The College of Humanities, Arts, and Social Sciences (CHASS) commits itself to the discovery, preservation, and dissemination of knowledge needed to achieve the ideals of a liberal arts education. The College offers this education to all undergraduate students and houses more than twenty different academic programs and one graduate program (master's degree in Religious Studies). Our faculty and students collaborate to pursue truth in a community that values diversity and the innate human dignity of each individual. The College strives to develop in all UIW students the capacity for creative and critical thought, effective oral and written communication skills, as well as ethical values and a commitment to community service which recognizes the need for social justice. Through its various programs of study, the College of Humanities, Arts, and Social Sciences contributes to the formation of responsible citizens by providing an educational foundation upon which students may build their lives and professions.



*Sophia: The Feminine Holy Spirit*Gabriela M. Bogran

An understanding of the female experience in the Christian faith can provide revelatory insight into the mystery of the Trinity. In this presentation, I will address the history and importance of Sophia, also known as the feminine Holy Spirit. I will also discuss the ways in which traditional views on women and their bodies have stifled all thoughts of a female image of God and the ways in which Sophia fulfills that female imagery of the Divine.

The Trinity is a core belief in the Christian faith. The most prominent imagery of this mystery of faith is God the Father, God the Son, and God the Holy Spirit. This image, though important, does however point out a notion that many followers either ignore or do not see as important: each essence of God is described as inherently male. However, God can be described with female imagery. If God is supposed to transcend gender, why do individuals continue to rely on almost exclusively male pronouns and metaphors? Understanding Sophia as the feminine aspect of God can offer Catholics, primarily young girls, an appreciation of the Judeo-Christian God as both male and female, rather than inherently male.

In the past within Catholic theologies, there have been attempts at transcending the gender of God, but some of these methods have their mishaps. Many theologians have attempted to neutralize the Holy Spirit by using the pronoun 'it,' or have attempted to feminize God altogether. However, some have also tried to create a balance between the male and female of the Divine by promoting the belief in Sophia. It is believed that through the spirit of Sophia, a balance can be made to transcend the descriptions of the Divine. However, if theologians wish to promote the belief in Sophia, why have they not succeeded?

Through the aid of feminist theologians such as Elizabeth Johnson and Rosemary Radford Ruether, I have been able to produce my research and findings. Johnson and Ruether were two of the main feminist theologians that wrote extensively on the understandings of Sophia, the history of her importance within the Bible, and why she had been cast aside due to patriarchal beliefs and systems. In my opinion however, it is through their interpretations and translations of the Old Testament passages that truly generate an enlightening outlook on the femininity of God through Sophia.

My extensive research has not only helped me discover means to describe God beyond the male pronouns and metaphors, but it has also aided me in appreciating the feminine in God. By accepting and recognizing God in both male and female terms, believers create a deeper intimacy in the Divine with infinite endearments and possibilities. God is no longer held within restrictive terms and understandings.

*An Evidence-based Learning Study*Francis B. Cassidy, MA, MEd

The purpose of this research is to conduct an evidence-based study for the Adoration, Community, Theology, and Service - Life Long Learning (ACTS-L3), Adoration Module, which is a Catholic life skills program. The goal to determine if participating in the Adoration Module, its practical application of knowledge and skills and the overall learning experience, resulted in a positive lifestyle change.

The unique ACTS-L3 program was developed in collaboration with the Prison Ministry Free World volunteer and offender first person perspectives and enforces personal accountability at a personal and communal level. The program has expanded into the Interfaith Community, comprised of leaders from six major faith groups.

The Adoration Module is the first of four modules that comprise the ACTS-L3 Catholic Life Skills Program. This program welcomes all participants seeking a faith-based approach to personal development providing an opportunity to apply shared knowledge and skills to daily life experiences. The program of instruction embodies the core competencies of the Catholic Church, with interfaith commonalities embraced and differences appreciated. This particular module introduces participants to the meaning of commitment and accepting conversion as a lifelong process.

Participants engage in fellowship, self-discovery, and prepare for re-entry into society. Learning activities assimilate a threshold of change to the decisions and actions which led to incarceration. The program strives to instill a transformation of mindset to create a productive and positive influence within communities.

Analyzing participants' completion of this module is crucial to the successful conclusion of the overall program. Commitment and accountability are key factors threaded throughout all learning activities and are often reasons for participants choosing to repeat the module.

Research will be conducted using an experimental method with paper response questionnaires, using a 5-point Likert scale anchored between 1 (never use) and 5 (frequent use). This methodology is most conducive due to the incarcerated state of the target audience and non-availability of electronic media.

The research outcomes will establish a tangible correlation between the learning experience and results of applying knowledge and skills gained. The UIW Office of Graduate Studies and Research granted IRB approval on August 24, 2016 and the Texas Department of Criminal Justice external research granted approval on November 4, 2016.

*Socrates' Stingray Effect : Diagnosing Silence in Philosophical Discussion*Zenon Culverhouse, PhD

Philosophy has a long history of challenging people's basic and often deeply held beliefs about reality, knowledge, free-will, morality, religion, etc. As a result of this challenge, people studying philosophy experience psychological discomfort in various forms, such as uncertainty, puzzlement, and cognitive "dissonance" over inconsistent beliefs, confusion, and even anger. Plato's dialogues, for instance, describe Socrates' effect on those he examines as a "stingray" that numbs (Plato's *Meno*), a statue of Daedalus that is always shifting (Plato's *Euthyphro*), and as a midwife of the mind, assisting in the painful birth of ideas (Plato's *Theaetetus*). Philosophers acknowledge this discomfort they produce in others, but also see it as a necessary step towards enlightenment. Socrates famously described himself as a "gadfly" irritating the body politic of Athens into action (Plato's *Apology*). The problem is that this discomfort can backfire, and has caused many to turn away from or against philosophy and philosophers.

Philosophy classes today are no different. Students often experience psychological discomfort as a result of challenging their beliefs, and this discomfort often discourages students from doing the difficult intellectual work required to think through these challenging questions. This is the "stingray effect" in the classroom, yet it is not often made the direct focus of pedagogy. This project offers some ways of diagnosing the "stingray effect" in the classroom and looks at some promising ways of using writing exercises to help students manage this discomfort. The latter part of the project draws from philosophers throughout history who have used writing as a means to managing this discomfort. For example, while in his prison cell awaiting execution, Boethius wrote the *Consolations of Philosophy* as a way of using philosophical reasoning to overcome his distress about the hand fortune dealt him. If this discomfort is a major impediment to the students' willingness to engage with difficult texts and arguments, reducing that discomfort should result in (a) increased motivation to engage the course materials and, ultimately, in (b) more productive inquiry.

*Plu-who? Research in the History of Philosophy: What it is and Why we do it*Christopher Edelman, PhD

This podium presentation consists of a discussion of the nature of research in the history of Philosophy by means of a case-study: an essay I wrote last year on the influence of Plutarch of Chaeronea, an ancient Greek philosopher, on Michel de Montaigne, the sixteenth century French essayist. Non-philosophers might reasonably wonder what “research” in philosophy amounts to, since philosophers neither conduct experiments nor uncover new facts. Moreover, they might wonder why philosophers often argue that research into the history of philosophy and research in philosophy itself are one and the same, given that in most academic disciplines, research in a discipline and research into the history of that discipline are quite different projects. So in this presentation I will give an account of the nature of philosophical research that seeks to explain why one can’t properly do philosophy today without studying the work of philosophers long dead.

*Music Therapy with Survivors of Trauma: Gender Implications*Elisabeth L. Hand

Music therapy is the use of music as a tool in a clinical setting to obtain measured goals and objectives. It is necessary to assess a patient and build rapport in order for a therapist to have a basis of understanding of the patient and work efficiently. The idea that males must act masculine and females must act feminine is a patriarchal pattern of thinking brought on by the pressures of western society. In each of these categories (male and female) different traits and duties are attributed. The purpose of this preliminary study is to look at how a patient's identified gender and the social constructs of that gender, affects the patient and influences the therapeutic process. Possible pre-conceived notions of gender may have originated from patients' traumatic experiences. To optimize therapeutic outcomes this study looks for effects of gender roles on a patient and seeks appropriate interventions to address negative influences.

This qualitative retrospective analysis of three case studies of trauma survivors examines the effect of gender roles on music therapy outcomes. Case studies were reviewed for patient gender identity language related to the traumatic event, effects of the trauma, and ultimate outcomes from the music therapy process. Case studies were chosen based on the following criteria: clinical PTSD cases from varying trauma (one Vietnam combat veteran, 40 domestic abuse survivors, and one childhood sexual abuse survivor), different varying therapeutic approaches.

This study recognized gender identity language in the case study of the male Vietnam combat veteran by observing the assistance he required in understanding and expressing his physical and emotional needs. The female childhood sexual abuse survivor's gender identity language was observed in obtaining understanding and empowerment in the set goals. A study of domestic abuse survivors determined that gender identity language was observed in taking control of the therapeutic process and incorporating it into their individual experiences. Depending on the patient's sex, the interventions differed between males and females due to the varying gender constructs. This phenomenon is discussed in "Guidelines for Music Therapy Practice in Mental Health" and looks at variations in music therapy interventions for males vs. females with PTSD.

The three trauma cases, though significantly varied, shared similar qualities regarding gender identity. Regardless of trauma type or demographic, all demonstrated language implying that gender identity influenced perceptions of their conditions. Likewise, treatment may require individualized approaches despite having similar goals. Understanding a patient's gender identity and origin can allow a music therapist to uncover false identities and gender misconceptions which can benefit the patient.

*Documenting a “Living Legacy” On-line: Carla De Sola*Sr. Martha Ann Kirk, ThD & Ivan Acevedo, MAA, MA

The psalmist urges people to praise God with dancing! How can that be done from generation to generation? Some harvesting of sacred dance history has been done giving seeds for future growth, but much more is needed. While many contemporary sacred dances become easily available on-line, dances from decades ago have been harder to find, and deeper studies of themes developed by sacred dancers over the years are needed.

Carla De Sola has been acclaimed as a “Living Legacy” by the Sacred Dance Guild. In 1960 De Sola graduated from the Juilliard School (in dance) where she studied with José Limón. She founded the Omega Liturgical Dance Company at the Cathedral Church of St. John the Divine, NYC, in 1974 and Omega West Dance Company in California in 1992. She has taught at the Graduate Theological Union in Berkeley, CA, and the "Carla De Sola Collection" is located in the GTU Archives. Almost all of the films mentioned in this and hundreds more can be found there. De Sola has worked with some of the most highly trained professionals in the world of dance in New York City and people who simply want to praise God with their bodies. See glimpses of both the fascinating complexity and the shining simplicity of her choreographies in the documentation of her work. Though the quality of the older films (often converted from VHS) may be weak, one can enjoy the strength of the spirit behind them.

This presentation will both give some of the content and the process of researching Carla De Sola’s dances, selecting films, and creating the The Carla De Sola YouTube which can be found at <https://www.youtube.com/channel/UCIG5oWfxeFGjRmxIPahDoxg>. Whether considering dance in the developing interfaith movement in the last four decades, to reflect on varied dances and themes in the life of Carla De Sola, or to explore ideas for different seasons of the Christian year, the Carla De Sola YouTube channel gives varied films and commentaries.

In the late 1960’s De Sola encountered Dorothy Day and the Catholic Worker movement which she founded. For about five years De Sola served the needy in Day’s community, which also encouraged artistic expressions, including De Sola’s dance. As the Catholic Church considers if Day should be canonized a saint, De Sola has been invited to be an official witness, sharing her experience of this friend of God. The Temple of Understanding is a network of people which began in 1960 with the endorsement of Eleanor Roosevelt, Pope John XXIII, and the Dalai Lama among others, to build dialogue and respect among religions. Carla De Sola and the Omega Liturgical Dance Company danced in the “Temple of Understanding Spiritual Summit with the Dalai Lama, 1984”. At the Cathedral Church of St. John the Divine, she helped develop the dances included in the Earth Mass or Missa Gaia celebrating and praying for creation.

*The Mythic in the Mundane: Sacrifice and the Tragic Hero in Sarah Orne Jewett's
A White Heron*

Scarlett J. Pacheco

Can a woman be a hero? Today the answer would be a resounding “Yes!” Many modern songs, movies and books heralding the strength and noble nature of leading female protagonists pervade pop culture. But over a hundred years ago the answer would not have been so widely agreed upon. Sarah Orne Jewett was an early literary proponent of the heroism and courage women were capable of. Jewett’s “A White Heron” is infused with elements of the Aristotelian tragic hero which illustrates the nature of the sacrifices women had to make in 19th-century America. During a time of changing perspectives on women’s roles in society, Jewett champions the ideals of the New Woman through her heroine, Sylvia.

Previously, the True Woman was put upon a pedestal and expected to adhere to a strict set of rules embodying divine- like expectations. The True Woman was pious, incorruptibly pure, submissive, and remained within the domestic realm. The concept of the New Woman emerged in the late 19th century as a reincarnation of the True Woman. She held the same ideals on piety and purity but replaced submissive qualities with strength and an independent spirit. Her realm of influence became more about society, and she became a strong, intelligent, maternal figure for the community.

In *A White Heron*, Jewett’s heroine, Sylvia, is a friendless, shy child befriended by a wanderer. The wanderer aimed to gain her trust so she will tell him the location of the heron. She embarks on a perilous climb up a great, ancient pine, where she discover the heron’s nest. In the end, however, she cannot betray the heron, and sacrifices her first friendship. Jewett’s use of classic tragic elements within the framework of a quest recalls classic Greek literature which defines the epitome of the classic hero. Sylvia experiences many of the tragic elements like peripety (a reversal of fate) anagnorisis (an important discover), she struggles with a nemesis and makes an important sacrifice. Sylvia may not have gone on a twenty-year quest or fought a Cyclops, she still displayed heroism. She maintains her autonomy by braving the climb and doing so on her own. She shows her inner strength and maturity by sacrificing her first and only friend to protect the wildlife she cherishes.

Jewett illustrates that though women may not regularly go on grand adventures risking life and limb as Odysseus did, a woman’s smaller, more mundane adventures and sacrifices can still be considered heroic especially at a time when the roles of women were shifting.

*Erasing to Remember: Reclaiming Traumatic Narratives through Erasure*Joshua Robbins, PhD, Robert Cavazos, Andi Silva & Zane Evans

The purpose of this research project was for students to explore the creativity of erasures and their ability to expose trauma. Erasure is the creation of new texts through winnowing down the old. The goal was for students to unearth a trauma narrative from a primary source. Students were encouraged to experiment with different techniques and erasure mediums to determine what best contributed to their intended trauma narrative. Next, the students related their erasures to class readings and discussions of personal and social trauma. The intended outcome of this project was to attain a better understanding of trauma and its conveyance through writing.

This project adds to the discipline of creative writing and adds a new emphasis on trauma. These erasures expand the notion of how trauma is used in creative writing in that a focus on traumatic experiences can be healing for readers who identify with the exposure of those experiences. Those affected by trauma lose their sense of community, and must re-self-identify to create a new sense of community. The erased texts include a U.K. bomb shelter manual; two prewar housewife guides; pamphlets on Cuban exiles in the U.S.; historical primary texts on U.S. policy regarding Native American displacement and genocide; a *Winnie the Pooh* book; a WWII novel; and T.S. Eliot's seminal, modernist poem: *The Wasteland*.

Students utilized various materials for their erasures. White-out, black ink, nail polish, paint, scratching and writing over words, burning, the removal and reordering of pages, and waterlogging were all used to texturize the erasure pieces and develop recreated narratives. One student used nail polish in her erasure piece, a cosmetic taboo for the time, to reveal and rebel against women's oppression. Another student used water to blur the words of the primary text for her narrative about drowning; the use of water as a medium created a concrete narrative. One student's erasure used the concrete mediums of fire and toxic colored paints to depict traumatic scenes of post nuclear attacks for his erasure of a U.K. bomb manual.

Trauma is an underlying message throughout all original texts, and each student was able to illustrate a specific type of trauma. The pieces depicted the trauma of gendered oppression, mental illness, war, a refugee crisis, and genocide. Each piece highlights events that have been overlooked and/or forgotten throughout history and our current lifetime. Creating such work emphasizes events and analyze their ramifications.. Erasure is a vital art form - it allows students, poets, and the public to deepen their understanding of trauma. The study does not end when the art form is completed, but is the beginning of an exploration into the various ways humans comprehend trauma.

*Further Validation of a New Measure of Academic Self-Efficacy*Fabiola Almeida & Stefanie S. Boswell, PhD

In this study, scores from the new measure were correlated with scores of another measure of ASE, as well as a measure of internal locus of control (LOC), or the belief that one can impact one's outcomes. Academic self-efficacy refers to individuals' confidence that they can effectively perform the academic skills necessary for academic success (MacPhee, Farro, & Canetto, 2013; Putwain, Sander, & Larkin, 2013). In performing goal-related activities, self-efficacy influences how long one will endure in difficult tasks and how much effort one is willing to invest in these tasks (Bandura, 1977). Several studies show that high self-efficacy is related to performance and achievement, goal-setting, persistence, academic engagement, career selection, and intrinsic motivation (Bong & Skaalvik, 2003). Cassidy and Eachus (2000) also found that ASE is positively correlated with internal LOC beliefs.

The current sample is comprised of 53 undergraduate students; however, data collection is ongoing. The data are collected online; participants may access the study from any electronic device with Internet access. Items for the scale were developed in a series of steps. First, a list of behaviors related to academic success was made on the basis of several college websites created to provide help for students. Then, feedback about the list was given by staff of Student Success at University of the Incarnate Word. With this feedback, the final items were refined.

The new measure contains 30 items that represent academic-related tasks. Participants rate their confidence in performing each item using a scale from 1 to 7 with 1 meaning not at all confident and 7 meaning very confident. A pilot study of the measure found it to have good internal validity and to correlate highly with another measure of ASE (Soldberg et al., 1993). In this study, participants completed the new measure and the four-item ASE measure developed by Schmitt (2008). To gather further evidence of validity, participants also completed the Academic LOC (ALOC) scale (McIlroy et al., 2000). Additionally, participants had the option to complete a brief demographic questionnaire.

In the current sample, Cronbach's alpha for the new scale is currently .92, indicating high internal consistency. Item-correlations are significant and range from .41 to .74, except for two items. This suggests these items may need to be removed from the scale. The correlation between the new ASE scale and the Schmitt ASE scale is currently both positive and significant, $r = .354$; this provides evidence of test validity based on the test's relationship with another measure of the same construct (Miller & Lovler, 2016). The Pearson correlation for the new ASE scale and the internal ALOC sub-scale is also currently both positive and significant, $r = .32$. This provides additional evidence of validity based on the measure's positive correlation with the measure of another variable both theoretically and empirically related to ASE.

Undergraduates' Confidence for Academics

Fabiola Almeida & Stefanie S. Boswell, PhD

This study gathered evidence of validity of a new measure of academic-self-efficacy for undergraduate students that is intended to reflect the experience of contemporary college students. It omits items about dormitories and includes items about technology-mediated academic tasks.

Academic self-efficacy refers to confidence that one can effectively perform the academic skills necessary for academic success. Taking notes and asking for help from faculty are examples of academic self-efficacy (MacPhee, Farro, & Canetto, 2013). Self-efficacy influences how much effort one invests in goal-related activities and how long one endures despite difficulties in goal-related activities (Bandura, 1977). Academic self-efficacy is important to study because it is related to academic outcomes such as academic achievement and engagement (Bong & Skaalvik, 2003).

Participants were students recruited from University of the Incarnate Word and Utah Valley University, and totaled 319 (68.7% female). Items for the scale were developed in a series of steps. First, several college self-help websites were reviewed to develop a list of behaviors associated with collegiate academic success. Second, Student Success experts at University of the Incarnate Word provided feedback about this initial list of behaviors which was used to refine the final set of items. Via Qualtrics, participants completed the pilot academic self-efficacy scale which contained 30 items that represent academic-related behaviors. Participants rated their confidence in performing each item using a scale from 1 to 7 with 1 meaning not at all confident and 7 meaning very confident. To rate their confidence in performing 202 academic tasks, participants also completed the College Self-Efficacy Scale (Solberg et al., 1993). Additionally, participants completed a demographic questionnaire.

Expert feedback on scale items supports its validity based on test content (Miller & Lovler, 2016). Pilot test Cronbach's alpha for the scale was .89 which indicates high internal consistency. Item-total correlations were significant, ranging from 0.35 to 0.67 (all $p \leq .01$); given this, all scale items were retained. These results suggest that the scale is measuring a unitary construct and provides support for validity based on test structure (Miller & Lovler, 2016). New scale scores also correlated positively with College Self-Efficacy Scale scores, $r = .73$ ($p \leq 0.001$). This is a large effect size (Cohen, 1992) and provides evidence of test validity based on the test's relationship with another measure of the same construct (Miller & Lovler, 2016). Data should be collected in another sample to determine if this scale correlates with another academic self-efficacy measure to provide further evidence of validity. Future experiments could manipulate academic self-efficacy as a dependent variable to determine if scale scores change.

*Consumerism's Relationships with College Self-Efficacy and College Commitment*Stefanie S. Boswell, PhD

This study investigated consumerism's relationships with affective, normative, and continuance college commitment, as well as with college self-efficacy. Consumerism in higher education is the belief that a college degree is owed in exchange for tuition payment (Marshall et al., 2015; Taneja et al., 2015). The belief that a degree is purchased rather than earned suggests that those high in consumerism would report lower college commitment. College commitment is attachment to and intention to remain in college. It exists in three forms: affective, normative, and continuance. Consumerism may also be related to college self-efficacy, or confidence in one's ability to execute the tasks necessary for academic success (Solberg et al, 1993).

Participants were undergraduate (89.6%) and graduate students recruited via Qualtrics Panels from the United States (73.3%) and Canada. Participants totaled 345 (53.9% female, 17.4% male, and 28.7% unknown). Each participant completed a demographic questionnaire and measures of consumerism (Taneja et al., 2015), college commitment (affective, normative, continuance; Hellman & Williams-Miller, 2005), and college self-efficacy (Solberg et al., 1993). Data collection occurred online via Qualtrics (IRB Approval 16-06- 011). At the bivariate level, consumerism had an inverse relationship with college self-efficacy ($r = -.16$), affective commitment ($r = -.22$), and continuance commitment ($r = -.46$), (all $p < .01$). Consumerism had no relationship with normative commitment. In a step-wise multiple regression, consumerism was predicted in one step only by continuance commitment [$\beta = -.46$, $t = -9.60$, $p < .001$; $F(1, 343) = 92.69$, $R^2 = .21$, $p < .001$] after controlling for self-efficacy and, affective and normative commitment. Conclusion: Those reporting greater belief that they should receive a degree in exchange for tuition (consumerism) reported lower confidence in their ability to execute tasks necessary for academic success (college self-efficacy). Contrary to previous research, under some conditions, college self-efficacy is related to consumerism. Given the inconsistent relationship between these variables, additional exploration is warranted. Those with greater consumeristic beliefs also reported less personal meaning and emotion associated with being a college student (affective commitment), and lower intention to continue college (continuance commitment).

When holding constant the effects of all variables, consumerism was related only to continuance commitment. When controlling for confidence in one's abilities and personal meaning associated with being a college student, individuals with lesser intention to continue college reported greater beliefs that tuition is exchanged for a degree. Although this finding is correlational only, further research may investigate if interventions to encourage intrinsic motivation could influence students' commitment to continue college.

*Is Our Drinking Water Safe?*Olivia J. Burch

This paper was developed in response to the devoid discussion concerning water terrorism. By introducing America's experiences with several unintentional outbreaks, as a result of water contamination, the research will confirm how imperative it is for the United States to strengthen plant security and prepare civilians for such an attack.

Currently, a primary concern for Americans is defeating and protecting our country from ISIS. Exposing major vulnerabilities in U.S. water treatment plants, ranging from protocols to security systems, will force this conversation into the public arena. Thoroughly assessing and analyzing several articles discussing water contamination that occurred in Milwaukee, WI, Flint, MI, and several cities in Colorado have given implications for future advancements in security systems of water treatment plants.

If discrepancies in security and accidental disruptions in our water systems occur on a daily basis, deliberate attempts would increase all affected areas. A rise in fatalities, days to recover, and financial costs would result from such an attack.

The Good, the Bad, the Morally Ambiguous

Andrea Garcia, Damian Gonzales, Carina Gutierrez, Joey Madrigal, & Nina Medrano

The purpose of this poster is to define, explain, and illustrate moral ambiguity through examples from Sophocles in *Philoctetes* and Michael J. Sandel in *Justice: What's the Right Thing to Do*.

In the learning communities of Composition I and Introduction to Philosophy, the concept of truth was explored from both fields and perspectives. For this poster, we researched one particular aspect of aspect of truth, moral ambiguity. A review of moral ambiguity is significant because answers to ethical problems are not always clear, and making decisions for such problems should benefit the greater audience based on different applications of virtue and truth.

In the research, two examples from *Philoctetes*, which dealt with betrayal and loyalty between two different friendships, were used. The initial problem of deserting a fellow soldier for the sake of Greek soldiers led to another problem, almost a decade later, of loyalty within a new friendship. Specifically, the act of taking Hercules' bow for victory in the Trojan War or leaving the bow to its rightful owner for the sake of the injured Philoctetes, who was left behind, brings loyalty into question. Sandel explains the loyalty dilemma of William Bulger who faces the tough decisions of either aiding in the prosecution of his own murderous brother to protect the city of Boston or remaining loyal to his brother even if it means putting the city in danger of letting a murderous gang member on the streets. Both examples juggle morally ambiguous choices that are both morally correct and incorrect. Together, the two texts help texts help to define moral ambiguity by presenting moral dilemmas whose end decision affects the greater good.

Moral ambiguity is a feature found within a moral dilemma in which the choices are equally right and wrong. When faced with morally ambiguous solutions that are both equally correct and incorrect, the greater good of a community should prevail. With our presentation we have learned to think deeper about situations that rely on our moral conduct.

A Pilot Study for the Development of a Measure of Undergraduate Research Self-Efficacy

Christopher J. Gonzaba & Stefanie S. Boswell, PhD

Although multiple research self-efficacy (RSE) measures exist, this pilot study began the development process for a measure of RSE specific to social and behavioral sciences undergraduates. Specifically, the measure relates to which abilities do members of this population believe undergraduates need in order to complete a research study?

RSE Research self-efficacy is confidence in one's ability to successfully execute research-related tasks (Bieschke, Bishop, & Garcia, 1996). Thirty-seven undergraduate-level research methods for the social and behavioral sciences students participated. Following informed consent, participants were prompted to list on a form "the abilities that you believe students need to successfully complete a research study."

Using content analysis, 16 categories of ability emerged: design and execute study methodology (reported by n=28 individuals), gather relevant journal articles (n=25), format reports in APA style (n=20), generate an appropriate research question (n=20), effectively communicate about research in writing (n=16), analyze and interpret data appropriately (n=14), comprehend journal articles (n=12), effectively utilize peer/supervisory review (n=10), present research orally (n=8), manage time (n=7), evaluate the quality of resources (n=6), develop a knowledge base of one's topic/design (n=6), conduct research ethically (n=2), use prior research to build a rationale for one's study (n=2), utilize word-processing and presentation software (n=1), and use study results to build theory (n=1). Eight responses were not utilized because they were unclear or did not refer to an ability; for example, "print out articles so you don't deal with computers." Exemplars of the methodology category are "use the right tests for collecting data" and "knowing how to set up an experiment." Each category's exemplars will be presented on the poster.

Overall, themes that emerged in our undergraduate sample were consistent with those in the RSE scale development and validation study conducted with doctoral students, by Bieschke et al. (1996). However, there were some small differences. For example, no undergraduates in our sample specifically identified parts of the research process such as obtaining Institutional Review Board approval to conduct research, supervising research assistants, or utilizing SPSS for data analysis. This is likely because, by comparison to doctoral students, participants in our sample have little or no experience with these aspects of research. These differences suggest that it is appropriate to develop a research self-efficacy measure specific to undergraduates.

*Perceptions of Service-Learning Experience in a Social Psychology Course*Lisa K. Lockhart, PhD

This study was a first attempt at formalizing the assessment of students' reactions to a service-learning course that has been offered for a number of semesters. Additionally, it was an opportunity to expand the existing body of knowledge to include Hispanic students' perceptions of service-learning experiences, as most of the service-learning literature has focused on Caucasian students' reactions (Seider, Huguley, & Novick, 2013). Popular sentiment toward service-learning in college courses is generally positive, and this position is supported by the service-learning literature (e.g., Celio, Durlak, & Dymnicki, 2011; Weiler et al., 2013). However, the literature also reports potential negative effects of such an experience (e.g., Desmond, Stahl, & Graham, 2011; Cipolle, 2004).

Students enrolled in a service-learning section of Social Psychology completed a questionnaire assessing their reactions to their service experience (n=26). Students were asked how satisfied they were with their service-learning experience, how enjoyable they found it, how interested they were in it, and whether they believed that it related to the course content; responses were made using a 5-point Likert-type scale. Additionally, participants answered questions about preferences to serve alongside other students, including an open-ended question regarding what they believed would improve their service experience.

Participants were predominantly female (92%), Hispanic (77%), and Catholic (77%), and juniors (50%) or seniors (42%), with a mean age of 21 years (SD=1.20); 54% were Psychology majors. The outcome measures assessing satisfaction with, enjoyment of, and interest in the service-learning experience were significantly correlated so they were combined into a single Overall Satisfaction with Service Experience (OSSE) outcome measure. A regression analysis, conducted with participant characteristics as predictors of OSSE, was not significant [$F(9,8) = .885$, $p > .05$]. Students reported a high level of satisfaction with their service experience ($M=4.33$; $SD=.59$) and interest in participating in a future service-learning course ($M = 4.27$; $SD=.96$). They also indicated they believed that their experience related to the principles of social psychology ($M=4.35$; $SD=.80$).

Although participants indicated a high level of interest in serving with fellow students, they also indicated they would not mind serving alone ($M = 4.46$; $SD=.51$ and $M=4.38$; $SD=.64$, respectively). All responses to the open-ended question (n = 11; 42%) indicated a desire for more interaction with the people being served by the community organization. Given this student feedback, future research will investigate satisfaction with service experiences based on degree of direct involvement with service-recipients.

*The Deceptive Nature of the Carlisle Coyotes in the Works of Zitkala-Sa*Taralea N. Lopez

The purpose of this article was to argue how Zitkala-Sa's autobiographies, *School Days of an Indian Girl* and *Impressions of an Indian Childhood*, support an analogy of how an interaction of the coyote relates to the deceptive white people of the Carlisle School and other off-reservation schools. Zitkala-Sa's autobiographies often describe her experiences with the "pale faces" negatively, due to oppression through assimilation at an off-reservation school modeled after Carlisle. American Indians had spiritual views of animals, so Zitkala-Sa likely had a particular, spiritual view of coyotes.

Coyotes in American Indian Literature are notable for being portrayed as tricksters. In comparison to Carlisle Indian Industrial Boarding School's methods for obtaining children attendance through force. The view of deceptive white people oppressing Zitkala-Sa was illustrated with a coyote she encountered. Zitkala-Sa described her encounter with a coyote as having chased the predator and it surrendering. Zitkala-Sa's further pursuit of the coyote represents the dominant, deceptive nature of the white faculty and her attempts to expose their hidden agendas. The examination of Zitkala-Sa's *School Days of an Indian Girl* coyote passage led me to question why and how the coyote was being portrayed. Why mention this particular encounter? Why was it so memorable to Zitkala-Sa? Is there any significance to the animal?

To prove my theory that the coyote symbolizes the white faculty, I separated my research into three categories: Zitkala-Sa's life and autobiographies, Native American folklore where coyotes are featured, and the history of the Carlisle Indian Boarding School. The results of this study provided supporting evidence in the argument for the similarities between the deceptive nature of coyotes and white faculty. Coyotes are typically depicted as tricksters which are representations of human nature. The trickster has the potential to be either good or bad; an option that humans also possess. Tricksters often use deception to benefit themselves without any regard of consequences and who they hurt. Richard Henry Pratt founded the Carlisle school to prevent genocide of American Indians but achieved ethnocide through the use of force and deception such as exploitation of weaknesses and glamorized lies.

It became clear that the coyote is representative of the white people in two ways: Deception and her ideals to expose the white people's true nature. Zitkala-Sa overcame oppression as an adult. Once she saw the mistreatment of American Indian children as Carlisle, Zitkala-Sa decided to expose the deception of Richard Henry Pratt, along with his hidden agenda of off-reservation schools.

*Loss of Culture in Millennial Mexican Americans in Texas*Mariella S. Metz-Yeverino

The purpose of this study was to explore the issue of assimilation and loss of culture within the 1.5 Millennial generation of Mexican Americans in the United States. Using Richard Rodriguez's memoir, *Hunger of Memory*, I compared his experiences to the 1.5 millennial generation of Mexican Americans. Among Mexican Americans, there is a tug-of-war, mentally and literally, between the American and Mexican cultures. This creates a sense of identity loss within different areas of life. A loss of identity fosters the idea of a cultural limbo in which Mexican Americans live; sometimes referred to as the 1.5 millennial generation.

This study is important to the English discipline because the analyzed memoir is a main text that is used within the study of Chicano/a Literature, often represented within anthologies. I questioned why the issue of assimilation and loss of culture within the 1.5 Mexican American millennial community generation is still prevalent decades after this memoir was written, and how the experience for the 1.5 millennial generation is similar and different from the experience of Richard Rodriguez's Generation X population.

I conducted a reading analysis of the memoir *Hunger of Memory* and compared the experiences written about by Richard Rodriguez to the experiences of a group of 1.5 Millennial Mexican Americans in order to see the similarities and differences that have occurred within the past three to four decades since the memoir was published. I propose using a focus group comprised of six members of the 1.5 millennial generation of Mexican Americans. I posed five questions related to their experiences in the United States five questions within a focus group of six members of the 1.5 millennial generation of Mexican Americans regarding their experiences in the United States and used the findings to compare their experiences to the experiences of Generation Xers, as mentioned in *Hunger of Memory*.

I hypothesized that the results of the focus group would yield parallel issues regarding assimilation and loss of culture, mentioned in *Hunger of Memory*. Therefore, ascertaining my expectations of similarities in issues regarding the between the 1.5 millennial generation population and Generation X of 1.5 Mexican Americans populations, regardless of the span of time between generations.

I Want America to Want Me: The Marginalizing Effect of Language in “America and I”

Kelly J. Moore

As part of engagement with literature and its discovery, the purpose of this study was to connect and involve literature with the volunteer service that students complete during their time at the University of the Incarnate Word. *America and I*, a short story by Anzia Yezierska, follows a refugee as she transitions into American life. Catholic Charities provides services to refugees in the San Antonio area as they transition into American culture. This study reveals how the lack of English proficiency marginalizes, and oppresses, non-American residents in the United States in the literature and in real life.

University of the Incarnate Word (UIW) has a population comprised of people with diverse backgrounds. Through respect of diversity, UIW believes that men and women can become enlightened citizens in the global community. Keeping with the parameters for service work, as put forth by the University, and approaching the project in the spirit of bettering the community at large, and being of assistance where it is believed it would be most beneficial, this study enhances the refinement of the values of the whole person. This study combined the academic development, through the analysis of the literature *America and I*, with the cultivation of development of the spiritual self, through the volunteer service with the refugees.

The experiences of three students were recorded as they attended and participated in volunteer work at a local refugee facility hosted by Catholic Charities. In this facility, refugee women receive various forms of assistance including language classes, immigration services, home buying and job placement assistance, and many other services. The women met weekly at a local elementary school to participate in language classes, and also received information on services that are available to help them succeed as they transition into American life. Students connected these observations during the learning service project to the literary piece *America and I* by Anzia Yezierska.

By analyzing the literature using Postcolonial and Marxist theories, the real life context of the observation, and its connection to the literature, the researcher allows enables the literature to be understood more clearly. It also gives a better understanding of how the marginalization of refugees has not changed much over the years.

From this research it can be concluded that immigrants face many challenges, and changes must be made to their schema in order for them to fully assimilate into American culture. However, learning the English Language is one of the fundamental challenges they must overcome in order to be successful in this process. It also became clear that by connecting it to the literature, that the challenges encountered by immigrants were, and still are, an ongoing concern.

*Tillie Kronborg and Her Unaccredited Role in “The Song of the Lark”*Sarah E. Peregory

This research article is written about the character of Tillie Kronborg in Willa Cather’s *The Song of the Lark*, and illustrates the role of the character in which Tillie is placed by Cather. While people may dismiss the role of Tillie, I argue that her role is a specific characterization by Cather. Not only does Tillie identify with the Thea, the main character of the novel, she also largely identifies with Cather’s own life. Tillie identifies with Thea by being the sole and unfailing believer in Thea, and, and she also shows great psychoanalytical value to the character of Thea in the writings dedicated to Tillie in the novel. Tillie identifies with Cather because of her resemblance to Cather’s own mother, who Cather seemingly never wrote about, and also the psychoanalytical factor Tillie plays toward Cather herself.

Throughout this article, I explore the questions surrounding Tillie’s role (why was she possibly written out of, or not written about in the novel), and the significance this character plays throughout the novel as a whole. I also discover and explore the rationale for Tillie’s presence in the novel at all, because she is scarcely written about in the novel. There must be a reason Cather included her character in the novel.

I researched articles, critiques, and literature reviews of this novel, as well as found many readers who would probably disagree with my stance on Tillie’s influential role in the novel. I have also found many articles about the novel itself, and many about other characters in the novel, but few relate to Tillie. It is important to note, that not much has been done in the way of research on Tillie, or her role in the novel. While this has proven to be difficult, it is also showing that Tillie’s role should be analyzed, as the little information that has been uncovered is verifying the stances I take throughout the article. My argument counters this current research in the way that I am actually putting forth an entire piece devoted solely to Tillie and her role in the novel. My piece also indicates that I have found some research related to Tillie, but disagree with most of what was written.

Through this research I have found that Tillie is an underdeveloped character, to say the least; but is a classic developmental character to both Thea Kornberg, as her caretaker, and the last surviving, or mentionable, family member as the novel concludes. Also, Tillie plays a significant role in Cather’s personal life, as Tillie very closely resembles Cather’s own mother. Through research I have found that Tillie can be considered many things in this novel: the bridge between reader and author, the bridge between character and author, a psychoanalytical self of the main character, Thea Kronborg, and an honorable mention to Cather’s mother. Therefore, Tillie’s unique “read-between-the-lines” position makes her a link between author and character that would otherwise be lost or confusing.

*Using Cooperative Learning in First-Year Modern Language Classes*Michael Tallon, PhD

The purpose of this poster presentation is to show how cooperative learning can be used in first-year modern language courses to promote language acquisition.

Modern language teachers know the importance of using group work in language classes in order to allow students to practice the language. However, simply telling students to “work in groups” may not be enough; a more structured approach would be more helpful. Cooperative Learning learning can be defined as “the instructional use of small groups so that student’s work together to maximize their own and each other’s learning” (Johnson et al. 2013). As research has shown that cooperative learning results in greater efforts to achieve, more positive relationships among students, and greater psychological health, confirms it is well suited for use in the modern language classroom.

The five essential elements of cooperative learning (positive interdependence, individual and group accountability, promotive interaction, interpersonal and small group skills, group processing) can be used to incorporate the 5 Cs in the classroom and promote gains in language proficiency.

Session attendees will learn what cooperative learning is (definition, essential elements, research results), see examples of successful cooperative learning activities used in a modern language class, and learn how to implement cooperative learning in their own language classes.

*The Reclamation of Personal and Traumatic Experience: Poems*Robert J. Cavazos

Depictions of personal and traumatic experience in poetry have been a mainstay of the literary art form—from the Ancient Greek and Roman war epics to modern and contemporary lyric poetry by African American poets, feminist writers, and war veterans. Poetry read and written provides cathartic healing for the abused and marginalized. The lyric poems to be performed for this presentation embody the tradition of personal and traumatic experience in poetry by chronicling my reactions to personal, traumatic, and political situations. Poetry has for centuries figured heavily in the healing of communities with individuals exposed to personal and cultural trauma. The Ancient Greeks and Romans understood poetry’s potential for emotional catharsis, as evidenced by the epics still taught in colleges and universities across the Western world today: Homer’s Iliad and Odyssey, Ovid’s Metamorphoses, and Virgil’s Aeneid. In the early twentieth century, the African American community, for the first time able to have a cultural voice, had an explosion of arts and literature: the Harlem Renaissance. At the forefront of that cultural boom were such lyric poets as Langston Hughes.

Lyric poetry fits with the goals of UIW’s NEH grant focused on trauma. I had the opportunity to take Dr. Robbins’ “Creative Writing: Trauma Writing” workshop course this fall. We studied numerous theories on personal and cultural trauma and learned how they are expressed in various forms of creative writing, including the lyric poem. In contemporary times, the lyric poems of war veterans, women, and African American poets have been used to address public perceptions of war veterans and PTSD, women’s rights, and the continued discrimination and acts of violence perpetrated against African Americans.

I have personally witnessed the significance of lyric poetry through my experiences as a reading group leader and poetry instructor. As one of three student leaders of a fall reading group for visiting Navy veteran and poet, Brandon Courtney, I saw the ability for lyric poetry to unite a diverse community through powerful discussions on war, returning veterans, and PTSD. As one of two Gemini Ink writers-in-residence at the Ella Austin Community Center on San Antonio’s developing East Side this fall, I observed the impact of lyric poetry on the writing skills, emotional development, and public speaking abilities of the third and fourth grade at-risk youth I had the honor of instructing.

For the purposes of this performance, I will read five of my lyric poems—“Good Morning, San Antonio”; “Before We Fell Apart”; “It’s Hers, Not Mine”; “Convicted Nowhere Yet”; and “The Midday San Antonio Sky in August.” With these lyric poems I divulge the trauma unearthed in conversation with others that is alarmingly prevalent in San Antonio: child abuse. I employ a different poetic structure for each piece to emphasize the unexpectedness of discovering someone you love was abused as a child. I bookend my three lyric poems focused on traumatic abuse with lyric poems that connect them to the societal concerns San Antonio faces—a shifting political climate and the effect of rapid population growth on infrastructure.

Art Song: The Collaboration of Poet and Composer

William Gokelman

Poem by Josh Robbins, PhD, Phillip Hill, PhD, baritone

Art Songs are songs written to pre-existing texts, usually poems, for single voice and piano. When a poem is realized in musical form, a unique creation emerges. Two original art songs will be examined, first by reading the poems, then performing the songs, and finally showing how the music embodies and reflects the poems, creating a new work of art. Elements such as text painting, word syntax, harmonic language, vowel colors, and the innate musicality of the poetry will be discussed.

*Flat Line Ocean*Kelly R. Holguin

Flat Line Ocean is a science fiction work that seeks to question how identity is constructed. Through the vehicle of narrative, the story attempts to comment on the effects of globalization, gender roles, and physical appearance, with respect to identity development. The story involves the creation of an inter-oceanic railway, a train that is the prize work of Rose, an elite member of a powerful group known as the Wise, the governing presence within the country of United. Rose also creates a half-cyborg, Q, an Inseminator who fulfills the spread of semen to the predominately female populace of United. With the onslaught of DNA modification, men have become genetically inviable, so there is a considerable push for citizens to give birth, with the hope of a resurgence of healthy, human men. The hidden agenda of the train is to spread the insemination technology that Q sports, in order to further spread the dying seed of Rose and his contemporaries, with the hope of eradicating pre-existing countries and their respective cultures. Enter Sol, a Wisdom Seeker who sacrifices increased aging for larger intellectual capabilities. As the primary engineer on the train, she develops a mother-son relationship with Q, despite the direct correlation between Inseminators and her mother's death. Q and Sol's relationship ignites Rose's jealousy, and after Sol inadvertently discovers the real reason the train has been created, he orders Q to exact his primary function of insemination upon Sol. With her prospects severely hindered as an expectant mother, Sol makes a decision that catapults Q into gaining full consciousness of his existence within the framework of society. Q in turn makes a decision that impacts the makeup of humanity as a whole. This project is intended to not only highlight important issues that impact the construction of individual character, but also to have an established piece of creative writing for application to MFA programs. For my performance, I will enlist the help of several volunteer theater students to reenact select scenes from my story. While I have attached the complete copy of the story, I will be working with the theater students to determine the most approachable selections of the story with which to reenact. The goal of this collaborative story-telling process is to present the important topics of identity listed above in an interactive way, garnering a stronger community with the intersection of the concentrations of Theater Arts and English, and potentially allowing for future collaborations between varying areas of study.

Unravelling the Unsound Mind

Stephanie Jablon

The concept for this poetry collection is to share my experience and my encounters with self-harm and trauma in attempts to open a door of communication to discussing mental illness. The idea for these pieces stems from the lack of a healthy outlet of communication and to create a collection that develops a healthy space within these poems to discuss and understand my own depression. The goal of these pieces is to capture the raw human experience regarding mental illness, how it happens, how it unfolds, what it is like and the process of recovery.

For this poetry collection the central argument is to break away from the taboo associated with talking about mental illness and help inform outside of the negative stereotypes. This collection is designed to capture the emotional state and experience of someone experiencing multiple traumas. As humans we have the capacity to empathize even if we do not experience trauma first hand and this collection is designed to be relatable to someone who hasn't necessarily experienced that trauma first hand in order to create an awareness and understanding. There is a great discrepancy between our current understanding of mental illness and the kinds of discrimination people experience who battle these illnesses daily. As a writer my objective with these pieces is to capture true emotion that comes with combating self-harm, addiction, depression and loss in order to depict an honest narrative. Mental illness challenges so many adults and children; this collection is a call for awareness and education needed for these people and their families outside the constrictive walls of a psychiatrist's office.

Made in SA

Ken Metz, PhD

Xiaoke Cheng, piano & Ara Koh, piano

Made in SA is an on-going project which joins composers, piano teachers, and their students. The idea has led to the production of a piano book series and a yearly concert.

Song Cycle for Sylvia Plath and Ted Hughes (I. Prologue, II. Epithalamium)

Kevin Salfen, PhD

Orit Eylon, mezzo-soprano, Rick Novak, tenor, & Cheryl Lindquist, piano

I. Prologue

The Song Cycle for Sylvia Plath and Ted Hughes is a five-song cycle for mezzo-soprano, tenor, and piano. This performance features the first two songs of the cycle. The text for the first song, Prologue, comes from Royall Tyler's translation of the classic Japanese Noh play *Izutsu* by Zeami. *Izutsu* ("The Well-Cradle") is a tale of a husband and wife whose relationship has fallen apart, but the excerpt used in Prologue tells about two early phases of this relationship: its beginning, when as children they would stand next to each other and gaze into the reflective water in the cradle of a well, unable to tell one another apart; and the moment when the two were old enough to recognize their adult love for one another. In the Song Cycle, the "Plath" character sings this prologue as a kind of poeticized way of talking about her almost mythic relationship with Ted Hughes.

Correspondingly, the musical setting attempts to open up a mythical space, introducing basic building blocks of the entire cycle: a row (an arrangement of the 12 chromatic pitches in a particular order), Plath and Hughes's "signature" notes (A-flat and B, respectively), and a sequential melody often linked with nostalgic moments in the cycle's poetry.

II. Epithalamium

An epithalamium is a wedding song, and this epithalamium is a setting of a poem ("A Pink Wool Knitted Dress") by Ted Hughes about his wedding to Sylvia Plath. The poem was published in the collection *Birthday Letters* in 1998, some thirty-five years after Sylvia Plath's suicide. It is a recollection, then, of a wedding, seen through the filter of decades of grief and loss. In my setting of the poem, part of a five-song cycle for soprano, tenor, and piano, I attempt to create a strongly referential sonic world: the Schubert-like evocation of rain and church bells, a quote from the introduction of Tchaikovsky's *Romeo and Juliet Fantasy-Overture*, a Schumannesque use of notes to signify "characters" in a drama (A-flat as Plath, B as Hughes), the use of a row (a collection of the 12 chromatic pitches in a particular order) to tie the song (and song cycle) together. In creating this dense and layered musical space, I am trying to echo Hughes's similarly dense and layered poem, which is full of references, some clear, some half-revealed, some entirely obscure. The density of reference in the poem and musical setting weighs down the wedding; instead of a celebration pointing to possibility and promise, this ritual remembrance cannot evade the foreknowledge of certain tragedy.

Seven Hours

Anthony M. Sanchez

This short story depicts the vast amount of emotion that both my wife and I endured during her pregnancy with our daughter—from finding out it's a girl to the doctor telling us our daughter has a terminal illness with a zero percent survival rate. I talk about our current every day struggle with depression as we try to cope with the emotional strain that comes after the death of a child, and that if my daughter's passing has taught me anything it is that everyone needs some kind of support system; whether that is family or friends, we all need someone there for us in our time of need to pick us up, dust us off, and tell us that it is okay to live again. The significance of this creative writing piece is that it serves as an outspoken word for those who can't talk about their personal loss, letting them know that others are out there and it is okay to talk about that sad time in their life.

Many families feel that by talking about it they are in a way losing those moments of remembrance that they shared with their child, when in reality it allows us to remember that much more, thus giving us a life of memories rather than ending them when the child passes. I have found that by writing and talking to others I have allowed myself to heal in a better way than if I had just kept my daughter Avalon's story to myself. I was honestly surprised by the amount of people I could help with my story when at first all I wanted was a way to remember my baby girl.

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Critical Issues Facing Underrepresented College Students at an HSI as Identified by Student Affairs Educators and Professional Staff

Danielle J. Alsandor, PhD, & Leslie Martinez, PhD

Student affairs educators, also known as student services professionals, are often on the “front line” with students in a variety of capacities—housing, student activities, academic support, student conduct, advising, counseling, financial aid, multicultural affairs, orientation, leadership development, etc. This study seeks to explore how these professionals who interact with college students on a daily basis outside the classroom perceive the students’ lived experiences of underrepresented students at a Catholic, Hispanic Serving Institution (HSI) in the South. For the purposes of this study, the term underrepresented is used to refer to students of color, first generation college students, undocumented students, or Deferred Action for Childhood Arrival (DACA) students.

This study’s theoretical framework is Rendón’s (1994) Validation Theory, which states, when “external agents” (i.e. student affairs professionals, faculty members, advanced peers) validate students be it academically, socially, athletically, artistically, and/or interpersonally, students increase their sense of self and their ability to be successful. However, an institution’s context and culture may affect whether validation theory is promoted or enacted. Thus, we look at the six cultures of the academy identified by Berquist and Pawlak’s (2007) to determine institutional culture amid the HSI status. Research questions include: (1) How do professional staff members at a faith-based Hispanic Serving Institution perceive the lived experiences of underrepresented populations on campus? (2) What are the main issues relevant to underrepresented students on this campus today? Do professionals perceive a change over time?

This is a qualitative study examining the ways student affairs professionals make meaning of students’ lived experiences. This approach allows researchers “to understand how humans view themselves and the world around them” (Willis, 2007, p. 53). This permits participants to share their unique experiences and attributes. Study participants first complete a 10-item online survey in which they identify a pseudonym, answer demographic information, and provide preliminary details regarding their experience in student affairs. Once the survey is completed, participants are contacted to schedule a 60 to 90-minute individual interview. The responsive interviewing model is used to generate in-depth of understanding, rather than breadth, and recognizes a relationship formed between the interviewer and interviewee (Rubin & Rubin, 2005). This methodological approach allows “for detailed investigation of each person’s perspective, for in-depth understanding of the personal context within the research phenomenon, and for very detailed subject coverage” (Rubin & Rubin, 2005, p. 58). Findings will be revealed in February as the study is in progress. Transcripts will be manually coded to identify etic and emic codes and allow for the most prominent themes to surface.

*Impacts of Officer Use of Force: A Multicase Study*Margarita McAuliffe, Doctoral Candidate

This study is an exploration of the perspectives of individuals, and family members and friends (co-victims) of individuals who have experienced officer use of force. In the United States, police use of force, and even abuse, is longstanding (Hoffman, 1993). Researchers who acknowledge that officer use of excessive force is a real phenomenon are at the same time implicitly acknowledging that people who have been subjected to such force are also a real phenomenon (Alpert & MacDonald, 2001; Griffin & Ruiz, 1999; Griffin & Bernard, 2003; Hickman, 2006; Johnson, 2006; Kane, 2003; Klinger, 2010; Morrison, 2010; Westley, 1953). While the use of excessive force and recommendations concerning ways to eliminate it have been addressed in the research literature, the perspectives of individuals who have experienced officer use of force, their subsequent needs, and the help they have received to deal with the impacts of violence perpetrated by an official have rarely been addressed there.

The findings from this research could be of use to individuals working in the field of criminal justice at every stage including law enforcement and prison administrators making personnel training choices; judges making case decisions; and public policy makers and legislators making determinations in regard to laws on public safety and mental health care. If unaddressed issues and needs within communities become evident, this research could make useful facts available to victims and co-victims of officer use of force and to advocates working on their behalf.

Interviews will be the primary means of data collection and the analytical procedure will follow Stake's (2013) approach to multiple case study analysis. This procedure includes identifying themes within and across cases, with the aim being to ultimately make generalizations among the cases.

*A Case for Spiritual Change Readiness: A Correlational Study*Wanita Mercer, PhD

The purpose of this study was to investigate whether there is a significant relationship between spirit at work and attitudes towards organizational change, because there are many claims in the literature of such a relationship without empirical support. Spirit at work is the feeling of having an inner life that is stimulated by engaging work and nurtured by a sense of belonging at work.

This investigation was significant in helping practitioners understand how to foster positive employee attitudes towards change to maximize the success of organizational change initiatives. This study utilized the quantitative method with an explanatory, correlational design to describe and measure the association between spirit at work and attitudes towards organizational change. Four factors (engaging work, mystical experience, sense of community, and spiritual connection) measured the independent variable, spirit at work, and three factors (cynical attitudes, fearful attitudes, and accepting attitudes) measured the dependent variable, attitudes towards organizational change. The crowdsourcing method was used to collect data via Amazon's Mechanical Turk. A total of 310 responses were collected and analyzed.

A Pearson's correlation test determined that the relationship between spirit at work and attitudes towards organizational change were both positive and significant at the .01 level. Of the 12 pathways explored between the two constructs, only two pathways were statistically insignificant. Also, a series of MANOVAs and ANCOVAs determined that religion, industry, and organization type had significant effects on cynical and fearful attitudes towards change, mystical experience, sense of community, and engaging work.

In this study, two spirit at work factors, sense of community and engaging work, decreased cynical and fearful attitudes and increased accepting attitudes towards change among employees in various industries. Whereas leaders reluctantly engage personal dynamics in traditional business practices, this study suggests it is time to make the workplace more personal. It is detrimental to an organization to ignore the importance of stakeholders feeling valued, connected, and engaged. This study also indicated that organizations would benefit from an intrinsic, spiritual approach to change management that addresses the challenges of today's workplace and meets the needs of stakeholders. Therefore, a model for spiritual change readiness was offered to guide future research and practice.

*A Comparison of Belgian and Texan Elementary School Mathematics and Science*Peter A. Casola & Craig S. McCarron

The mathematics and science performance of students in the United States has lagged behind the performance of students from other developed countries according to multiple studies. The purpose of this pilot study is to compare mathematics and science expectations in a Belgian elementary school to standards for students in Texas elementary schools.

Comparisons of US students to others around the world are based primarily on testing at the secondary level. Little has been done to identify differences in education in the eight years of schooling before the secondary level. This pilot study will compare expectations in a Belgian elementary school to Texas elementary school standards.

These comparisons will shape future research questions to pinpoint differences between education in the United States and Europe. In the United States, individual states have standard expectations for what a student will learn in each grade level. In Texas, this is known as the Texas Essential Knowledge and Skills (TEKS). In Belgium, there is no similar set of standards. To compare grade level expectations, mathematics and science worksheets and assessments have been collected from kindergarten, third, and fifth grade classes. These artifacts will be translated and compared to the TEKS to determine the approximate grade level at which comparable subject matter is taught in Texas.

Revision and Reflection as Teaching Strategies: Developing Writing Attitudes and Abilities in Prospective Teachers

Susan Hall, PhD, Ann David, PhD, Stephanie Grote-Garcia, PhD, Inci Yilmazli, M.Ed & Letitia Harding, PhD

In this, the first of a two-phase study, our research aims to encourage the meaningful use of the writing process by preservice teachers (PSTs) to improve the quality of their writing and to increase their self-efficacy as writers: qualities vital to successful writing instruction (Morgan and Pytash, 2014). The project enhances the preparation of PSTs by the introduction, or enhancement/refinement, of a series of writing assignments in four of their teacher education courses. These assignments vary according to the nature of the courses, but share three traits: a) including explicit use of revision, b) encouraging students' use of reflection on their own writing process, and c) harnessing technological tools appropriate to writing instruction. In short, the revised assignments are designed to help develop students' critical thinking through writing, revision, and attention to audience.

Based largely on low and flat-lining scores on the State of Texas Assessment of Academic Readiness (STAAR), the Texas Education Agency has identified writing as a weakness in K-12 students' academic achievement. Teaching PSTs how to write is one of the most difficult and complex tasks of teacher preparation. Our work across Education and English aims to support PSTs as they develop their own efficacy as writers, strengthen their writing ability, and consider ways to teach writing well.

The study addresses the following research question: Can teaching strategies that explicitly emphasize revision and reflection encourage preservice teachers to integrate a process approach into their writing, strengthen their writing abilities, and improve their self-efficacy as writers? This study is formative in design (Reinking & Bradley, 2008), and thus allows the research design to adapt to the efficacy of the interventions. Writing assignments in the subject courses are aligned around a shared emphasis on revision and reflection. This first phase of the project began in Fall 2016, using students enrolled in four teacher education courses. Writing samples were collected and scored using adaptations of the Written Communication VALUE Rubric (Assn. of American Colleges and Universities, 2010). After submitting each paper, students completed a brief "wrapper," a simple form designed to prompt reflection on their process in writing the paper (Ambrose, et al. 2010). At this stage of the research, we looked for emerging patterns of strengths and weaknesses in the writing samples and analyzed descriptive data from the "wrappers" that indicated strategies students were using in their writing.

The Political Contexts of the School-to-Prison Pipeline: Dismantling Deficit Discourses

Sasha N. Jones & Sandra L. Guzman-Foster, PhD

The purpose of this review of research is to critically examine the political contexts of deficit discourses and their impact on discipline policies that funnel students of color into the school-to-prison pipeline. The goal is to not only to provide an awareness of the inequitable practices that exist in schools as a result of these policies, but to bring to the surface the reality of the role educators play in maintaining these unjust practices. Helping educators to engage in dialogue to deconstruct and reconstruct perceptions of African American and Latino students will not only slow down the number of senseless consequences given to students as a result of minor infractions due to zero tolerance policies, but most importantly, it will help to eradicate practices that sustain the school- to-prison pipeline.

The key research questions guiding this review of research are the following:

1. What do we know about the impact of Zero Tolerance Policies on the School-to- Prison Pipeline
2. What are the discourses about students of color related to Zero Tolerance Policies and the School-to-Prison Pipeline?
3. How can deconstructing and reconstructing perceptions of African American and Latino students going to help eradicate the school-to-prison pipeline?

Implementing change through action align with the core principles of a social justice and critical theory framework, which call for addressing policies that condone social disparities that have plagued this nation for too long. By participating in this analysis, school leaders, teachers, and policymakers are provided the opportunity to deconstruct and reconstruct their paradigms about students of color and to reflect on their practices related to school discipline policies. This is vital considering that in today's world, where the number of students removed from schools as a result of zero discipline policies continues to increase. There is no room for school leaders and teachers to hold on to the long held belief that zero discipline policies are effective and that it is okay to send our most vulnerable students through the penal system.

This review of research will be conducted to examine current and emerging research focused on zero tolerance policies, the school-to-prison pipeline, deficit discourses, and eradication of the school-to-prison pipeline. Electronic databases, scholarly books and scholarly peer-reviewed articles published from 2006 to 2016 will be examined to provide a synthesis of current thinking related to zero tolerance policies, the school-to- prison pipeline, and deficit discourse about students of color.

*Program Evaluation- Peer Financial Literacy Program*Heather K. Miller & Sandra L. Guzman-Foster, PhD

The purpose of this study is to evaluate the effectiveness of a training program that is focused on training student leaders and mentors about financial literacy. The study will look at the impact of financial literacy education on participant's financial behavior and attitudes over a six-week period progression. Behavioral changes such as improvement in spending habits, credit card usage, student loan borrowing and motivation to change personal beliefs about college financing challenges will be examined via pre and post survey and focus group responses.

National data suggests that most undergraduate students come to college with limited financial literacy skills, which can lead to unwise financial decisions, higher debt, and a higher loan default rate for universities. According to the National Center for Education Statistics, nearly 71% of undergraduate students have Federal Student loans and less than half lack financial resources to complete their degree (NCES, IPEDS, 2011).

Academic research proposes that four year universities should focus on financial literacy as part of retention effort. Despite best efforts from universities, undergraduate student populations seem to lack the financial knowledge to make the most of their investment. Brown (2009), endorses Innovative financial literacy programs that expose financial literacy fundamentals from student peers. Peer counseling models provide relevant and personal scenarios to challenging college finances experiences. Examining how student peers influence the effectiveness of financial literacy education may yield better financial decisions for University of the Incarnate Word undergraduate students!

*Disney Princesses, Little Black Girls, and Perception of Beauty*Brittany D. Minor

I am submitting a research proposal for Research Week because I am passionate about investigating the influence of Disney© “princess” stories on Black girls, between the ages of 4-6. Specifically, this research focuses on their perceptions of beauty while viewing movies with all-White princesses.

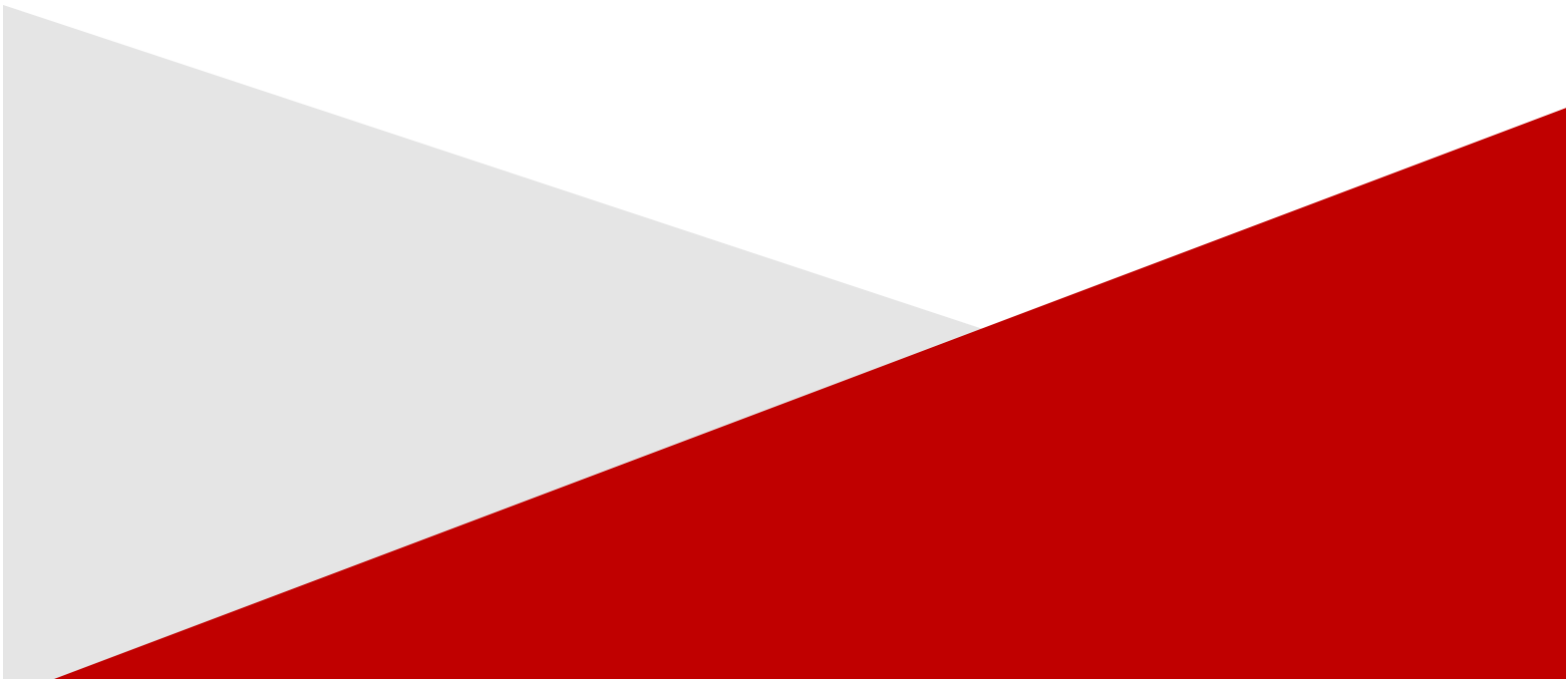
I hypothesize there is not a negative effect on young Black girl’s perception of beauty from viewing White Disney© princess movies or reading the related books. In recent years, efforts have been made to empower Black girls and to provide imagery that “Black is Beautiful” (University Wire, 2015; University Wire, 2016; Business Wire, 2016). Many positive role models and national initiatives exist (i.e. Michelle Obama, Black Girls Rock, Black Girl Magic, etc.) to help Black girls create a healthy, stronger sense of self. I hypothesize the positive imagery of Black females today creates an environment where the mostly White Disney princesses has little influence on young Black girl’s perception of beauty. However, it is still important to provide more diverse and inclusive images of what a “princess” can look like. This significance is evident with Disney’s addition of a Black princess named Tiana in its 2009 movie *The Princess and the Frog*.

Methodologically, this is qualitative research study utilizing multiple methods for triangulation (e.g. individual interviews, focus groups, pictorial, narrative inquiry, and document analysis). The main focus is to investigate young Black girls (4-6) and the direct influence of Disney© princess films (e.g. *The Little Mermaid*, *Snow White*, *Cinderella*, *Sleeping Beauty*, *Beauty and the Beast*, *Pocahontas*, and *Aladdin*) on their perceptions of themselves, beauty and life. Specifically, I focus on how viewing Disney© princess films affects their perceptions of beauty and self-beauty due to their differences in appearance. The research questions guiding this study and symposium proposal include:

1. How do Black girls aged 4-6 identify beauty and what it means to be a princess?
2. For young Black girls who have viewed Disney© princess films or read the books, how have they influenced their view of themselves, if at all?
3. How do the behaviors and experiences of the Disney princesses affect how Black girls, aged 4-6, look at the world or their futures?
4. How do books and movies about Disney princesses affect Black girls’, aged 4-6, and perceptions of beauty, if at all?

HEB SCHOOL OF BUSINESS AND ADMINISTRATION

H-E-B School of Business & Administration is committed to building relationships that foster the delivery of high quality education grounded in academic excellence; emphasize social justice and community service; and develop the whole person through innovative programs responsive to opportunities and needs of our students.



*Bexar County's Reentry Program: A Cost-Benefit Analysis*Michael McGuire, PhD, Shishu Zhang, PhD, Catalina Zarate, PhD & Mega Martinez

Reentry into society is difficult for a formerly incarcerated person to overcome. Numerous obstacles for these individuals which further compound their course include poor education, lack of job skills, and mental health problems, drug or alcohol dependency. In addition, the cost of recidivism to taxpayers is enormous and include trying and re-incarcerating these individuals. In Texas, for example, it costs \$18,538 to hold a person in prison for one year. Furthermore, an estimated 50,000 persons are released from Federal and State jails into Bexar County, Texas. One estimate is that 75% of those released into Bexar County are re-arrested within 3 years of their release.

Bexar County has instituted the state-of-the-art "Bexar County Reentry Program" at the county's Reentry Center, founded in June 2016. The Center's goal is to "find safe and effective ways to reduce the habitual relapse into crime (recidivism), save tax payer money, and reinvest back into the Reentry Services." Benefits of the program consist of savings to the public sector and private individuals that result from reduced crime and recidivism. Costs of the program include expenses of running the Bexar County Reentry Center and those of the volunteers who offer their services free of charge.

The purpose of this study is to improve the efficiency of the Bexar County Reentry Program by measuring its costs and benefits. The design of the study is based upon the authors' review of 23 articles. Two of these articles are key: (1) Welsh et al. "Monetary Costs and Benefits of Crime Prevention Programs," and (2) Roman et al., "Impact and Cost-Benefit Analysis of the Maryland Reentry Partnership Initiative."

The enthusiastic collaboration of Bexar County Reentry Program managers has been secured, and the research team has been assembled. The team is currently conducting a review of the literature and preparing to collect data. The podium presentation will describe the recidivism problem in Texas and the Bexar County Reentry Program's approach to combating it. It will review other Cost-Benefit studies, outline the UIW study, and conclude by presenting preliminary results of the study.

*Impact of Religious Regulation on International Health, Wealth, and Happiness*Shishu Zhang, PhD & Gregory J. Soukup, EdD

Religious beliefs and practices significantly impact the lives of many people and research suggests that as individuals age, their religious convictions become stronger. Recent studies have suggested that religion had a significant positive impact on attitudes related to economic development and growth. Remeboog & Spaenjers, (2011) found that households with higher rates of religiosity were more trusting, had stronger bequest motives and longer planning horizons.

There is a large body of literature that examines how religious beliefs impact the lives of individuals in specific nations; however, there is a lack of research examining how religious beliefs and practices impact the health, wealth and happiness of global citizens. This study analyzed social and economic data to determine the impact that government regulation on religion had on international gross domestic product (GDP), reported life satisfaction and life expectancy.

The researchers used the International Religion Index (IRI) to study the impact that religious regulation had on the health, wealth, and life satisfaction of individuals from different nations. The Cross-National Socio-Economic and Religion data sets for 2005 to 2011 were analyzed for this study. There were 318 observations that were analyzed from the 2005 data set and 253 from 2011. Life expectancy was used to measure health; per capita GDP used to measure wealth; and individual self-responses of life satisfaction surveys to measure happiness. Responses were divided into Christians, Muslims and other religious groups. ANOVA analyses were used to compare the means of health, wealth and happiness for Christian, Muslim, and other religions. A regression analysis examined the effect that religious regulation had on health, wealth, and happiness of Christians, Muslims and other religious groups.

Analyses of the 2005 and 2011 data sets found that nations that did not have strict religious regulations had significantly higher per capita GDP and life expectancies and that religious freedom could have significantly positive impacts on individual income and long-term health and life expectancies. However, a regression analysis of the same 2011 data set found that government regulation of religion produced significantly higher rates of life satisfaction. Nations with higher literacy rates had lower rates of poverty and health problems. Finally, the researchers determined significant differences between predominantly Christian and Muslim nations, with Christian nations having significantly better health, more wealth, and higher levels of happiness than Muslim nations.

*An Investigation of Introductory Accounting Students and Ethical Quandaries*Trish Driskill, PhD, CPA

The purpose of the study was to evaluate the relationship between exposure to real- world ethical dilemmas and the ethical reasoning skills of introductory accounting students.

Research Question 1.

Did the students' AEDI (Accounting Ethical Dilemma Instrument) scores in the treatment group differ after exposure to real-world ethical dilemma examples, compared to students in the control group with no ethical exposure?

Research Question 2.

What was the main effect of an individual's gender on AEDI scores?

Ethical reasoning skills in accountants are essential to the honesty and integrity of the accounting profession. Currently, future accountants struggle to effectively apply the ethical knowledge gained in higher education to the practical world. With the rise of financial scandals, more research needs to be conducted regarding the ethical reasoning skills in future accountants and whether exposure to ethical dilemma examples in introductory accounting classes contributes to higher ethical reasoning skills.

The study was a between-subjects, paired-sample analysis utilizing a quasi- experimental, and quantitative research design. The researcher used the Accounting Ethical Dilemma Instrument (AEDI) to measure ethical reasoning skills of introductory accounting students at an AACSB accredited in accounting university, located in the state of Texas. The researcher employed a convenience sample, which consisted of a total of 48 research participants enrolled in two introductory managerial courses taught by the same instructor. The researcher exposed the treatment group to two ethical dilemma examples, via group and class discussions, to measure if this manipulation increased ethical reasoning skills compared to a control group receiving no exposure to ethical dilemma examples.

Utilizing the Mann-Whitney U test, the researcher concluded that exposure to ethical dilemma examples did not improve reasoning skills and there was no statistical significance in ethical reasoning skills based on gender. Due to conflicting results in the research literature, a need exists for future research studies in examining ethical reasoning skills and contributing factors, such as conducting a longitudinal study, observing alternative methods of ethics exposure, and investigating the effectiveness of different research instruments.

Results of the 2016 Society of Information Management IT Trend Study

Vess L. Johnson, PhD, Leon Kappelman, Ephraim McLean, & Russell Torres

In 1980, the Society for Information Management (SIM) began a collaboration with IT scholars to solicit input from its members about the most important IT management issues. The study collects information such as IT spending levels and hiring, technology issues facing the organization, primary investment areas, outsourcing, cloud and shared services, and skills.

Over the years, the SIM IT Trends Study expanded to become one of the most insightful and comprehensive investigations of the state of IT and IT leadership in organizations. An important contribution of this multi-year research effort is its ability to identify important trends across the industry and the IT profession. This year marks the 37th anniversary of this valuable SIM program.

A survey was developed using a 3 phase Delphi method with the final instrument distributed to over 5000 IT professionals. One thousand and thirteen individual SIM members, including 490 CIOs, representing 801 unique organizations responded. The collected data were analyzed to identify trends ranging over the past 37 years.

Some of the key findings and conclusions include:

- The average annual revenue of the responding organizations is \$4.75 billion, the median is \$500 million, and their total revenues are nearly \$2.4 trillion. On average, their IT spending is 5.04% of gross revenues.
- Alignment of IT with the business and security/privacy continue to be the number one and two issues facing organizations and IT management.
- The highest spending is occurring in areas related to big data analytics. In addition, security expenditures remained third for the second straight year.

**Collaboration with University of North Texas, Georgia State University, and University of Texas-Dallas*

*Nexus in Texas*April Poe, PhD & Joseph B. Labatt, JD

The purpose of this study is to investigate the evolution of the sales tax strategy taken by Amazon through a review of relevant court cases, new state legislation, Amazon's public responses on sales tax issues, and settlements with states. Important cases include *Quill Corp v. North Dakota*, the failed objection to new sales tax legislation in the Supreme Court of New York, and the Colorado court ruling against Direct Marketing Association.

Amazon is the epitome of an economically relevant online company. At its inception, one of their cost-leader strategies has been to avoid having the customer pay sales tax. However, as they have grown and placed facilities in more states, they have not been able to maintain that strategy while servicing customers. From a series of state legislative activities such as the 2008 New York law regarding "click thru" nexus, the 2009 Rhode Island and Carolina laws, and the 2010 Colorado "non-collecting" retailers law, Amazon's public and dissenting stance was unsuccessful. In New York, Amazon challenged the ruling and was denied a review by the Supreme Court. Their position also was defeated in Colorado's 2016 decision against Direct Marketing Association. Nexus, for sales tax purposes, means a "minimal contact" with a state before the state can impose sales tax under two landmark Supreme Court decisions: *International Shoe v. Washington*, and *Quill Corp v. North Dakota*.

Through investigation of court cases, legislation, articles, and review of public comments by both Amazon and leaders such as former Texas State Comptroller, Susan Combs, we describe the evolution of Amazon's sales tax strategy as it has grown, as an enterprise. Amazon initially avoided putting property or people in states to deliberately avoided creating "nexus" or the "minimal contact" in a state to deliberately avoid sales tax collection requirements. As their customer base grew and other online merchants began competing more vigorously against them, they shifted their strategy towards using the court system and lobbyists to avoid sales tax. They lost many cases including ones in New York and Colorado. It is apparent from the public comments made by state leaders and Amazon, as well as the plethora of finalized state tax settlements (such as the \$269M agreement to forgo back sales taxes in Texas and the 2012 Nevada agreement to begin collecting sales taxes in 2014), that Amazon's current sales tax strategy is focused more on state settlements than their previous strategies. Amazon has moved away from its initial strategy of claiming it is not subject to sales tax collection as well as its following strategy of changing/challenging legislation.

*Transitioning to Online with Blackboard Course Shell & Quality Matters (QM):
Envisioning New Pedagogical Possibilities in Economics & Marketing Courses
Using a SWOT Analysis*

Esmeralda de los Santos, PhD, Nursen A. Zanca, PhD, & Ana Gonzalez

The first objective is to demonstrate changes made in undergraduate Macroeconomics and Marketing courses “after” QM Technology Training at UIW. Our goal is to demonstrate the incorporation of QM standards into online teaching by use of a newly created Blackboard course shell. The second objective is to conduct a SWOT analysis for online vs. face-to-face (F2F) teaching formats. In conducting the SWOT matrix, we utilized our own experiences along with the available literature related to online and F2F teaching.

Some educators argue that "online learning has been described as a solution" to educational challenges in the twenty-first century. They further argue that higher education must retool itself in order to remain viable against challenges rising from cost and student demands. Responding to these challenges, during the 2015 academic year, the UIW Instructional Technology department developed a new Blackboard course shell which includes pre-formatted content for hybrid, online, and F2F courses. As the growth of online teaching continues, a consequence will be the need for faculty to gain necessary skills and tools for online teaching.

An important question is whether online education represents a solution while maintaining teaching quality? A parallel debate exists around pros and cons associated with online vs. F2F classroom settings. To address the issues, we created a SWOT analysis between two delivery methods. Researchers argue that identification of SWOT is important because it provides an analysis of internal and external factors that may affect the success of a new venture, such as online teaching. Concisely, a SWOT analysis is a method that evaluates four elements (strengths, weaknesses, opportunities, and threats) of a new venture. Briefly, strengths (characteristics of online teaching that gives an advantage over others); weaknesses (characteristics that online teaching is at a disadvantage relative to others); opportunities (factors that online teaching could exploit to its advantage); and threats (factors that could cause trouble for online teaching).

The paper describes how an Economics and Marketing professor have re-envisioned their courses as they demonstrate technology tools that address QM Standard 5 (Course Activities and Learner Interaction) and Standard 6 (Course Technology). Potential advantages of online delivery are faster information access; more student responsibilities; convenient self-paced work; self-directed learning; additional study time; gain in computer skills useful for future career paths; enhanced student-professor interaction; and lower delivery cost per student. On the other hand, potential disadvantages include higher withdrawal rates; students' lack of discipline to succeed in online courses; additional faculty time and effort necessitated by online teaching; least effective learning environment; technical problems related to Web infrastructure; faculty training; and detecting potential cheating.

Students' Perspective of Using Technology in Classroom

Shishu Zhang, PhD, Yingying Pang, Michael McGuire, PhD, & Jia Wang

The purpose of this research is to explore college students' perceptions on technologies used in traditional classrooms. Technology plays an increasingly important role in people's lives. It has been integrated into the teaching of traditional courses through tools such as learning management systems (LMS) and social media (Al-Bahrani, Patel and Sheridan, 2015; Wang, Woo, Quek, Yang, & Liu, 2011). By doing so, instructors hope to enhance communication and promote active learning. While engaging and motivating students using technology is not new, it is a relatively recent development in economics teaching (Al-Bahrani, Patel and Sheridan, 2015). Research on the efficacy of incorporating technology in students' learning and new ways to interact with students is growing (Al-Bahrani, Patel and Sheridan, 2015; Wang, Woo, Quek, Yang, & Liu, 2011) however, not much research focuses on students' opinions on technology use in traditional classrooms. Instead of focusing on the use of different types of technology in the classroom, such as social media, this article focuses on students' perceptions of different technologies.

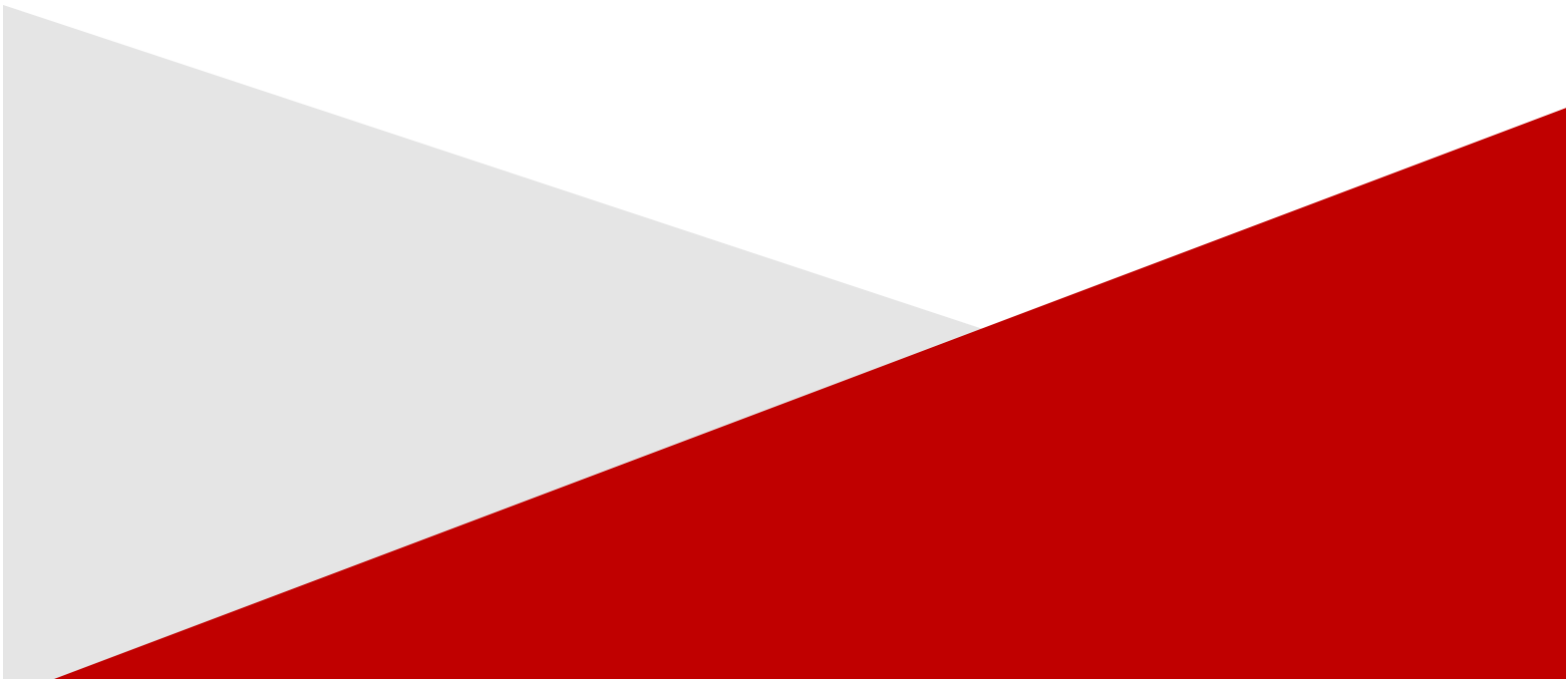
The faculty will design a survey, distribute the survey in class, let participants (students) complete the survey, and then collect the data based on the surveys received. The researchers will analyze the data using SPSS with T-Test Analysis, Descriptive Frequencies Analysis, Regression Analysis, and ANOVA Analysis. The duration of testing will be two months. Currently, the reported results are the completed the analysis of ANOVA. The Regression Analysis will be finished by the end of February. The data has been collected from Dr. Shishu Zhang and Professor Michael McGuire's Economics classes. The participants are anonymous student volunteers from the classes. The data from the paper surveys were entered manually into excel and then exported to SPSS.

Results of the data analysis showed that female students had a significantly higher positive perspective on using online course management systems for online grading than male students. Students who are 23 years old had a stronger positive opinion about posting a course website on social media than 21 years old students. Interestingly, the analysis also indicates that student mothers' educational level significantly impacted responses to questions related to automated response system and the preference of buying eBooks. The ANOVA analysis showed that when a student mothers' education level is graduate school, the students had higher positive feelings about using an automated response system with a large class than when a student mothers' education level is high school. Students whose mothers earned a 2-year college degree had a higher preference to have the option for eBooks rather than printed textbooks, compared to the students whose mother earned a 4-year college degree.

**Collaboration with the University of the South*

FEIK SCHOOL OF PHARMACY

The Feik School of Pharmacy embraces the Mission of the university as it develops a group of caring faculty and student scholars who are dedicated to impacting the health care needs of the people of south Texas and the nation. The program focuses on a strong foundation in the basic, pharmaceutical, administrative and clinical sciences using innovative technology, curricular integration, lifelong learning and critical thinking to provide high-quality, evidence-based pharmaceutical care with opportunities for multicultural and multilingual development.



Reduction of Medication Regimen Complexity in Geriatric Patients: The Effect on Quality of Life and Functional Capacity

Emily G. Brysch, PharmD, Kimberly A. B. Cauthon, PharmD, CGP, BC-ADM, G. Blair Sarbacker, PharmD, BCACP, & Bethany A. Kalich, PharmD, BCPS-AQ Cardiology

A reduction of the MRCI will increase patient functional status and quality of life in geriatric patients.

The American Geriatrics Society suggests that future research initiatives, on the elderly, focus on quality of life and functional status. Geriatric patients are prescribed multiple medications which may increase medication regimen complexity, leading to poor outcomes such as functional decline and poor quality of life. The Medication Regimen Complexity Index (MRCI) is a validated, 65-item scoring system used to determine medication regimen complexity. Currently, there is no literature examining the reduction of this score and the resulting effects on quality of life and functional status. This study seeks to determine whether a reduction of the MRCI will increase geriatric patient functional statuses and quality of life.

This is a multi-center study with a prospective cohort of patients 65 years and older seen by an ambulatory care pharmacist in one of the cardiology or primary care clinics for their medication and disease state management. A chart review will identify eligible subjects from the list of patients to be seen in clinic each day. The pharmacist will obtain informed consent from patients interested in participating in the study. Next, the pharmacist will provide the subject with the SF-12 questionnaire which will assess quality of life and functional status. The pharmacist will conduct the patient visit as per standard of care. After the visit, a retrospective pre-visit MRCI and a prospective post-visit MRCI will be calculated. Four weeks after the visit, a second SF-12 will be completed via telephone follow-up. If the hypothesis is validated, MRCI should be taken into consideration when designing a care plan for geriatric patients.

**Collaborative study between Feik School of Pharmacy, University of Texas Health Science Center, & South Texas Veterans Health Care System*

Angiotensin II/NaCl Increases FosB Expression in the Paraventricular and Supraoptic Nucleus

Cynthia Franklin, BS, MSCI, Caroline Conner, Lauren Biggs, Lauren Tischler, Yolanda Rangel, & Helmut Gottlieb, PhD

The purpose of the present study is to examine changes in FosB immunohistochemistry evoked by an in vivo hypertension model, angiotensin II/High salt diet (ANGII), within the supraoptic nucleus and paraventricular nucleus of the hypothalamus. Immuno-detection of Fos, a member of the AP-1 family of transcription regulatory proteins, has been widely used as an indicator of neural activation. Increases in Fos expression have been shown to occur under several pathophysiological conditions. FosB is an inducible member of the Fos family that has been proposed to be a marker of chronic activation in the central nervous system. This study investigates that changes in FosB in the hypothalamus under a chronic hypertensive model. Angiotensin II and high salt diet have been proposed to activate several brain regions involved in autonomic function. As such, we used FosB to determine the changes in neuronal activity in the forebrain of ANGIID rats treated as compared to rats treated with high salt diet only, and rats on a normal diet (control group). By examining the changes in FosB, we can determine which hypothalamic brain regions are being chronically modulated by the ANGIID model. For further comparison, we also measured changes in FosB in ANGIID hypertensive rats treated with a kappa opioid receptor (KOR) agonist, which has been shown to produce effects on cardiovascular and renal function.

Male Sprague-Dawley rats were instrumented with osmotic mini-pumps filled with angiotensin II for subcutaneous (s.c.) infusion. In addition, rats were implanted with an ICV cannula for delivery of drugs into the lateral cerebral ventricle. After recovering, rats were fed 2% high salt diet for 14 days and at day 15, injected with either U50-488H, kappa opioid receptor agonist, or saline. Ninety minutes post injection, each rat was anesthetized with Inactin (100 mg/kg i.p.) and perfused with PBS and fixative [4% paraformaldehyde (72) in phosphate buffered saline, PBS, pH =7.4]. The brains were removed and processed for FosB immunocytochemistry using a commercially available antibody (1:1000 rabbit anti-FosB). Brain sections were examined using light microscopy to identify FosB positive cells.

ANGIID hypertensive model increased FosB expression in the paraventricular nucleus of the hypothalamus (PVN) when compared to high salt diet. ANGIID also increase FosB expression when in the PVN and supraoptic nucleus (SON) when compared to naïve-control rats. Although FosB expression increased in the PVN, there were no statistical significant changes between magnocellular and parvocellular expression. U50-488H administration decreased FosB expression in the SON and PVN. The PVN and SON have been shown to be involved in the control of blood pressure, fluid and electrolyte balance. Central KOR receptor inhibition of these forebrain regions may form part of the neuro pathways involved in the decreases in water and sodium excretion evoked by KOR activation.

**Collaborative study between Feik School of Pharmacy; University of Texas Health Science Center*

Evaluation of Prophylactic Antibiotic Regimens on Recurrence and Mortality in Spontaneous Bacterial Peritonitis

Shelley S. Glaess, PharmD, Rebecca L. Attridge, PharmD, Rebecca L. Brady, PharmD, & Russell T. Attridge, PharmD

Current guidelines recommend antibiotic prophylaxis in patients with cirrhosis who survive an episode of spontaneous bacterial peritonitis (SBP). Limited data support specific prophylactic strategies. Our primary objective is to compare different prophylactic antibiotic regimens for SBP recurrence and mortality at 90 days and one year in patients with cirrhosis and a history of SBP.

Assessing long-term outcomes of different prophylactic antibiotic regimens has the potential to confirm superior dosing regimens (e.g. weekly versus daily schedules). By analyzing our population's characteristics and outcomes, we hope to characterize resistance patterns by bacteria in regards to their antibiotic exposure and generate potential risks and benefits of concurrent medications (non-absorbable antibiotics, antihypertensives, gastric acid suppressants).

We performed a single-center, retrospective cohort study of adults (>18 years) with a peritoneal fluid analysis from January 2010 to November 2015. Eligible patients had peritoneal fluid polymorphonuclear (PMN) leukocyte counts ≥ 250 cells/mm³ or a positive peritoneal fluid culture. Initial secondary SBP prophylaxis regimens were used to stratify patients into daily or once-weekly groups. Primary outcomes were analyzed with Fisher's exact test.

Of 201 patients with positive peritoneal fluid samples, 42 patients met inclusion criteria. Most (97.6%) were male; mean age was 61.5 years (SD \pm 10.0). Daily antibiotic prophylaxis regimens were more common than weekly regimens (18 vs. 15); 9 patients received no SBP prophylaxis. Most patients (69.7%) received either daily or weekly ciprofloxacin. Overall 90-day and one-year mortality were 23.8% and 59.5%, respectively. Daily and weekly regimens had similar rates of recurrence at 90-days (55.6% vs. 44.4%, p=1.0) and 1-year (53.8% vs. 46.2%, p=0.95). Similarly, there were no differences in mortality between daily and weekly regimens at 90-days (66.7% vs. 33.3%, p=0.67) or one-year (55.0% vs. 45.5%, p=0.95). Patients who received no prophylaxis had similar rates of 90-day (44.4%) and one-year mortality (55.5%) to both the daily or weekly groups. When comparing daily vs. weekly SBP prophylaxis, both regimens resulted in similar rates of 90-day and 1-year SBP recurrence and mortality.

**Collaborative study between Feik School of Pharmacy, University of Texas Health Science Center, & South Texas Veterans Health Care System- Audie L. Murphy Division*

Making Data-Driven Curriculum Improvements by Converting AACP Curriculum Quality Survey Data to Information

Alejandra Zertuche, MBA, David Maize, R.Ph, PhD & Renator LeDuc

The American Association of Colleges of Pharmacy (AACCP) Curriculum Quality Surveys provide a quantitative assessment of pharmacy school curricula, and allow for data-driven curricular improvements to be made. AACCP's online survey system provides data from individual schools, peer-schools and national survey responses. Given the amount of available data, the task of analysis can be daunting and time-consuming. However, there exist technologies which may allow for more efficient assessment of these data.

For example, Tableau™, a data-visualization application, supplies interactive reports that are coupled with statistical analyses from R©. Thus, we describe how we convert AACCP Quality Survey data into usable information and allow for data-driven curricular assessments at our school.

Utilizing Tableau™, survey responses from our school, from 2010 to 2015, were assessed against peer-schools and national responses. This analysis was available within minutes of obtaining new AACCP data. The Chi-squared test of independence and the Adjusted-Wald Method were conducted to test for significance ($p\text{-value} < 0.05$).

Questions where our school's agreement responses were statistically lower than either peer-schools or national responses were defined as areas of opportunity. Questions where our school's agreement responses were statistically equal to or greater than both comparators were defined as areas of strength.

Interactive-visualization reports identified 27 areas of opportunity within our curriculum over a five year period. Within that time frame 24 of these areas were converted to areas of strength.

Conversion of AACCP Curriculum Quality Survey data to information utilizing technological platforms allow for much more efficient Quality Survey analysis and data-driven curricular change.

ILA FAYE MILLER SCHOOL OF NURSING AND HEALTH PROFESSIONS

The mission of the Ila Faye Miller School of Nursing and Health Professions is to extend the healing ministry of Jesus Christ, the Incarnate Word, through the educational preparation of health professionals.



*Improving Communication through Bedside Reporting in the ICU and IMCU*Patti Brooks, BSN, RN, & Bryan Abejuela, BSN, RN

Evidence based practice shows that nurse-to-nurse communication is improved when shift hand-off is completed at patient bedside (IOM, 2001). In an urban south Texas hospital, ICU and IMCU setting, the nurses have been resistant to implementing this change of practice. This affects patient satisfaction scores, which ultimately affects reimbursement and can raise concerns regarding patient safety. The purpose of this project was to identify barriers to successful implementation and to develop an intervention plan to improve policy adherence and patient satisfaction scores related to nurse hand-off communication.

Failure in communication was identified by the Joint Commission as the leading cause of sentinel events in the country. Adequate information during shift hand-off, along with the chance to ask questions, promotes patient safety. Traditionally, this is done in a private room or the nurses' station away from the patient, but recommendations now suggest holding nurse communication hand-offs at the patient bedside. This allows for inclusion of the patient and family in the communication loop and increases the likelihood of preventing errors (Laws & Amato, 2010). Communication is also tied to hospital reimbursement through patient satisfaction scores. The units' scores should be at the 80th percentile ranking and are currently well below the benchmark.

This project included direct observations of shift hand-offs in both units over a period of two months. Nurses were individually surveyed regarding their perceptions of the efficacy of using bedside handoff, and rationales as to why they adhered or did not adhere to the new policy. Anonymous staff input regarding the bedside handoff process was also sought to obtain unbiased feelings. Patients admitted on both units were surveyed regarding their perceptions of their own safety and the quality of communication from the hospital staff. The hospital and unit administration were both interviewed for their perceptions of the bedside report implementation process and why results were not as expected.

Improving Medication Reconciliation in the Emergency Department

Emma Caballero, BSN, RN, Michele Herrera, BSN, RN, Theresa Pomerlau, BSN, RN, & Leslie Hinson, MSN, RN, CNL, CEN

The purpose of this project is to discover barriers to a standardized medication reconciliation process in the Emergency Department (ED) and to use this information in development of an intervention plan to improve patient safety outcomes in a suburban, acute care hospital in south Texas. Medication reconciliation is a process that provides a list of all medications the patient is taking (Institute for Healthcare Improvement (IHI), 2011). The patient safety goal is to have a 90% medication reconciliation compliance rate.

An inaccurate list of medications taken at the first point of entry, can disrupt the patient's quality of care and their safety. The average age of patients seen in the ED was 60 and older. This age group is more susceptible to multiple comorbidities and polypharmacy issues. Therefore, making this process difficult. Evidence-based research shows an accurate medication reconciliation reduces adverse drug events (ADE) (IHI, 2011). Also, medication errors can increase patient harm (Salanitro, et al., 2013) and readmission rates increase (Auerbach, et al., 2015). The Joint Commission (2015) acknowledges that medication reconciliation can be difficult to obtain because the accuracy depends on the patient and their ability to provide their medication information.

This quality improvement project collected descriptive microsystem data using the five P and Dartmouth ED assessment tools. Patient and staff surveys, interviews, observations, and a case study were used to further evaluate the medication reconciliation process. The CNL students observed the medication reconciliation process with the staff and patient interaction in the ED. The patient and staff surveys were used to collect their perception related to the medication reconciliation policy and procedure. A case study created from an ADE was used to assess staff knowledge of the expected process. Also, leadership team member interviews were used to collect expectations on medication reconciliation.

Preliminary results showed the majority of the patients were not aware of their current medications. ED staff demonstrated a knowledge deficit in the medication reconciliation process as well as using the software program. Because an average daily census in the ED is 75 patients and because of the rapid pace in the ED, nurses stated they were unable to complete the process for all patients. The leadership team expressed concern about the pharmacist's role lacking a clear definition and that the ED was not in compliance with medication reconciliation standards. The lack of a standardized process could increase patient risk. Barriers identified included: length of time to complete an accurate medication reconciliation, rapid pace in the ED, lack of staff knowledge/training, and patient/family member inability to recall medications accurately. An intervention plan should include: patient medication education, increased staff accountability, and to identify clear roles and responsibilities for the pharmacist and the staff nurses regarding the medication reconciliation process.

**Collaboration between Ila Faye Miller School of Nursing & Health Professions and Methodist Stone Oak Hospital*

A Voluntary Journal Club for Undergraduate Nursing Students

Katie Chargualaf, PhD, RN, CMSRN, Laura Munoz, PhD, RNC, NNP, & Christina Hernandez, PhD, RN

The purpose of this study is to determine the impact of a voluntary Journal Club for undergraduate nursing students on the knowledge, skills, and self-efficacy related to research concepts and the evidence-based practice (EBP) process.

Evidence-based practice is the combination of current, best research evidence with clinical experience in the nursing role and client values to inform patient care decisions. The foundation of an evidence-based practice relies on research knowledge and a clear understanding of the research process. Baccalaureate nursing programs must assure that graduates have a basic understanding of evidence-based practice to include the research process and the appraisal of research evidence for integration into clinical practice.

A two-group, quasi-experimental, after-only non-equivalent control group design will be used to compare the student outcomes of a Journal Club instituted to support student learning. All students (N=47) enrolled in the undergraduate nursing research course in the fall 2016 semester are eligible to participate. The results will be compared, in aggregate form, to the outcomes of a previous semester of students enrolled in the same undergraduate nursing research course (N=50; spring 2016 semester).

Research knowledge and skills will be operationalized using aggregate scores on course assignments (1) the Critical Appraisal of a quantitative research article, (2) EBP project and presentation, (3) midterm and final examinations (mean score and range), and (4) final course grades. Scores on the CA assignment, EBP project and presentation, midterm and final examinations, and final course grades were analyzed using an independent samples t-test. Results demonstrated that there was a statistically significant difference in scores on the CA ($p=0.007$); EBP project and presentation ($p=0.016$); midterm exam ($p=0.05$) and final examination grades ($p=0.011$). There was no significant difference in scores on the final course grade ($p=0.103$) between the spring 2016 and fall 2016 semesters.

Additionally, participants completed a researcher developed survey to examine their perception of the knowledge and skills attained from Journal Club. Results showed that 57% of participants reported that Journal Club was “very helpful” or “extremely helpful” to their understanding of the EBP and research process. A majority of students found participation in a Journal Club helpful to their understanding of the research process and effective in increasing knowledge and skills on selected assignments related to EBP.

Simulation Improves Student Confidence on High-Risk, Low-Frequency Skill Scenarios

Reid Fisher, EdD, LAT, ATC, Shandra Esparza, EdD, LAT, ATC, & Anyssa Guajardo

The purpose of this study was to explore simulations as an effective way to increase students' confidence levels in high risk, low frequency events, in athletic training.

Medical doctors, nurses, and paramedics regularly use simulation to safely expose students to high-risk, low-frequency events. The result is an increased self-confidence in performing the skills necessary to successfully manage the event. In athletic training, however, research assessing the affective impact or psychological utility of simulation as a tool in student preparation does not exist.

IRB approval was granted through the Illa Faye Miller School of Nursing and Health professions' simulation center. Testing was conducted once a semester for three semesters. As simulation is part of the program's approach to ensuring preparedness, each student takes part in the simulation regardless of willingness to have their data included in the study. Lead faculty provided an informed consent so students understood and could elect whether or not they wanted their data included. Three days prior to the event, faculty provided students with pre-event preparatory materials directed towards foundational knowledge necessary to manage an emergency scenario. The day of the event students arrived in pre-assigned groups and were asked to complete self-evaluations of confidence for various competencies involved in the scenario. Each participant was assigned a specific role to play. Faculty assessed students on their reactions to the events that then transpired. Debriefing after the conclusion allowed faculty and students to discuss collectively the end result and ways of improving a final outcome. The same confidence evaluation was given after the simulation to compare the students' level of confidence for each competency. Data were analyzed by paired samples t-test.

A total of 50 students agreed to participate in data collection for the purpose of this study. On a scale of 0-3, the average pre-score (2.23 ± 0.50) was significantly lower than the post-score (2.58 ± 0.45), $t(49) = -9.913$, $p = 0.000$. Simulation is an effective tool to augment a student's perception of readiness towards responding to high-risk, low-frequency events.

Exploring Anxiety Levels and Recidivism Rates of Patient's with a Primary Diagnosis of Alcohol Dependence and Withdrawal

Anna Tabet, DNP, FNP-BC

The purpose of this study was to explore anxiety levels and recidivism among patients with a primary diagnosis of alcohol dependence and withdrawal. The Center for Disease Control (2014) reports that there are 88,000 deaths each year due to alcohol use. As the third leading cause of death in the United States, alcohol use contributes to many societal issues such as homelessness and illegal activity, in addition to mental health related issues such as depression and anxiety. There are many negative health outcomes of alcoholism including cirrhosis of the liver, esophageal varices, hypertension, and breast cancer. In 2014, excessive alcohol consumption cost the United States an estimated 223.5 billion dollars; the majority of this cost resulted from workplace productivity of which was attributed to (1) the total amount of loss from the workplace, (2) an increase of health care expenses, (3) law enforcement, and (4) an increase in legal issues from motor vehicle costs (CDC, 2014).

A retrospective chart review of 20 randomly selected charts were audited from September 2014 to August 1, 2016 from a small, private detox unit in Texas. Charts were reviewed for the following data: age, gender, number of admissions, discharges, their primary and secondary diagnosis, and their CIWA-Ar levels on two admission and discharges.

With a small sample of 20 patients, the anxiety scores of detox patients decreased from each admission to each discharge. Those who were admitted on second admission with higher anxiety than the prior admission, had a decrease between the second admission and discharge then the prior admission and discharge. There was a statically significant decrease of anxiety on the second admission and second discharge.

Alcohol dependence is a multi-faceted problem that can contribute to numerous health disparities. This pilot study suggested that it is essential that, prior to discharge, patients must understand how to identify the origin of their anxiety and how to manage their anxiety with each admission and discharge.

Athletic Trainer Integration in U.S. Air Force Base Training

Bryant Webber, MD, MPH, Reid Fisher, EdD, LAT, ATC, Shandra Esparza, EdD, LAT, ATC, Mary Pawlak, MD, MPH, Nathaniel Nye, MD, Juste Tchandia, PhD, MPH, Thomas Cropper, DVM, & Sarah de la Motte, PhD, MPH, ATC

The purpose of this study was to identify the impact athletic trainers can have on attrition, time lost from training, and injury rates while integrated within a United States Air Force (USAF) basic training squadron. As the leading contributor to missed military training time and medical attrition from training, musculoskeletal injuries significantly affect operational readiness. Reducing injury morbidity among military recruits could minimize disruptions in the training pipeline, decrease the associated costs, and improve the health and fitness of individuals entering the armed forces. This project was designed to evaluate the operational and cost impact of embedding certified athletic trainers (ATCs) in a U.S. Air Force training squadron.

An athletic training room staffed by two ATCs was opened near the end of 2015 in the 323 Training Squadron of U.S. Air Force Basic Military Training, Joint Base San Antonio- Lackland, Texas. Musculoskeletal injury rates, time out of training due to injury, injury- based attrition rates, healthcare utilization for injury, and per capita injury-related costs were calculated for the intervention squadron and compared to two control squadrons without access to ATCs. This population-based intervention trial profited from extant random allocation of recruits into the three squadrons. Preliminary analyses for the first eight months of the program (January through September, 2016) were conducted for this abstract.

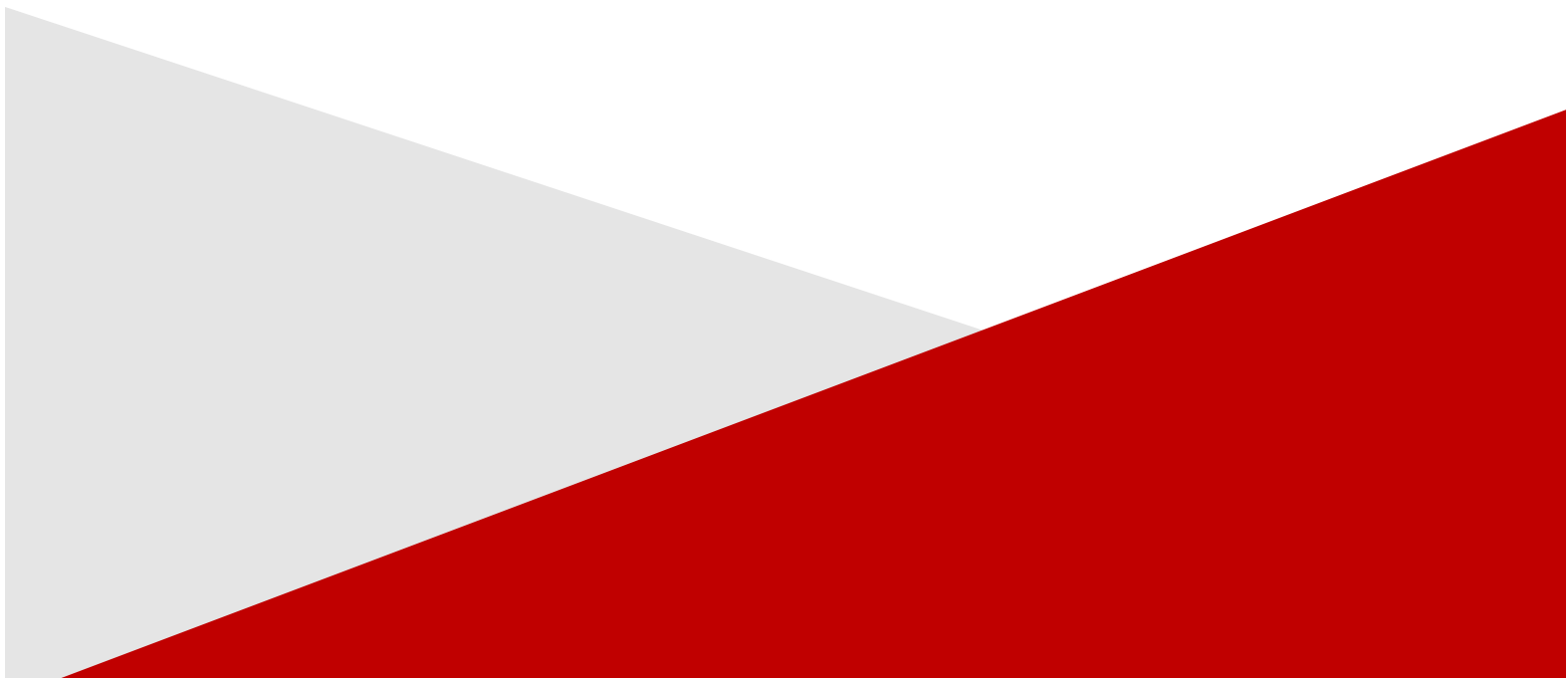
A total of 8,239 recruits accrued 36,349 weeks of training in the intervention squadron, compared to 16,643 recruits and 100,075 weeks of training in the control squadrons. Intervention and control squadrons experienced significantly reduced attrition rates (4.66% and 6.09% respectively; $p < 0.0001$) and medical hold referral rates (2.28% and 3.21% respectively; $p < 0.0001$). Attrition due to musculoskeletal injury reduced 18% (0.95% and 1.16%; $p = 0.1286$), and stress fracture rates reduced 15% (2.14% and 2.53%; $p = 0.0568$), both trending towards significance.

Embedded ATCs in U.S. Air Force Basic Military Training reduce attrition and time out of training due to injury and therefore, the net financial impact is positive. This program is early in its implementation and analysis should continue to delineate the longitudinal impact of ATCs in a military training environment.

**Collaborative project between Ila Faye Miller School of Nursing & Health Professions; 59th Medical Wing, Joint Base San Antonio- Lackland, Texas; Injury Prevention Research Laboratory, & Uniformed Services University of the Health Sciences, Bethesda, Maryland*

SCHOOL OF MEDIA AND DESIGN

SMD serves the needs of students by providing a firm foundation in theory and application utilizing innovative, state-of-the-art software and computer technology. In harmony with UIW's Mission, SMD seeks not only to develop the necessary knowledge and skills to become effective professionals in students' selected careers, but to help cultivate them in becoming concerned and enlightened citizens, rooted in the core values of education, truth, faith, service and innovation.



*Development of a Signal Analysis Identification Program for Aircraft/Disaster
Visualization by Converting Audio Signals using Fourier Transform Algorithms*

Paul Huron

The research paper is aimed at ascertaining a computerized method for detecting and identifying aircraft by using a Discrete Fourier Transform (DFT) algorithm that is capable of reading and identifying an aircraft's aural signature. The experiment will be conducted by utilizing the MATLAB high-level interpreting language and computing environment to display and compare various audio signals that will be gathered from a variety of commercial and military aircraft. There is an expectation to discover how DFTs represent sounds produced by various aircraft.

There is also an expectation to develop a database to store and view the data obtained from the experiment. With this project, the data obtained via initial experimentation and successful development of a sound wave database can contribute to the understanding of numerous scientific fields and clarify the nature of how sound waves function in the air.

This research can be extended to design a system that can be capable of identifying aircraft through a series of audio sensors that will be laid out at locations of interest and serve as an air defense system for military bases, "no-fly" zones and areas of conflict across the globe.

The deliverables of this research will include a database that will consist of the aural signatures retrieved from experimentation, a complete MATLAB (Matrix Laboratory) program designed to identify aircraft via their Fourier Transforms, and written documentation that relates to the research and experiments throughout the duration of the project. This research will also contain a copy of all the documentation, records and exhibition materials that will be presented.

*It's All Greek to Me*Carla J. Perez. PhD

The purpose of this research was to explore the adoption of the Greek Key motif throughout western culture, document its use, and understand its popularity. The cyclical nature of fashion is well established. This study addresses one specific feature: the Greek Key motif, a stylized representation of a meandering river. In order to more thoroughly understand how such an ancient motif has survived and is continually revived can contribute to the understanding of fashion cycles. This will assist fashion industry trend analysts to more effectively predict the recurrence of cycles and therefore increase company profits and job security.

Photographs were taken to document the researcher's observation of the Greek Key motif encountered in everyday life over a period of two years. The motif was observed as decoration throughout the environment. It was seen on television shows, trucks, floors, and even people. Any place the researcher encountered the decorative motif, it was photographed. The motif was photographed in hotels, airports, restaurants, and even at University of the Incarnate Word.

Because qualitative research analysis involves understanding a situation in its totality by using data to describe the phenomenon, multiple photographs were used to document the researcher's encounters of the motif in daily life. The similarities among and difference between the various images of the motifs collected were noted. Twenty-five sightings of the ancient Greek Key motif were experienced throughout the typical day-to-day life of the researcher, during a 30 month time period. This journey started at The Loretto Chapel in Santa Fe, New Mexico, in February 2014 and continued through August 2016 at El Machito's, a restaurant in San Antonio, Texas.

Results were supported by Laver's Law (Taste and Fashion, 1937), which states that as fashion ages it becomes more attractive. Fashion, as a means of intercultural communication (Gudykunst, W. B., 2003), was observed in this study. Mentioned by Homer in the Iliad, this motif most likely began in ancient Greece. Since that time it has been modified and adopted by many other cultures, and supported by the current study. Modifications of the ancient motif, the Greek Key, can be seen throughout the Western Hemisphere. One reason for this may be that with the migration of people groups from Europe to "The New World" their mode of dress and adornment came with them. The enduring popularity of the design can be attributed to its simplicity and ease of replication.

The Designer/Embroiderer Relationship

Theresa C. Alexander, PhD

While conducting interviews in France, Italy, and England on high fashion embroidery in 2013, I was repeatedly told that European embroiderers are losing much of their business to Indian embroiderers (Alexander, 2014). Yet, the European embroidery designers that worked with Indian embroidery workshops lamented that they could not obtain the desired quality from their Indian embroiderers. This posed the question, are Indian embroiderers less skilled than European embroiderers? If not, why do European designers have difficulty procuring quality embroidery? There is little documentation about high fashion embroidery in either Europe or India. Of the information available, almost no information exists on the processes involved in making the embroidery or the people that execute the embroidery.

This study is actually a conglomeration of three different studies. The first and second studies had the same basic design: both were qualitative studies that utilized recorded oral interviews oral history methods. The first study took place in London, Milan, Paris, and the Lorraine region of France, and the second in Kolkata, India. I interviewed 20 individuals in the European study and 15 individuals in the Indian study. Participants were selected for their association with high fashion hand embroidery. In the European study, these included embroiderers, embroidery designers, and embroidery company executives. The Indian study participants included fashion designers, embroiderers, and assistants. The European study resulted in 16 recorded interviews and the Indian study resulted in 10 recorded interviews. The recorded interviews from both of these studies were transcribed using the gisted method of transcription (Dempster & Woods, 2011). I used a modified version of the constant comparative method of analysis to develop themes (Fram, 2013). The final study was a comparative study between the two individual studies.

The embroidery and design in the Indian companies were not lower quality than the embroidery produced in the European workshops. The cheaper labor even enabled the embroidery to be more intricate. However, the embroiderers in the companies I visited were constantly supervised by the fashion designer. Even the embroidery designer was under constant scrutiny. This was, in part, due to the company structure of having everything in-house, due to the different process that allows less reliance on the autonomy of the embroiderer and, due to the different social status of the embroiderers. The different social status of the embroiderers is the primary reason the embroiderers have less autonomy.

The tighter control of Indian fashion designers over their embroiderers' results in finer embroidery than European embroidery and fashion designers can obtain from the same Indian embroiderers. European embroidery houses do not have their primary embroidery designer located in India; controlling every action of the embroiderers. The reliance on contracted labor produces different results.

Media Digital Source Branding

Leah M. Norton

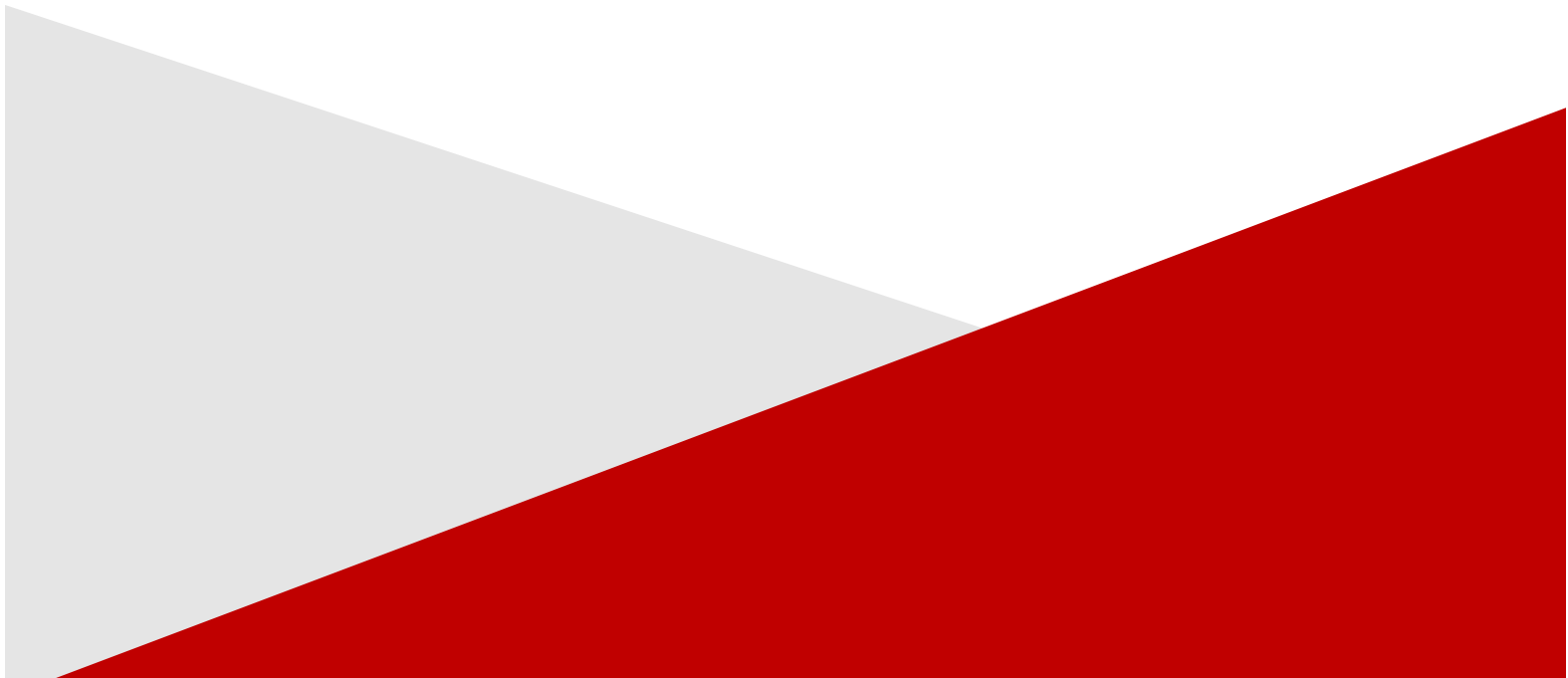
My work explores the relationship between the corporate world of a digital marketing firm and modern design. My influences have been found in established companies like Apple, and smaller firms such as HUGE.

Since starting in the graphic design program, I have been fascinated with how designers solve problems with design, imagery, and color. I started working for Media Digital Source (MDS) prior to its formation. I offered my services as a graphic designer to create the logo and branding for the new company. This was my first opportunity to create something that would actually be published.



SCHOOL OF MATH, SCIENCE, AND ENGINEERING

At SMSE we are interested in the future, with our highest priority preparing the citizens and scientific workers that will live in the future. We are experiencing an exciting time of renewal within the various School disciplines with a focus on education through research. At SMSE, we are on course toward new recognition as a premier urban School, helping the University of the Incarnate Word build a strong reputation on the power of an excellence-based educational environment.



*Sand in my Shoes: A Sabbatical at the Marine Biological Laboratory*Veronica G. Martinez-Acosta, PhD

In the spring of 2016, I was awarded a sabbatical leave to work as a visiting scholar at the Marine Biological Laboratory (MBL). My journey to the MBL was one that began the summer of 2002 when I was afforded a life-changing opportunity as a young scientist to attend an MBL summer course that specifically addressed the needs of underrepresented minority (URM) graduate students in the neurosciences. At a pivotal time in my young career, I met some of the mentors that have continued to support me across all levels of my career. Traveling back to the MBL for my sabbatical work, it was my intention to develop networks, similar to those I became a part of that summer, for the URM students that I now serve as a faculty member of a minority serving institution.

I present data collected this spring on the characterization of the neural anatomical and synaptic changes observed following CNS injury that underlie functional plasticity in the aquatic oligochaete, *Lumbriculus variegatus* and provide an overall summary of the contributions my lab has made in the fields of developmental biology and neurobiology. Most importantly, I provide a personal reflection on the needs of the URM student, from a URM perspective, to be retained in STEM and a suggestion of best practices moving forward to better equip the underserved student for success in their chosen fields.

Girls in Engineering, Math and Science (GEMS) Camp: Using Various Pedagogical Techniques as a Vehicle for Inspiring Female Enrollment in STEM Education at the University of the Incarnate Word

Sreedevi Ande, PhD, PE, Okan Caglayan, PhD, & Erik Coronado, BS, BA

This study is critically important because it targets a population that has been historically unrepresented in the STEM fields, specifically in the engineering field. As late as 2013, an average of one woman for every four men earned an undergraduate engineering degree, and less than one out of four women were from a historically minority background.

In order to maximize the outreach to as many high school female students as possible regarding the GEMS camp, and inspiring them towards choosing a STEM career, high school students from various High Schools in San Antonio were invited to the GEMS camp to participate in hands-on engineering activities. The goal was to teach the students about how engineering is part of daily life. This was achieved by engaging and inspiring them through applied sciences and mathematics. Students gained valuable experience working in groups with their fellow campers, through challenging activities that emphasized Civil and Electrical Engineering.

The first part of the camp gave the students an opportunity to study the basic concepts of electricity and magnetism through exciting hands-on robotics activities. The objectives were threefold: to introduce the students to the fundamentals of electricity and magnetism through theoretical and experimental analysis; to support them in developing creativity and engineering problem-solving skills through teamwork; and to inspire the students to become more skilled in communication, organization, and research that will help prepare them for future success in higher levels of schooling and in the workplace.

The second part of the camp introduced the students to the importance of the engineering design process, which is considered as the heart of engineering. Students designed, built, and tested a model lightweight bridge that has the highest weight bearing capacity. By combining the Lego building system with the Lego Mindstorms educational robotics technology, the students gained an understanding of scientific and engineering design methods in fun and engaging applications. Students presented their experiences and their knowledge gained by creating and delivering a group poster presentation at the end of the camp.

Through observations, interviews, surveys, and examination of student work, the Girls in Engineering, Math and Science camp was classified as a success. The outcomes of the summer camp included student's increased ability to conceptualize engineering problems and an increased engagement in engineering by incorporating visualization tools in the classroom environment. More importantly, the graduating high school seniors were motivated and excited about starting their first year at university in an engineering field.

*Nest Characteristics and Behavior in Captive Turtles*Kristina Lopez

The purpose of this project is to provide a nesting area in the exhibits for each species of turtle I will be working with that will simulate natural nesting grounds that they would use in the wild. The turtle species I will be working with at the San Antonio Zoo are the Florida red-bellied Cooter (*Pseudemys nelsoni*), Texas river Cooter (*Pseudemys texana*), Giant Amazon River Turtle (*Podocnemis expansa*), Yellow Spotted River Turtle (*Podocnemis unifilis*), the Black Wood Turtle (*Rhinoclemmys funerea*), and the Mexican Musk Turtle (*Staurotypus triporcatus*).

The purpose of this study is to utilize my observations and findings to add insight into the nest characteristics and nesting behavior of the captive turtles. There were not many articles with good general information on some turtle species. I hope that my research will provide that needed information. The project will yield more turtle eggs from these turtles since, up to this point, these turtles have had no proper nesting areas in their exhibit and have been laying their eggs in the water. The study will provide insight and data on the nesting behavior of the species of turtles (*P. unifilis*, *P. nelsoni*, *P. texana*, *P. expansa*, *R. funerea*, and *S. triporcatus*).

The San Antonio Zoo will benefit from this study, since it will provide proper nesting areas for their turtles, enhancing the exhibits. This project will also provide the zoo with data to track and log to the courtship, mating, and nesting behavior of the turtles. My project will also contribute to the science community by studying and documenting turtle species that have not been previously researched.

There are four exhibits in the project and each will have a nesting area. Sandy nesting spots will be provided for each turtle, allowing them to burrow and make their nests. The nesting areas measure 2 ft. x 2 ft. x 1.5 ft, providing the turtles enough space to settle into. Observations of each exhibit are conducted once a week for thirty-minutes. Any inter- and intra-species interaction is noted, as well as any basking, swimming, or any other activity. The temperature and weather at the time of the observation are also recorded.

Since I am an undergraduate student with little experience with animal behavior, I will be discussing my observations with my mentors for this project. I will use their expertise to analyze and draw conclusions of my observations. I will also cross-examine my observations with other research done on the behavior of other turtle species to find any potential links or similar behaviors across species.

Analyzing the Protein-Protein Interaction Network of TNF-Alpha

Alan Amaya, Kelley Magill, & Lakiesha Jackson

In this project, we analyze the protein-protein interaction (PPI) network of TNF-alpha by using graph theory in order to understand more about inflammatory pathways found in the development of type 2 diabetes.

Type 2 diabetes is one of the leading causes of death in America. This type of diabetes is caused by insulin resistance which disables your body's ability to properly regulate your blood sugar levels. Having high blood sugar levels cause inflammation within the body, which eventually leads to organ failure. TNF-alpha, also known as tumor necrosis factor alpha, is a specific cell signaling protein involved in inflammation and insulin resistance inside the body.

We used "<https://thebiogrid.org>" to find our specific protein's (TNF Alpha) protein interaction map. This map allows us to see each specific protein that TNF alpha interacts with, and displays these interactions in a graphical diagram. Once we have this graphical diagram, we can look at all the proteins surrounding TNF alpha, and we can obtain graph theoretical data for each of those proteins by using the protein graph repository. When we have all this data regarding the original graph, we can do a single point mutation of the interaction graph, and replace it with a certain mutation of TNF alpha. Once we do this, we re-calculate the data. We did this for 5 mutations of TNF- alpha, and we were able to compare the 5 mutations along with the original, in order to see which of these mutations was most different to TNF-alpha.

Out of the 5 mutations, 2 mutations were significantly different from TNF-alpha. We used a dendrogram to cluster the data found from all five mutations, and the dendrogram differentiated two mutations from the rest of the mutations and the original. Future research will be needed in order to see the biological applications of the differences that we found.

**Collaboration between students at University of the Incarnate Word, University of Rhode Island, & Grambling State University.*

*Effect of Ozone Exposure on Cone Photoreceptors*Jordan Wetz, BS. A. Philip Aitsebaomo, OD, PHD, & Carlos Garcia, PhD

Ozone (O₃) is a naturally occurring odorless and colorless gas that is well known to be harmful to humans. In recognition of this danger, the Environmental Protection Agency (EPA) constantly monitors O₃ levels and broadcast their results so that susceptible individuals may take necessary precautions. While O₃ effect is commonly discussed as it relates to people with breathing problems such as asthma, its effect on the visual system - specifically cone photoreceptors of the macular which is used for critical daylight vision - has not been well documented. Age Related Macular Degeneration (AMD), a leading cause of blindness in the US and around the world, is associated with oxidative stress which selectively damage macular photoreceptors. The purpose of this study is to compare the Electroretinogram (ERG) responses between control (clean air condition) and O₃ -exposed rats, to better understand the effect of a strong oxidant such as O₃, on retinal function.

Cities like San Antonio constantly monitor O₃ levels mostly for respiratory risks. If we can demonstrate that O₃ has an adverse effect on photoreceptor, we might be able to develop an eye-model O₃ warning system, so that even asthma free individuals will be cautious on O₃ alert days.

Photopic and Scotopic ERG were measured in six Long-Evans rats in control condition, and after exposure to 0.4 parts per million (ppm) O₃ for 4 hours. Long Evans rat retina is a good model for human retina because like human retina, it has a high metabolic rate, and suffers from the dry and wet forms of AMD. Recordings were performed under anesthesia (Ketamin 70 mg/Kg, Xylazine 2.5 mk/kg IP). Pupils were dialted with 1% Tripicamide and 2.5% Phenylephrine. Eye lubrication and proper conductance of the active electrodes were maintained. The electrodes were designed for use in rats. The rats were dark-adapted for 30 minutes prior to measurements. They were then placed on a heated table designed for such measurements. All the rats were allowed to fully recover from anesthesia after the readings.

Our scotopic data indicates that acute exposure to O₃ significantly (t-test $p < 0.05$) decreased the a-wave amplitude (size) at light intensities ranging from -0.001 to 25 cd.s/m². The implicit time (time from onset of the stimulus to peak of the wave) was also reduced after O₃ exposure. We have previously shown that rats exposed to similar levels of O₃ (0.4ppm) have reduced dopamine utilization. Our findings are in line with the predictions that can be reached from this and other dopamine utilization studies, and strongly suggest that high levels of O₃ can significantly affect the function of cone cells, thereby impacting our ability to maintain superior vision during the day, and possibly contributing to the development of AMD.

*A Preliminary Analysis of the Bacteria Harbored by the Pillbug (*Armadillidium vulgare*)*

Sondos Alhajouj, M.S., & David E. Starkey, PhD

Pillbugs (*Armadillidium vulgare*) are ubiquitous. As result, humans frequently encounter them when in nature. One of the most frequent things people do when they find these bugs is to pick them up and watch their characteristic behavior - curling up in a ball. In doing this, people are exposed to any bacteria that are harbored by the pillbugs – which could be transferred to them. Therefore, the purpose of this study was to identify the bacteria that are commonly found on pillbugs and determine if there are any that are potentially pathogenic to humans?

Currently, there have been no studies conducted to determine the external bacterial fauna associated with pillbugs. Thus, this study will be the first to examine the bacterial fauna of these bugs and whether, or not, they harbor bacteria that could be potentially pathogenic? We will examine pillbugs at four time points corresponding to winter, spring, summer and fall. These data will not only allow us to determine what bacteria are found on these animals, but we will also be able to determine if the bacterial fauna changes over time?

Pillbugs were collected outside Bonilla Science Hall at the 4 time points indicated above. They were briefly washed with sterile H₂O and 100-200 uls of sample was plated, in triplicate, on NA plates. Plates were grown overnight at 37°C. The following, day the number of colonies and colony morphology were determined for each plate. Colonies morphologies that were determined to be unique were isolated and regrown in NA broth. Colonies were regrown and DNA was extracted with the 16s RNA gene being amplified from each isolate. Isolates were sent to UTHSCSA for sequencing analysis. All samples were analyzed in GenBank to determine the genus and species of each isolate.

Overall, 11 distinct genera of bacteria were isolated across our 4 time points. These 11 genera were found to represent 18 unique species of bacteria. The genus *Bacillus* was represented by the most species with 6. The genus *Aeromonas* was represented by 3 species; no other genus was represented by more than a single species. The distribution of genera and species was different across our 4 time points with the following exceptions. There was a single species, *B. cereus*, found across all time points. Two species were found at 2 time points (*A. hydrophila*: summer and spring and *R. ornithinolytica*: winter and spring), no other species was found at more than a single time point. Of the bacteria identified in this study, there are 2 (*B. cereus* and *A. hydrophila*) that are potential human pathogens. Overall, this study suggests that there is a wide array of bacterial diversity associated with pillbugs. In addition, these data suggest that the bacterial fauna associated with these bugs changes overtime. Lastly, these data suggest that there are potential human pathogens harbored by pillbugs and care should be taken when handling these organisms.

A Study of Particle Recognition in Scanning Electron Microscopy (SEM) images using MATLAB

Sreedevi Ande, PhD, PE, Okan Caglayan, PhD, & Max Martinez

The purpose of this study is to provide an adaptive method to obtain the boundaries of nanoparticles in order to identify the type of material within a sample. This method is obtained by the use of the scanning electron microscope (SEM) with an Energy Dispersive X-Ray Analyser (EDX or EDA). Four different types of cement that are available, both domestically and industrially, will be chosen for the study as the sample.

Use of the SEM with EDA allows study of cements; permitting the chemistry of constituents. Surface Morphology is a subset of Analytical Imaging, which is an advanced form of high spatial resolution imaging that uses sophisticated microscopes to produce images of products, samples and objects that cannot be seen with the naked eye. Such images originate from the exposed surface of the sample or product.

The Engineering Department received a new scanning electron microscopy (SEM) in October 2016. The SEM has a wide range of applications. It allows study of different types of cement such as measuring chemistry of cement constituents, surface morphology, and mass percentages obtained by EDA.

This study presents a particle recognition technique by combining the characteristics of SEM images and the digital image processing in MATLAB programming environment. SEM provides detailed high resolution images of the sample by rastering a focused electron beam across the surface and detecting secondary or backscattered electron signal.

Cement is the main aggregate in concrete. Its properties such as its composition and fineness greatly influence the properties of concrete. Each type of cement has a different purpose due to its chemical composition. Alamo Portland, the type N, the type S, and the type N white are the type of cement samples from Alamo, Lehigh, and Quikrete Cement acquired for the research. These types of cement differ in the amount of Portland, lime, and sand ratio which are critical in determining compressive strength and flexibility of concrete.

Psychological Ambiguity
Zahida Aziz & Violet Sanchez

The purpose of this study is to expand upon psychological ambiguity, the decisions we make at times which may not be clear. We all have different motives and desires behind our actions. In Philoctetes, Odysseus leaves behind a soldier named Philoctetes. Odysseus' motives in leaving a soldier behind were unclear. Odysseus claimed he was following orders, but was it because he knew he would not be able to make sacrifices to the gods by bringing along a hopeless man?

This is a philosophical inquiry in which we analyze Philoctetes by Sophocles and Plato by Socrates. The significance of this topic is that psychological ambiguity occurs daily. This project originated in this year's freshman learning community between English and Philosophy. We often do not know the real reasons behind one's actions. A great example of this would be police brutality. What is the real reason behind this? Are the officers profiling? Or are they truly doing something wrong? What is the answer when it is caught on camera? In the Plato, Socrates questions the idea of piety to Euthyphro, an individual that claims to know all. Socrates continues asking, knowing that Euthyphro does not know. This is often the case in school: why keep questioning, if you know the individual does not know the answer. Is one just curious or is there something more behind it?

The methodology is a critical analysis of philosophical and literary texts. The research focus is our motives and desires to investigate why people may be uncertain of their actions at times. Our study will be conducted through interviews. Individuals will be asked to choose between parents, and to give their reasons for choosing the parent.

The findings of this research can conclude that through Philoctetes, many of the choices given were very unclear as to why they did what they did. Overall, when we are faced with a difficult choice, we should consider each outcome. The desires and motives behind actions vary among each individual. Singer and Philoctetes show that the many choices we have become harder when we are motivated, or have a certain desire for an object of our choice. This is important to realize because every action has consequences.

**Collaborative study between students in the School of Math, Science, & Engineering & Ila Faye Miller School of Nursing and Health Professions*

Type 2 Diabetes Risk Factors and Glucose Response

Kelli L. Bass, Cynthia J. Heiss, PhD, RDN, LD, Lesley Lilly & Sofia Maragoudakis

Identifying risk factors is vital to disease prevention; however, there is a lack of research in the role that risk factors play in glucose response prior to a diagnosis of type 2 diabetes. For instance, can there be a high fasting glucose level and indications of a poor glucose response in individuals who have risk factors for type 2 diabetes but do not have the condition? This research study attempts to bridge this gap. The purpose of this study is to determine if the number of risk factors for type 2 diabetes is associated with a higher fasting blood glucose level or the glycemic response to a high carbohydrate breakfast. I hypothesize that as the quantity of risk factors increases, so will a participant's fasting blood glucose, indicating a poor glucose response.

According to the Center for Disease Control, 9.3% of the United States population has diabetes (2014). Numerous complications are associated with the disease; heart and kidney disease, blindness, compromised blood circulation, and potential amputations. The foundation of previous research has been on disease prevention and identifiable risk factors. According to the Center for Disease Control, risk factors include older age, race/ethnicity, family history, obesity, diet, and physical inactivity (2015). Adams and Lammon (2007) conducted a study on 2,444 children and found that 31.38% of the participants who had a family history of diabetes also exhibited one additional risk factor. Ethnically speaking, the risk for developing type 2 diabetes is 77% higher for non-Hispanic Blacks compared to other ethnicities, and furthermore, this population is 27% more likely to die from the disease than Caucasians or Hispanics (Murimi, Chrisman, McAllister, & McDonald, 2015). Many other ethnicities are affected as well. For instance, according to the American Diabetes Association (2016), the rates of diabetes is 12.8% in Hispanics, 9.0% in Asians, and 7.6% in non-Hispanic whites. In regards to obesity, the Canadian Diabetes Association (2013) states that there is an increased risk for Type 2 Diabetes in individuals who have central obesity, as assessed by a waist circumference of 40 inches or greater in males and 35 inches or greater in females.

This study includes 20 healthy adult participants, representing Hispanic, Caucasian, and African American ethnicities. Materials include glucometers, lancets, blood glucose monitoring strips, alcohol wipes, sharps containers, digital scale, stadiometer, tape measure, and breakfast items (2 pieces of white bread and apple juice). Participants arrived at UIW in a fasted state and their fasting blood glucose levels were obtained. After, they consumed a high carbohydrate breakfast, blood glucose levels were taken at 15, 30, 60, 90, and 120 minute intervals to determine glycemic response. Demographic information was also obtained to determine the presence and quantity of diabetes risk factors (family history, activity level, ethnicity, BMI, and waist circumference). Results will be analyzed via descriptive statistics, ANOVA, and glucose area under the curve.

Extraction and Analysis of Agarita (Mahonia Trifoliolata)

Mariaelena Boyle, Nicholas A. Leed, PhD, Betsy Leverett, PhD, & Brian G. McBurnett, PhD

The versatility of the agarita plant is what makes it a fascinating research subject. This research begins to explore the chemical constituents of the agarita plant, improved extraction methods, and testing for antimicrobial properties.

Agarita (*Mahonia Trifoliolata*) is a native Texas plant that has been used for medicinal and aesthetic purposes by the Native Americans. The first steps of this research were to confirm that berberine, the compound of interest, is the active ingredient of the dye extracted from the agarita plant. If so, the dye itself could be the source of possible health benefits as well as a vibrant natural dye alternative to synthetic dyes.

The extraction process was optimized using a soxhlet apparatus. Samples of branches and root (leaves and stems removed) were dried for one to two weeks, and the dye extracted using methanol as a solvent. To evaluate the dye extract, ultraviolet visible spectroscopy methods were used to assess color quality. High Performance Liquid Chromatography (HPLC) spectroscopy separated, identified, and quantified the berberine component in the agarita dye mixture.

The antimicrobial effects of berberine were assessed using Disk-Diffusion method. The extract and standard berberine were tested against *Esherichia coli*, *Staphylococcus aureus*, *Stenotrophomonas maltophilia*, *Candida albicans* and *Pseudomonas aeruginosa*.

The dye was extracted using a soxhlet apparatus. Two trials of extraction were tested using polar and non-polar solvents (methanol and hexanes). Only the methanol solvent extracted the dye from the approximately 3g sample, so all further analysis used agarita dye in methanol and water 1:1 mixture.

The alkaloid compound, berberine, was found to be the active ingredient in the dye extracted from the agarita plant, using HPLC analytical methods. A berberine standard curve was used to evaluate the concentration of berberine in the sample. Further steps are being considered to concentrate the extract for medicinal purposes.

The extract and berberine standard were tested against *Esherichia coli*, *Staphylococcus aureus*, *Stenotrophomonas maltophilia*, *Candida albicans* and *Pseudomonas aeruginosa* using the Disk-Diffusion method. No effects have been noted currently, but the bacteria may be revisited once the dye has been successfully extracted from different solvents aside from methanol.

This research is still ongoing, but there are some promising results for the agarita dye, and its active ingredient berberine, to have aesthetic, environmental, and medicinal uses in the future.

*robo-roach: Biologically-Inspired Robots Using the Lego Mindstorm EV3 Analog*Erik Coronado, Alina Garza, Sreerenjini Nair, PhD, & Michael Frye, PhD

Biologically inspired engineering is of growing interest due to its potential applications in biology, engineering, education, and other disciplines. Our robo-roach is a biologically inspired analog, comprised of Lego EV3 hardware and software, which intends to mimic the observed behavior of its natural counterpart—the Madagascar hissing cockroach.

Nature has a way of solving problems, so why not take her cues to attempt to solve our own? Our inquiry is two-fold: we are studying the specific relationship between our natural roach and our synthetic analog; and we are conducting a general inquiry into the method of studying biologically-inspired robotics.

We present a four-phase approach to achieve our goal. First, an animal behavior analysis is used to determine the qualitative behaviors of the natural roach. Second, the qualitative data can be transformed into quantitative data by way of algorithms used to model the qualitative behavior. Third, we can take the algorithms and translate them into a computer language such as MATLAB. Finally, we can install the computer language into the EV3 robot to create a robo-roach, which behaves analogously to its natural counterpart.

This study is a work in progress; thus, we only initial predictions about the trajectory of the study and its findings. Initially, we intend to start with simple behaviors such as hissing and movement, to test out the efficacy of this approach, then move on to more behaviors in order to create a more complex robotic system.

Employing CRISPR-Cas9 Technology to Study the Essential Role of Cyclic GMP-AMP Synthase (cGAS) in Recognition of Microbial DNA in Human Cells

Kalli R. Davis, & Xiao Dong Li, MD, PhD

Innate immunity is the first line host defense mechanism against pathogen invasion. Following DNA virus invasion, Cyclic GMP-AMP synthase is activated and leads to the production of antiviral cytokines such as type I interferons (α/β). A recent study using knockout mice demonstrated that cGAS is essential for the detection of DNA viruses in mice. In order to prove clinical significance, it is important to replicate this study in human cells. Using HT29 human colorectal adenocarcinoma cells we will replicate this assay. Using the CRISPR Cas9 we will be able to selectively cleave the cGAS gene from the HT29 cell.

To prove the significance of cyclic GMP-AMP synthase (cGAS) in recognition of DNA in host cells, cGAS $-/-$ knockout mice were recently generated. Lung fibroblasts derived from these mice were infected with the herpes simplex virus 1 (HSV1), vaccinia virus (VACV), and a mutant strain of HSV1 known as HSV d109, all of which are DNA viruses. The control group was infected with the Sendai virus, an RNA virus. IFN- β production in the cGAS $-/-$ cells was largely abolished in response to all DNA viruses. The response to the RNA virus, known to activate the RIG-I pathway, was not affected. These studies conducted in mice concluded that cGAS is required for IRF3 activation and cytokine induction solely in response to viral DNA, but not viral RNA, in lung fibroblasts.

To replicate this finding in human cells, we will use HT29 human colorectal adenocarcinoma cells and the CRISPR-Cas9 technology for genome engineering as outlined by Ran et al. A cGAS knockout cell line will be created by using 20-nt RNA, which specifically targets the human HT29 cGAS gene locus. We will then use Polymerase Chain Reaction (PCR) and restriction enzymatic analysis to verify the successful inactivation of cGAS protein expression. Lastly, we will challenge HT29 knockout cells with DNA virus, HSV1, and RNA virus, and Sendai viruses. We expect viral DNA will go undetected in HT29 knockout cells as, in the cGAS $-/-$ mouse lung fibroblast.

Cyclic GMP-AMP synthase (cGAS) is the cytosolic DNA sensor that triggers an immune response in host cells. cGAS triggers the signaling cascades that release type I interferons and inflammatory cytokines. Microbial DNA binds with cGAS to catalyze the synthesis of the cGAMP isomer. cGAMP then activates STING which finally activates I κ B kinase (IKK) and TANK-binding kinase 1 (TBK1). These molecules activate transcription in the nuclear factor- κ B (NF- κ B) and interferon regulatory factor 3 (IRF3). Transcription of NF- κ B and IRF3 induces interferons and cytokines that combat the invader.

*Exploring The Viability of Using Southeast Texas Wild Yeast in Fermenting Beer*John A. Donaldson, Brandie Enriquez, MS, & Carlos A. Garcia, PhD

Fermentation is a natural process in which alcohol and organic acids are formed from dissolved sugar in the presence of microorganisms and in the absence of air. Although commercially available, yeast is normally used for beer or wine production; wild yeast may be used as well. The purpose of this study is to investigate the possibility of capturing and using Texas wild yeast for fermenting beer as an alternative to the commercial variety.

It's now possible for many homebrewers to produce credible examples of any beer style, similar to well-regarded commercial examples. Yeast type plays a vital role in influencing the end product of any beer. Among these is its effects on alcohol level, clarity, and flavor. The isolation of wild yeast from Southeast Texas is largely unexplored and could produce many pleasing and novel characteristics not available via commercial choices.

This study began with yeast collection jars containing 250 mL of $(\text{NH}_4)_2\text{HPO}_4$, and biotin dissolved in maltose to a specific gravity of 1.033 being placed in four different sites in Southeast Texas, under citrus fruit trees from approximately dusk to sunrise in mid-November 2015. Fourteen distinct samples were collected. Microbial colonies were streaked and isolated in agar plates. Gram staining revealed a mixture of predominately gram negative rods and yeast from all collected samples. In order to stimulate the growth of yeast and the inhibition of bacteria, microbial mixed samples were then transferred to Sabouraud agar resulting in largely pure yeast colonies.

All fourteen wild yeasts were then used to ferment a prepared homebrew wort. Beer style chosen was a British brown ale, largely due to its mild character (low alcoholic strength, bitterness and roastiness). As an experimental control, beer was brewed using a well-established commercial *Saccharomyces cerevisiae* yeast (Wyeast 1028 London Ale). Wort was fermented for four weeks in glass containers at a temperature of 72° F, at which time all beer was transferred to bottles with priming dextrose at a rate of 177 mL/19 L. Five weeks after bottling, samples of control and experimental beer were reviewed.

Beer was evaluated by six tasters: two judges with Beer Judge Certification Program credentials, and four persons with broad knowledge of brewing and evaluating beer. Aroma, appearance, flavor, mouthfeel and overall impression were considered. Beer brewed by the commercial yeast was deemed typical. Of the fourteen wild yeast samples, eight were close to commercial standards with several considered to be superior. Overall impression was mostly clean and neutral, with some fruity or sour character of varying degree. Of the remaining six, three had pronounced, yet pleasant character varying from very sour, spicy, or woody. Three were considered substandard with unpleasant moldy, phenolic character.

Overall consensus was that wild yeast is generally well suited in fermenting beer of moderate strength. Additionally, the potential for producing a wide range of beer styles, ranging from relatively clean and neutral to more aggressive and even possibly unique in character was deemed worthy of further pursuit.

An Assessment of the Impact of Slime layers obtained from Probiotic Lactobacillus species on the growth of Pathogenic Bacterial Biofilms

Priscilla Escareno, Daniela Hirsch, & Ana C. Vallor, PhD

In this study, we sought to investigate the effect of S-layers obtained from Lacto bacilli species S-layers on the biofilm formation of the following pathogenic organism: Pseudomonas aeruginosa, Candida albicans and Stenotrophomonas maltophilia.

Normal microbial flora is an important component in the first line of immune defense against opportunistic disease pathogens. With the rise of antibiotic resistance in pathogenic bacterium, there has come a need for alternative methods of treatment. Current anti-microbial therapies, while being effective in controlling pathogenic infections, have also caused an imbalance in the normal flora, dysbiosis, when used long-term. Several Lactobacillus spp. have been found to be beneficial as probiotics in the intestinal and vaginal regions due to their strong adherence and unique antimicrobial properties. It is thought that the extracellular lacto bacilli slime (S)-layer plays a major role in adherence and formation or maintenance of its niche, and production of its own biofilm. It is hypothesized that Lacto bacilli S-layers will slow or inhibit bio film formation of selected pathogenic bacterium.

Briefly, slime layers from Lactobacillus crispatus, Lactobacillus acidophilus, Lactobacillus colehominis and Lactobacillus iners were extracted from late exponential stage cells utilizing Guanidium hydrochloride. S-layer extracts were then normalized based on protein concentration utilizing the bicinchoninic protein assay. For biofilm assays, extracts were co-incubated at various time points (0, 12, 24, 36, 48, 72 hours) with each pathogenic organism in 96 well polycarbonate plates. Biofilm viability and growth formation is currently being assessed by measurement of metabolic activity, utilizing a standard tetrazolium salt (XTT) reduction assay and crystal violet for visualization.

Analysis and comparison of major proteins present in purified S-layers showed no significant differences between vaginal or intestinal species. The expectation of the data obtained from the biofilm assay is that an inhibitory effect on one or more pathogenic biofilm formations will be demonstrated due to the presence of the S-layer obtained from one or several of the species of lacto bacilli tested in this study.

PrimeStore MTM® Provides Enhanced Preservation of Viral RNA at Elevated Temperatures for Efficient Collection and Transport of Respiratory Specimens

Ricardo Estolano, Dustin Lewis, Kathrine M. Slagle, BS, Brandie K. Goren, & Luke T. Daum, PhD

Real-time PCR (qPCR) and next-generation sequencing (NGS) continue to improve early detection of infectious diseases. However, sensitive detection is limited to the quality/concentration of nucleic acids (RNA/DNA) from collected specimens.

PrimeStore MTM® (PS-MTM) and eNAT™ are commercial specimen collection/transport solutions that preserve RNA/DNA for downstream qPCR and NGS. In this study, influenza and adenovirus were collected in PS-MTM and eNAT™, held outdoors at Texas ambient temperature (22.7-39.4°C) or at 37°C for 28 days, and subsequently evaluated using qPCR and NGS.

Low-level concentrations (102 TCID₅₀/mL), of whole influenza and adenovirus were added to equal volumes of PS-MTM and eNAT™ and held at ambient (22- 24°C) and 37°C for 28 days. Real-time cycle-threshold (CT) values were assessed by qPCR. Additionally, RT-PCR amplification of a 459-bp fragment from influenza RNA was performed from PS-MTM and eNAT™ to compare preservation of larger fragments.

PS-MTM and eNat™ medias exhibited similar preservation of adenovirus DNA at both temperatures across 28-days (CT range: 26.8-30.7). However, viral RNA from influenza virus was not detected from eNat™ (CT=40) beyond Day 8. In marked contrast, influenza RNA was detected in PS-MTM at Texas temperature and 37 °C (CT range: 30.3-33.2) over 28 days. Furthermore, amplification of a 459-bp fragment was only visible in eNAT™ till Day 14, but visible at all time-points from PS-MTM.

PS-MTM enhances preservation of viral RNA at elevated temperatures for extended periods, particularly from low-copy specimens. Furthermore, PS-MTM stabilizes and preserves larger nucleic acid fragments that are critical for NGS.

Axiation of Freshwater Microalgae Using Singlet Oxygen Generation

Kimberly D. Foster, Daniel W. Sisco, Maria F. Monroy, Justin T. Lamontagne, James P. Martinez, & Betsy D. Leverett, PhD

Axiation of microalgal cultures from three classes of algae was performed using an established method and either the singlet oxygen producing agent, cis-Bis(2,2'-bipyridine) dichlororuthenium (II) hydrate (BPY), or one or more common antibiotics (penicillin, streptomycin, gentamycin, or ampicillin). The main goal of this study is to show that producing lab scale, bacteria-free algal cultures can be accomplished as conveniently and economically with singlet oxygen generation as with antibiotics.

The study of the biochemistry, metabolism, and interactions, of microalgae in natural and controlled laboratory environments often requires the use of bacteria-free cultures. Most traditional approaches to purifying algae involve treatment with common antibiotics. These widespread methods frequently use large doses of antibiotics commonly used in clinical infections and may represent a source of resistance bacterial populations. Singlet oxygen generation has been reported to be a reliable antibacterial strategy with a reduced likelihood of resistance development.

In the present study, a convenient light-active agent, cis-Bis(2,2'-bipyridine) dichlororuthenium (II) hydrate (BPY), has been used to generate singlet oxygen in live cultures of microalgae as part of a method to render freshwater algal cultures axenic (a single species of algae without bacteria or other organisms present). Using the same protocol with penicillin, streptomycin, or ampicillin, and without antibiotics or singlet oxygen generation, (BPY) has allowed a comparison of the convenience and success of axiation, with or without antibiotics, and with or without singlet oxygen generation. The method conditions have been assessed according to the number and quality of final cultures obtained from each condition and whether axenic cultures are obtained for each algal species.

The singlet oxygen agent, cis-Bis (2,2'-bipyridine) dichlororuthenium (II) hydrate (BPY), was as effective in producing bacteria-free cultures as both the penicillin/streptomycin combination, and gentamycin, and BPY was less cytotoxic to some species of algae than ampicillin. Final axenic cultures obtained either with antibiotics or with BPY were found to exhibit comparable growth characteristics and antioxidant activity when compared to axenic cultures obtained without any additives.

Multi-Autonomous Vehicle Collaboration

Tomas E. Goldaracena, Miguel Reyes, Sreerenjini Nair, PhD, & Michael T. Frye, PhD

The purpose of this project is to design a biologically-inspired control system infrastructure that will allow the collaboration between several autonomous ground and air vehicles.

There are a variety of scenarios in which the herding process, which designates one or several autonomous vehicles as "herders", and others as members of the herd is found, especially in military situations that require both ground, and air cooperation in order to achieve a goal, or secure a target, as well as aiding in disaster relief. By emulating a simple herding process, vehicles designated as herders oversee, record, and process information obtained by members of the herd, and autonomously decide the best way to achieve the desired goal.

The process will involve hovering two, or more AVs around a set of several ground drones. The air vehicles will maintain constant communication, while assessing the position in which the ground vehicles are located. This will prompt the air vehicles to surround their ground counterparts, and ensure they remain within the designated area within the radius generated by the air vehicles. Both the ground and air vehicles are designed and manufactured by Quanser.

The air vehicle, called "Q-ball," is a quadcopter equipped with high speed processor that allows real time communication between the vehicle, our host computer, as well as a sonar that estimates the distance between the quadcopter and the ground. The ground vehicle, called "Q-bot," is equipped with a high speed processor, a 30 FPS camera, and bumpers mounted on a I-Robot Rumba.

Although this is an ongoing research project, several milestones have been achieved. Real-time data transfer and communication among a four ground vehicle "herd" has been achieved. All members of the herd communicate their current position to the sever computer, which then processes the information and generates a new set of coordinates for all vehicles to move.

Also, real-time data transfer and communication between one ground, and one air vehicle has been achieved. The ground vehicle is set as the leader, or "herder", and provides the air vehicle with a set of coordinates (XYZ) to follow. The Optitrack camera system is crucial for this mission, since the coordinates XYZ is generated while the herder is moving, and the air vehicle replicates that same pattern.

Characterization of S-layers Proteins Present in S-layers Isolated from Select Gastrointestinal and Vaginal Lactobacilli

Daniela Hirsch, Priscilla Escareno, Adeola Coker, PhD, & Ana C. Vallor, PhD

Investigation of colonization properties of the probiotic and normal flora species *Lactobacillus crispatus* and *Lactobacillus gasseri*, has gained prominence due to their contributions of maintaining healthy human intestinal and vaginal environments. Proteins present in the slime (S)-layer of these species have been proposed responsible for maintenance of adherence and colonization. *Lactobacillus coleohominis*, a newly characterized vaginal species, and the understudied *Lactobacillus iners*, have routinely been recovered from women of reproductive age presenting with dysbiosis. There has been a minimal amount of studies characterizing the S-layer in these species in the context of probiotic activity, adherence and/or colonization. The purpose of this study was to isolate and characterize S-layer proteins present or absent in *L. coleohominis* and *L. iners* and compare them to those in S-layers obtained from *L. crispatus*, and *L. gasseri*. It is predicted that differences in the presence or amount of proteins among the isolates may explain the loss of probiotic activity and or adherence.

Briefly, overnight broth cultures of each lactobacilli species were harvested by centrifugation. Pellets were washed twice and re-suspended in cold water. S-layers were extracted from cells by incubation in 8M guanidine hydrochloride. After centrifugation, supernatants (S-layer fractions) were dialyzed against purified water and concentrated by lyophilization. Proteins concentration was determined by BCA Protein Assay and Protein content was visualized by Sds-Polyacrylamide Gel Electrophoresis. Spectrophotometric analysis of the extracts to assess protein structural properties such as protein folding and interaction with their immediate environment was also conducted. Among the analyses performed were: UV-Vis, Intrinsic Fluorescence (localizing phenylalanine, tyrosine and tryptophan residues) and Fourier Transform Infrared (FTIR, measurement of the absorption spectra of the proteins) spectroscopy utilizing standard techniques.

SDS-PAGE gel electrophoresis resulted in the visualization of two protein bands (100kD and 50 kD) in three of the four S-layer extracts. UV Spectra displayed peaks within the range of the absorbance maxima of phenylalanine, suggesting that this amino acid is the most prevalent as detected in these extracts. The fluorescence emission maxima for the proteins were 357, 359, and 334 nm for *L. iners*, *L. coleohominis*, and *L. crispatus* respectively. The results suggest that tryptophan residues in the proteins extracted from *L. iners* and *L. coleohominis* are exposed to the solvent, while they are relatively buried in the protein extracted from *L. crispatus*. FTIR spectra of the supernatants showed absorption maxima at 1634-1635 cm^{-1} , suggesting a large proportion of β -sheets in the proteins which has been characteristic of S layer proteins. Lastly, an investigation comparing the S-layer extracts of selected species of the probiotic *Lactobacillus* was initiated. The data obtained thus far has coincided with previously published literature on the characterization of S-layers in other lactobacilli species. Spectra analysis characterized the light sensitivity of the, leading to information which will be used to compare the differences of S layer structures at the amino acid level. Future directions of the study will entail better resolution of the S-layer protein content, which may lead to identification of lactobacilli adherence proteins necessary to allow the members of this genus to maintain their niche and play a critical role in the maintenance of a healthy microbiome.

Characterization of changes occurring at the synaptic level during segmental regeneration in the regenerating model system, Lumbriculus variegatus

Katherine James, Miguel Madrigal, & Veronica G. Martinez-Acosta, PhD

Characterization of changes occurring at the synaptic level during segmental regeneration in the regenerating model system, *Lumbriculus variegatus*. *Lumbriculus variegatus*, an aquatic oligochaete, has been described as a regeneration model system. *Lumbriculus* undergoes regeneration for replacement of body segments lost on their apical ends, a process known as epimorphosis. Regeneration involves the replacement of all body tissues including the nervous system. The purpose of this study is to characterize changes occurring at the synaptic level which underlie *Lumbriculus*' remarkable regenerative ability.

During *Lumbriculus* regeneration, worm fragments removed at any position along the anterior-posterior axis regenerate 7-8 segments of head and varying lengths of tail segments. With posterior most-located fragments, this means that regeneration of the head places this fragment in a much more anterior position post-amputation. Previously, we described that posterior fragments demonstrate remarkable levels of neural plasticity. As the regenerating posterior fragment becomes more anteriorly located, anterior specific behaviors emerge. Moreover, when head regeneration is blocked, the appropriate recovery behavior is not observed. Thus, *Lumbriculus* not only regenerates missing body structures, but also demonstrates 100% recovery of function appropriate for the new axial position of the body fragment. Insight into the mechanisms used by *Lumbriculus* and other regenerating systems for recovery of function, will provide insight that may highlight new areas of study in vertebrate nerve injury models.

Our lab is interested in regeneration of the nervous system. While we have previously presented work on molecular aspects of nervous system regeneration, the rapid recovery of nervous system function raises questions regarding plasticity at the synaptic level. In this study, we used transmission electron microscopy imaging to characterize synapses that interact with main components of the worm central nervous system. We also conducted immunohistochemical analysis of synaptic vesicle proteins. Synaptic vesicles are the main structures that underlie chemical neurotransmission. Vesicle SNARE proteins are typically used as synaptic markers. In this study we worked to discover the presence of the synaptic protein, Synapsin, a vesicle SNARE protein, and identify its role in non-regenerating and regenerating worm fragments. Lastly, we investigated Synapsin expression at different time points (24hr, 1wk, and 3wk) of regeneration through immunoblot analysis.

Taken together, we present the first pieces of data that characterize changes occurring at the synaptic level which underlie plasticity events which are the hallmarks of functional recovery in *Lumbriculus* during regeneration.

Identification and Characterization of Novel Compound Inhibitors of Candida albicans Biofilm Formation

Alexandria I. Knecht, Ricardo L. Estolano, & Christopher G. Pierce, PhD

Currently there is an urgent need for the development of antifungal drugs, and the purpose of this study is to identify novel anti-biofilm compounds that represent potential drug candidates against *Candida albicans* infections.

Candida species represent the main cause of opportunistic fungal infections worldwide, and *C. albicans* is the most common etiological agent of candidiasis. Candidiasis represents the third to fourth most frequent nosocomial infection in hospitals in the United States. These infections are typically associated with unacceptably high morbidity and mortality rates up to 50%, mainly due to the limited arsenal of antifungal drugs. For the three major classes of antifungal drugs, polyenes, azoles, and echinocandins, resistant strains of *C. albicans* are routinely reported. Furthermore, *C. albicans* ability to form biofilms, complex microbial communities, heightens this issue of resistance as biofilms are intrinsically less susceptible to these commonly used antimicrobials as well as host immune responses. Considering the role of biofilm formation in *C. albicans* infections, it represents a valuable target for the development of anti-virulence treatment strategies. One advantage of targeting such virulence factors is it may inflict weaker selective pressure for the development of resistance.

In this study, we performed a cell-based phenotypic screen of 320 compounds from the NIH Clinical Collection, a library of drugs in Phase I-III clinical trials. Hits from our screen represent compounds that have the potential to be repurposed as antifungal drugs.

Briefly, the compounds were screened to identify (i) inhibitors of *C. albicans* biofilm formation, (ii) inhibitors of pre-formed, fully mature *C. albicans* biofilms, and (iii) inhibitors of planktonic growth. To determine anti-biofilm activity, compounds were screened using a 96-well microtiter plate model of biofilm formation coupled with a metabolic XTT reduction assay. Inhibition of planktonic growth was determined using the broth microdilution assay.

Following the initial screening of the compounds, eight compounds inhibited *C. albicans* biofilm formation and of these compounds, one also inhibited pre-formed biofilms, and two were general inhibitors of *C. albicans* growth. Compounds that display anti-biofilm activity represent a promising subset of small molecules for the development of anti-virulence treatment strategies targeting *C. albicans* biofilm formation.

Promoting Mathematics to 7th grade Women Using Undergraduate Mentoring and Activities

Theresa Martines, PhD

This program is designed to assist girls with the transitions between middle/high school mathematics and to encourage colleges and universities to develop connections with middle schools and high schools.

A survey published in the Notices of the AMS showed that students make decisions about whether to continue their studies of mathematics early in their high school years; however they do this with little guidance from parents, teachers or counselors. In particular, in the state of Texas, students are given a choice of 8th grade mathematics courses. In most cases this choice puts them on a track to either end high school with Algebra 1 or Calculus 1, students and parents are often unaware of these tracks. This program looks to show the use of mathematics in school and careers to encourage them to continue mathematics studies.

Students are divided into 5 groups of 15-20 students which rotate between the various activities and speakers, designed to encourage continued study of mathematics and introduce mathematics related careers. The activities are organized and supervised by faculty members, but the actual activity is run by undergraduate volunteers. The undergraduate volunteers meet before the event for training on the activities as well as discussions on how to initiate meaningful conversations in order to mentor the student participants. This gives the undergraduate students a leadership experience, as well as enriches the activity for the middle school participants. The event targets 7th grade girls from the Young Women's Leadership Academy, an all-girls public school that is part of the San Antonio Independent School District (SAISD). The school is composed of 91% Hispanic, 7% African American, and 2% White (non-Hispanic) students, with 92.6% of the total enrollment classified as economically disadvantaged.

The event, by all accounts, was a great success. The teachers from the middle school have reported that students are more interested in learning mathematics and their testing scores show improvement. We have also begun to work with the school to incorporate activities that address mathematical topics in which the students are testing well. We hope to repeat the event and create an annual event, with the possibly including other middle schools in our community as well.

Antimicrobial Properties of Extracts from Freshwater Species Representing Three Classes of Algae

Patrick Matulich, BS, Gabriella Ortiz, & Betsy D. Leverett, PhD

This study examines antimicrobial activity in hexanes-isopropanol (HIP, 3:1) extracts from three species of freshwater algae: the film-forming chlorophyte, *Characium perforatum*, the carotenoid producer, *Pleurochloris meirengiensis*, and *Botryococcus braunii*, an oleaginous, colonial alga.

Biofilms are extracellular matrices produced by bacteria for adhesion and are a major factor in cell to cell gene transfer and the development of antimicrobial drug resistance (AMDR). AMDR is becoming a more prevalent and life-threatening feature of human infections, especially in hospital settings. Thus, there is an emerging need for alternative antimicrobial agents that can inhibit biofilm formation and other virulence behaviors without enhancing resistance gene expression. Extracts of both marine and freshwater microalgae have been shown to have antimicrobial effects, including some activity against bacterial biofilms.

Assays for bacterial biofilm formation, bacterial biofilm viability, and bacterial growth, have been performed according to established, *in vitro* methods using HIP extracts from each of *P. meirengiensis*, *B. braunii*, and *C. perforatum*. Biofilms established by the gram negative pathogen, *Stenotrophomonas maltophilia*, were stained with crystal violet stain and with the tetrazolium dye, MTT, after incubation with and without the presence of algal extract to determine the impact of extracts on biofilm formation and cell viability within biofilms. Antibiotic sensitivity in planktonic cultures of *S. maltophilia* was assessed with and without the presence of algal extracts according to established *in vitro* methods as a means of examining whether algal extracts increase sensitivity of *S. maltophilia* cultures to common antibiotics.

Preliminary results have demonstrated that HIP extracts of both *P. meirengiensis* and *C. perforatum* enhance the sensitivity of *Stenotrophomonas maltophilia* biofilms to rifampin, penicillin, streptomycin, and gentamycin. The extracts did not exhibit a significant impact on drug sensitivity in planktonic cultures of *S. maltophilia*, as demonstrated by the minimum inhibitory concentrations (MICs) of select antibiotics with and without HIP extracts present. The HIP extracts of *Botryococcus braunii* demonstrated an antimicrobial effect in both planktonic culture and biofilm.

Standards-Based Science Institutes: Effective Professional Development that Meets Teacher and District Needs

Bonnie D. McCormick, PhD, Alakananda Chaudhuri, PhD, & Richard Lewis, PhD (UTSA)

The purpose of the study is to investigate the outcomes of five standards-based science institutes funded by the Texas Higher Education Coordinating Board (THECB) Teacher Quality Grant Program (TQGP) to improve content knowledge, pedagogy, and pedagogical content knowledge in Biology of in-service middle and high school science teachers in San Antonio, TX. The National Science Education Standards (NSES) and Next Generation Science Education Standards (NGSES) emphasize the professional development (PD) of science teachers by learning science through inquiry and collaborative group work. No Child Left Behind (NCLB) required states to ensure high-quality PD for all teachers. Based on these principles, UIW offered Science Institutes to meet the PD needs of middle and high school science teachers in San Antonio, Texas to enhance the science preparation in essential content areas of life sciences and to link this content enhancement to improved classroom performance of both the teacher participants and their students. The study specifically explores how inquiry-based PD impacted the implementation of inquiry instruction by secondary life science teachers in their middle school classrooms.

The program assessment was conducted nine times between 2005 and 2016. A total of 77 science teachers participated in the biology modules. Four approaches were used: 1) analysis of content knowledge gains, 2) participant assessment of the program, 3) analysis of redesigned lesson plans, and 4) classroom observations. Content knowledge gains were evaluated through the administration of pre- and post- tests of each biology science institute. Content knowledge assessment was conducted using test score means and standard deviations as well as the comparison of differences between paired pre-test and post-test scores. Test score analysis was accomplished utilizing independent group, paired t-testing, and correlation coefficients for longitudinal comparison. Comparisons of participant perceptions were accomplished by analyzing differences in frequency distributions. Teachers also submitted regular reflections as part of the THECB TQ evaluation process that elaborated on their perceptions of the effect of the program on their teaching. To evaluate the use of inquiry in the teachers' classrooms, redesigned lesson plans were analyzed to confirm that the participants were able to develop inquiry activities related to the content standards. Classroom observations provided evidence of implementation of inquiry activities in the science classroom.

The findings provide strong indications that the Teacher Quality Program goals of enhancing content knowledge, instructional practice, and developing communities of practice among the participants were achieved. The pre-post-assessment scores indicated that teacher's knowledge of science and technology improved as a direct result of the program. Throughout the nine assessment periods, participants consistently agreed that the program helped them develop professionally and enhanced their teaching skills. Additionally, the majority of participants stated that their expectations of student performance increased based on their involvement in the Teacher Quality Program. The analysis of the results clearly supports that the 5E learning and instructional model provided the teachers with the tools to alter their traditional teaching practices and to include the inquiry-based teaching practices specified by NSES, NGSES and the state standards.

*The Behavior of Soliton Waves Associated with Nonlinear PDEs*Sergio Melendez, Zach Viray, & Barbara Escandon

The purpose of the study was to better understand the behaviors of soliton waves produced from solutions to nonlinear partial differential equations (PDEs) such as the Korteweg-de Vries (KdV) and sine-Gordon equations. Better understanding of soliton wave solutions can lead to more precise manipulation of soliton systems that will in turn lead to refined research in the field of applied mathematical wave theory.

Through deliberate manipulation of matrix entries using Matlab, we analyzed and modeled behaviors of solitons produced from soliton solutions. We compared results between solutions to the KdV equation and the sine-Gordon equation and discovered many consistent methods to obtain any results we require.

We uncovered consistencies between soliton behaviors of different solutions, but also differences in wave propagation and velocity. Our hope is to expand the analysis of soliton solutions to include other nonlinear PDEs and compare our current results on soliton behaviors to obtain a complete understanding of general soliton solutions.

Rain Erosion of Sun-dried Mud Brick

Gerald J. Mulvey

The hypothesis of this research is that the rain erosion process is a multi-cyclic combination of surface moistening from rain, runoff of sand, silt and clay particles (sheet erosion) and a surface swelling, followed by the formation of surface micro-crack and pits during the drying of the surface. The micro-cracks, fissures, and pits will deepen and widen during successive wet/dry cycles.

Earthen Brick (Sun-dried mud brick a.k.a. Adobe) has been and still is being used as a sustainable building material across the United States and the world. Commercially manufactured sun dried mud brick testing standards are based on moisture absorption and hydraulic drilling. This research examined the basic processes of brick degradation through the rain erosion process, including moisture driven swelling shrinking, cracking, and pitting. This work will be used to estimate the erosion rate of exposed, unstabilized mud brick structures, and erosion testing for commercially produced earthen bricks.

The approach is to expose mud brick samples to a series of natural rain storms and characterize the erosion process and rates. A cylindrical sun dried mud brick sample (D=9.5 cm, H= 7.5 cm) was exposed to rain from a strong thunderstorm in eastern Virginia in June and July of 2016. The storms were characterized by rainfall rate, and rain fall amount using a tipping bucket rain gauge with a sensitivity of 0.01 inches (0.25 mm) of water. The samples were inspected and photographed before, during and after exposure to the rain. Pit and micro-crack depths were estimated using a 0.1 mm probe. Microphotographs of the eroded surface explored the micro- crack structure and the role of gravel binding agent in rain erosion.

The erosion process has two distinct phases: rain and subsequent rains. The following is a conceptual model of the rain erosion process. At the onset of the rain event the droplets impact the hardened brick surface causing minimal material removal. The water then soaks into upper layers of the brick and loosens the bonds between the soil particles. Subsequent raindrops impact the surface, freeing the soil particles through momentum transfer. The water moves the particles as the water volume becomes sufficient to flow across the surface to the brick edge. This process continues during the initial storm with more and more of the clay particles being removed. This leaves the small pebbles and binder material in place forming the micro-rills. Water fills some of the interstitial voids between the soil particles causing micro-expansion in the brick surface layer.

Following the rain storm the moist upper layer of the brick dries out and cracks due to the micro expansion form as the water is evaporated. The net result is that the surface area of the brick is enlarged by the side wall area of the cracks and erosion channels, accelerating the infiltration of water into the brick surface during the next rain event. The erosion rate difference between a new flat brick and one that has been exposed to previous rain will be a function of the new surface area and the area of the exposed brick covered with binder material. This ratio will continue to change as a function of the number, duration and intensity of the rain events as well as the periods between the events.

Antimicrobial and Antioxidant Properties of Extracts from Nannochloropsis oculata

Gabriella Ortiz, & Besty D. Leverett, PhD

In the present study, antimicrobial and antioxidant activities have been examined in three types of extracts prepared from axenic *N. oculata* cultures in terms of antioxidant capacity and inhibition of bacterial growth, biofilm formation, quorum signaling, and infection by human and plant pathogens.

Nannochloropsis oculata is a marine microalgae that is commercially important for its production of omega-3 fatty acids and as a source of biofuels. The identification and development of additional applications for the biomass and secondary metabolites of *N. oculata* is a necessary step in improving the economic feasibility of this algae for lipid and biofuel production. Since other marine microalgae have shown potential as sources of microbial control, the likelihood exists that *N. oculata* has antibacterial properties, and may be useful against pathogens that are resistant to conventional antibiotics or form robust biofilm structures.

Extracts prepared from log phase cultures of *N. oculata* for analysis included crude cell extracts (CCEs), ethyl acetate extracts of growth media (MEs), and hexanes/isopropanol extracts (HIP, 3:1) of total cell lipid (TLEs). The antioxidant capacity was determined for each type of extract using an established in vitro assay for quenching of the ABTS [2,2'-azino-bis(3-ethylbenzothiazoline-6-sulphonic acid)] radical cation. Antimicrobial activities examined with each type of extract included inhibition of planktonic growth and biofilm formation by select Gram negative pathogens, blockade or quenching of bacterial quorum signaling, and enhancement of the antibiotic sensitivity of bacteria in biofilms. Literature methods for antimicrobial assays were used, in particular, bacterial reporter assays for blockade of quorum signaling and high performance liquid chromatography (HPLC) analysis for quenching of quorum signaling. The Gram negative pathogens selected for these studies included *Stenotrophomonas maltophilia*, an emerging hospital-borne pathogen, and *Pseudomonas aeruginosa*, an important pathogen of both plants and animals.

Lipid extracts of *N. oculata* were found to have limited growth inhibition and no significant effect on biofilm formation in *S. maltophilia* and *P. aeruginosa*, either alone or in combination with rifampicin, penicillin, streptomycin, or gentamycin. Media extracts of *N. oculata* did not contain detectable amounts of the quorum signals used by many bacteria to mediate pathogenic functions, nor did the MEs inhibit signaling in reporter assays. Crude cell extracts (CCEs) of *N. oculata* demonstrated quorum signal degradation activity, or quorum quenching, according to HPLC analysis. Taken together, these results indicate that extracts from *N. oculata* effectively degrade bacterial quorum signals, but exhibit limited inhibition of growth or biofilm formation in *S. maltophilia* and *P. aeruginosa*, and do not detectably block quorum signaling or alter antibiotic sensitivity of either pathogen in biofilm structures.

*SPOP as an Emerging Key Player in Breast Cancer Progression*Everardo Ramirez, & Marieke O. Burleson, PhD

Cancer is the second leading cause of deaths worldwide, following closely behind cardiovascular disease. Although radiation and chemotherapy have been the frontline choice of treatment for cancer over the past few decades, because of detrimental side effects, personalized treatment is rapidly becoming a superior treatment method. This is largely due to recent advances in genome-wide DNA sequencing that have allowed for the identification of cancer-related mutational landscapes. Through these advances, it is now feasible to identify oncogenic mutations that are unique to particular cancer patients thus improving patient care.

Once the cancer-causing mutation is identified, a personalized treatment regimen can be designed, targeting the oncogenic signaling pathways affected by the mutation, eliminating all the detrimental side effects of global drugs such as chemotherapy. One gene that has recently been identified as a potent oncogene in a variety of cancers, is Speckle Type POZ protein (SPOP). SPOP is the substrate binding subunit of an E3 ubiquitin ligase that, when mutated, acts as an oncogene by disrupting the degradation of a variety of proteins critical for tumor suppression. Our studies, as well as others, identified GLI3, a downstream effector of Sonic Hedgehog (SHH) signaling, as a SPOP target. It was found that SPOP binds directly to GLI3 to target it for degradation in a manner that is disrupted by cancer-associated SPOP mutations in advanced prostate cancer. Since SHH signaling is highly activated in advanced prostate cancer, we highlighted SPOP as a key player in prostate cancer progression. Interestingly, recent studies have shown that SPOP is also among the highest loci for loss of heterozygosity in breast cancer. Furthermore, a correlation has been found between high levels of SHH signaling and poor prognostic pathological features in breast cancer. Based on these findings, we hypothesize that downregulation of SPOP promotes hyper-activated SHH signaling, promoting breast cancer progression, and, furthermore, that SHH inhibitors would prove highly beneficial for SPOP-downregulated breast cancer patients.

These studies will be conducted by generating stable knockdown breast cancer cell lines through the use of SPOP-specific lentiviral shRNA infection. Additionally, SPOP knockout cell lines will be generated through CRISPR/Cas9 genome editing. The successfully targeted cells will be tested for hyper-activated SHH signaling through immunohistochemistry and western blotting of SHH effector proteins. In addition, cells will be assayed for tumorigenic properties including cell proliferation, migration, invasion, and colony formation. Finally, the effects of vismodegib, an FDA approved SHH inhibitor, will be tested on SPOP- downregulated cells versus wildtype cells.

We observed increased cell proliferation and colony formation in SPOP-downregulated breast cancer cells, indicating that SPOP is indeed critical for breast cancer suppression. With further studies, we expect to observe a dramatic effect of vismodegib on these SPOP- downregulated cells, making vismodegib an attractive personalized treatment for patients with SPOP-downregulated breast cancer.

Production of antibodies in T-cell deficient specimens

Justin D. Rodriguez

B cells play a crucial role in immunity of the human body by producing antibodies that counteract pathogens and tumor cells. In adaptive immunity, T cells act as critical support for B cells in regards to producing the effective antibody response to pathogens that can harm the body. T cell deficiencies can lead to significant immunodeficiency in specimens, such as those suffering from HIV/AIDS and those whose old age have caused B cells to be less diverse. We hypothesize that a potential way to help mediate T cell deficiencies in these specimens is to yield effective antibodies that are produced independently of T cells.

Previous lab results have shown that dual engagement of the B cell receptor (BCR) and a Toll-like receptor (TLR) on a B cell efficiently induced class switch DNA recombination (CSR) in vitro. CSR and somatic hypermutation (SHM) are two antibody diversification processes important to antibody response, as they reinforce the production of both class-switched and high-affinity antibodies. As the results have further shown, mice immunized with a conjugate consisting of the hapten NP and TLR4-activating lipopolysaccharides (NP- LPS) displayed sustained levels of class-switched and high- affinity antibodies and also able to display an anamnestic antibody response, most likely due to the production and re- activation of antigen-specific “memory” B cells. Thus, a single vaccine that can affect BCR/TLR could prove to be an important mechanism that can trigger B cell differentiation and production of antibodies, most likely without the aid of T cells.

The experiment will use the preliminary data and establish T cell-independent CSR and SHM for antibody responses and B cell differentiation into memory B cells for amnestic antibody responses. To accomplish this, antibody responses caused by NP-LPS in $Tcr\beta^{-/-}$ $Tcr\delta^{-/-}$ mice, which are devoid of both $\beta\beta$ T cells and $\delta\delta$ T cells, will be analyzed.

The mice will be injected with more NP-LPS 90 days later, and class-switched and high- affinity anti-NP antibodies will be analyzed over a 120-day period using ELISA. For SHM analysis, sequences of 100 independent clones of cDNA prepared from activated B cells will be analyzed. For CSR analysis, cell surface expression of IgM, IgD, IgG1, IgG3, IgG2b, and IgA will be analyzed by flow cytometry and transcripts that indicate completed CSR will be analyzed by qRT-PCR. Formation of germinal centers, in which CSR and SHM occur, and generation of plasma cells and memory B cells will be analyzed.

Antibacterial Efficacy of Basil, Coriander, and Melaleuca Oil on Staphylococcus aureus, Pseudomonas aeruginosa, and Streptococcus pyogenes

Nyssa Saenz & Ana C. Vallor, PhD

This study addressed the microbial sensitivity of a selected panel of normal flora and pathogenic bacteria to pure grade commercial preparations of basil, coriander and melaleuca essential oils.

Due to the significant increase in microbial resistance to traditional medical therapies (i.e antibiotics), research has begun on sources of alternative and new natural sources of antimicrobials, in this case essential oils. Essential oils are comprised of volatile liquids distilled from plants that have been proposed to have a variety of biological attributes including antiseptic, anti-inflammatory, anti-bacterial, and anti-fungal properties. It is predicted that when tested separately against *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Streptococcus pyogenes*, melaleuca, basil, and coriander essential oils will demonstrate a degree of inhibition of growth of these microorganisms and therefore, one or more will be proposed for further study as an alternative treatment in microbial infections.

Investigators utilized standard Kirby-Bauer methodology to demonstrate the presence of antimicrobial properties by fully concentrated essential oils (Basil, Coriander, and Melaleuca) as compared to standard antibacterial drugs (Amoxicillin, Ceftazidimie, Cephazolin, Erythromycin, Ticarcillin).

In this study investigators found that all three essential oils produced similar sized zones of inhibition, if not larger, as compared to the results of the antibacterials. Therefore, the investigators propose that Basil, Coriander, and Melaleuca oil should be further studied as an alternative treatment in microbial infections.

Women's Empowerment and Economic Development in Tanzania: A Community Based Approach

Elaine Talarski, PhD, Netta Singh, PhD, & Alison Buck, PhD

The purpose of this study is how introduction of soy into the diet would improve protein intake and become a source of income for the people in rural Bukoba, Tanzania. Soy is a plant based food with all of the essential amino acids. Cultivation of soy beans on a farm owned by the Bukoba Women's Empowerment Association produced soy as a food source.

This poster provides the outcomes from evaluation surveys from workshops and cooking demonstrations that focused on educating the community about integrating soy as a source of protein. Cultivation and production of soy from the farm and planting in family plots of land increased the availability of soy. Education on the benefits of soy increased the susceptibility of soy in the diet. Further, income was generated with the production of soy products.

** Collaborative study between Women's Global Connection and School of Math, Science, & Engineering*

Investigating Biodiversity in the Headwaters: What Can Coverboards and Bird Feeders Tell Us?

Sara Tallarovic, PhD & David E. Starkey, PhD

The Headwaters is a 53-acre urban sanctuary in San Antonio, Texas. There are a wide variety of plants and animals that have been documented in the Headwaters, but we do not have a complete representation of the biodiversity present. There have been two short-term studies (2011-2012 and 2014-2015) conducted at the Headwaters. These studies were able to document a variety of different plants and animals, but may have missed animals that were using the sanctuary for a short period of time, or that might only be active at certain times of the year. In this study, our plan is to focus on herpetological and ornithological diversity in the Headwaters in order to gain a better understanding of the Headwaters ecosystem across multiple seasons.

Understanding biodiversity is paramount to the survival of an ecosystem. Preliminary studies have detailed a wide variety of plants and animals in the Headwaters. The previous surveys utilized drift fences and visual surveys. Both of these methods are extremely useful, but each has shortcomings. For example, if an animal were found within a small area of the study site and drift fences were not in that area, you might never encounter that animal. Similarly, visual surveys dictate that you be in the area at the “right time” in order to see the animal you are looking for. Therefore, we have chosen to use two alternate methods to investigate the biodiversity within the Headwaters: coverboards and bird feeding stations employing camera traps.

Coverboards are artificial habitats that can be utilized by a wide variety of organism. Briefly, a small (1x1.5m) piece of rock, wood or aluminum is placed in an appropriate habitat and left alone for several weeks. During this time, animals living in the area should become accustomed to the site and start utilizing this novel habitat. After a suitable amount of time, the coverboard can be lifted and inspected at regular intervals to determine what sorts of animals are now making it “home.” In particular, these habitats are extremely suited to many species of reptile that are not highly mobile and may never be encountered using a drift fence. The second method we will employ will utilize bird feeding stations already present in the Headwaters. After offering a variety of food rewards for several weeks, we will employ game cameras to document what species are using the feeders. This method will have a distinct advantage over in-person visual surveys and should increase our knowledge of the bird diversity in the Headwaters.

The coverboards should provide additional data regarding the reptiles present in the Headwaters. The use of this technique will allow us to monitor the site long-term, and as a result, will provide novel data regarding the biodiversity in the sanctuary. The feeding stations and game cameras will allow us to monitor the sanctuary on a continual basis, and should provide a more accurate estimate of the bird diversity in the Headwaters as seasons change. Overall, the results of these studies will provide us with a more detailed picture of the biodiversity in the Headwaters and allow us to determine if the species utilizing the sanctuary are similar to other natural areas in south central Texas.

Screening of NIH Clinical Collection Library for Compounds with Candida albicans Anti-Biofilm Activity

Christin R. Thompson, Ricardo L. Estolano, & Christopher G. Pierce, PhD

The purpose of this study is to identify and characterize novel small molecule inhibitors of *Candida albicans* biofilms, an important virulence factor intimately linked to the organism's ability to cause disease.

C. albicans, while a common inhabitant of the human microbiota, represents an increasing health threat to immune and medically compromised individuals. As an opportunistic pathogen, *C. albicans* is capable of causing disease ranging from superficial to life-threatening systemic candidiasis. Furthermore, the seriousness of *Candida* infections is heightened due to the lack of antifungal drugs available, particularly against the biofilm mode of growth. Biofilms are complex three-dimensional communities of cells that adhere to both biological and inert surfaces, including implanted medical devices. *C. albicans* biofilms are clinically relevant as they are more resistant to antifungal drugs. Currently there are only three major classes of antifungal drugs proven to be effective against *C. albicans* infections, including polyenes, azoles, and echinocandins. In addition to *C. albicans* ability to develop drug resistance, the toxicity of these antifungals to human cells represents a major problem.

In effort to address the urgent need of developing new treatment strategies targeting the resistant *C. albicans* biofilms, we screened a subset of small molecule from the NIH Clinical Collection (NCC-108) compound library to discover novel inhibitors of *C. albicans* biofilms using a 96-well microtiter plate model of biofilm formation.

From a subset of 387 compounds, we found four compounds that inhibit *C. albicans* biofilm formation. Of these four compounds, one also inhibits preformed biofilms which are generally more resistant to treatment, and two have a general inhibitory effect on planktonic growth. Future studies are aimed to further characterize the inhibitory effects of these compounds using dose-response curves and screen the compounds for potential additive, or synergistic effects with clinically used antifungals (fluconazole and amphotericin B). The compounds identified in this study represent potentially novel antifungal agents, which are urgently needed, to treat *C. albicans* biofilm infections.

The Zika Virus: Then, Now, and Tomorrow
Marina Vargas, Dang Han, Ashley Pacheco, & Julia Ocejo

The main focus of our group is to establish a path of the distribution of Zika virus cases and its effects on Humans Health. The importance of knowing its origins is essential in order to create a method of reversing its effects. Due to its characteristics being similar to other viruses, the Zika virus was not given awareness. Being able to present this information in a clear illustration can be a resource for public education regarding Zika virus epidemiology and health risks in South Texas.

The reason people need to be concerned over Zika is to prevent future spread of this virus. There has been a positive correlation between countries with Zika cases and cases of children with microcephaly. In order to protect future generations, knowing the effects and symptoms of Zika and how the virus is transported can decrease spread. The expected outcomes from this work is to increase awareness to countries that are most likely to be affected by Virus. South Texas, for example, is an environment where the Aedes mosquito (Zika virus carrier) thrives. Knowledge of the Virus can prevent future cases.

The manner in which information is going to be collected is by going through different sources of media, such as news and social media, scientific literature and lastly Health related perspectives websites, such as CDC (Centers for Disease Control and Prevention) and WHO (World Health Organization). Due to the differences in audiences that are targeted, not all the resource usage is weighted equally. Scientific peer-reviewed journals, such as *Zika virus: a new global threat for 2016* by The Lancet, and *Zika virus in Brazil and macular atrophy in a child with microcephaly* by Camila V. Ventura et al, are used as a source of data. Social media outlets provide a method of presenting the information for a general public could understand.

Although thought of as a new and recent virus, The Zika virus has been present since 1947. The most likely form of transportation is by the Aedes Mosquito. This type of mosquito lives in areas found in tropical, subtropical, and some temperate climates. The Aedes Mosquitos living in tropical environments, such as those in the southern part of the United States, can lead to more epidemics in the country. The first step to stop the spread of the Zika virus would be awareness of the general public, with a concentration on the southern states. Although this virus has had many outbreaks in the past, there is still a possibility that it can be isolated.

Modular Advanced River Barge System (M.A.R.S.)

Alison Whittemore, PhD, Okan Caglayan, PhD & Max Martinez, Yura Galvez, Padyn Giebler,
& Andrew Grossman

This paper presents the design process of the Senior Engineering Capstone Team to create a new river barge for the City of San Antonio.

The upcoming 300th anniversary of the city of San Antonio brought an open competition for the design of a new river barge. The competition was sponsored by the San Antonio River Authority and the American Institute of Architects. The design of a barge became the focus of a Senior Capstone project. The project exposed the student team to invaluable opportunities to work on a practical real-world engineering problem. They prepared a competitive proposal with a budget and a timeline for the final deliverables. The proposal was submitted to the competition.

The competition had numerous parameters and restrictions for the design. The barge had to carry at least 40 passengers; it needed multiple deck configurations for tourists, diners, and parties; and it needed to run for at least 12 hours on a battery charge. The students used MatLab software to develop power algorithms to optimize the operation of an electric motor. They created a unique pontoon hull design to reduce drag and allow for higher loads. The team researched and designed an efficient battery bank to provide a full day's worth of power. They created a modular deck design which allowed seats, tables, and umbrellas to be quickly reconfigured for different uses. Three-dimensional (3-D) modeling was performed with AutoCad software and a 3-D printer. They performed an analysis of proposed materials, comparing weight against strength, durability and cost. They created a complete budget and a timeline for production.

Ultimately, another design from an established architectural firm was awarded the contract for the new barge fleet. However, the Modular Advanced River Barge System (M.A.R.S) project was a great success. It provided a culmination of the undergraduate experience, where classroom knowledge was applied to a major industrial project. Students worked with representatives of the sponsoring organizations and product vendors throughout the design process. They created a professional proposal that advanced through several levels of the competition. Future Senior Capstone classes will be using the lessons learned from this project to create proposals for other competitions and research designs.

Gut Dysbiosis Increases Mouse Airway Susceptibility to Chlamydial Infection

Cuiming Zhu, Guangming Zhong, & Shannon O'Bryant

We hypothesize that oral uptake of antibiotics designed for treating non-chlamydial infection may actually increase the COPD patients' susceptibility to Cpn infection in the airway. COPD patients may enhance their resistance to airway infection by improving their gut microbiota homeostasis by taking prebiotics and/or probiotics.

In this study, we treated one group of mice with an antibiotics cocktail consisting of vancomycin and gentamycin (abbreviated as Abx) by two oral gavages followed by maintaining the Abx in draining water. The control group of mice was similarly treated but with buffer only. Four weeks after the treatment, fecal samples were collected from both groups of mice for measuring gut microbiota. After fecal collection, the same mice from both the Abx treatment and control groups were infected with CM intranasally. Mouse body weights were measured on a daily basis. On days 3 and 9 after the intranasal infection, subgroups of mice from both the Abx treatment and control groups were sacrificed respectively. Mouse lung tissues were harvested for making homogenates. The lung homogenates were used for measuring the number of live CM organisms and the results were expressed as log₁₀ IFUs (inclusion forming units) recovered per lung.

We found that the fecal samples from the Abx group displayed a significantly lower ratio of bacteriodes vs. fermicutes comparing to that from the control group, indicating gut dysbiosis in the Abx group. The Abx group of mice displayed more significant bodyweight drop than the control group, which correlated with significantly higher levels of live CM organisms recovered from the lung of the Abx group.

The results described above have demonstrated that the Abx-induced gut dysbiosis can significantly increase the mouse susceptibility to airway infection with CM. This observation suggests that oral uptake of antibiotics by COPD patients may make the COPD patients more vulnerable to Cpn infection in the respiratory tract. More importantly, this observation also suggests that COPD patients may enhance their resistance to airway infection by improving their gut microbiota homeostasis by taking prebiotics and/or probiotics.

ROSENBERG SCHOOL OF OPTOMETRY

The mission of the University of the Incarnate Word Rosenberg School of Optometry is to educate and prepare future leaders in optometry through excellence in education, patient care, and vision research. This is achieved in an environment committed to personal growth within a context of faith, human dignity and social justice.



*Adrenoleukodystrophy - A Rehabilitation Race Against Time*Stephanie Schmiedecke Barbieri, OD,FAAO, Diplo Low Vision, Kara Tison, OD

Adrenoleukodystrophy, (ALD), is an x-linked metabolic disorder characterized by progressive neurologic deterioration due to demyelination of the cerebral white matter. Brain function declines rapidly as the protective myelin sheath is stripped from the brain's nerve cells. Virtually all patients have visual symptoms including loss of acuity, hemianopia, visual agnosia, optic atrophy, and strabismus. The purpose for this case study is to raise awareness for this fatally, rare condition.

The rationale for bringing this case report forward is to help practitioners identify key findings that help expedite the diagnosis. By doing this, the family and the patient can maximize their remaining time to plan and prepare for this terminal diagnosis. The significance is immeasurable. Our patient died within 10 months of being diagnosed. Had the patients' family not been as proactive as they were, the time between diagnosis and death may have been less.

Case report: PR, a 5-year-old Caucasian male presented to the UIW Eye Institute for a consultation in January of 2016 as a referral from the patient's visual impairment teacher. PR's father reported that he felt PR was almost blind and hearing impaired, secondary to ALD. He requested an evaluation to determine his son's visual status and to learn about any devices available to help them communicate with PR while he still had vision.

PR's birth history and family's medical and ocular history were unremarkable. PR had normal development until September of 2015 when handwriting and school performance began regressing. His initial eye exam, done by an outside provider in October of 2015, found his best corrected visual acuity (BCVA) to be 20/60 OD, and 20/60 OS at distance and near, with minimal refractive error. PR was described as having poor oculomotor control and that his eyes "did not work together." Pale optic nerves were also noted. An urgent referral was made to a neuro-ophthalmologist. In late October 2015, he was diagnosed with ALD.

Pertinent findings at our January 2016 consultation were BCVA of .4/700 (20/35000) OU measured with the Feinbloom chart, 25 prism diopter constant left exotropia, jerky extra ocular motility and inattention to superior fields. The father was educated on the visual prognosis, accommodations, and assistive devices available to optimize his son's quality of life. The rapid and severe effects of ALD requires early diagnosis and intervention. This poster will review the diagnosis, treatment options, interdisciplinary management and prognosis of ALD.

Community Engagement Through Eye Care Services in Peru with a Globally Focused Inter-professional Team

Russell Coates, OD, Yutaka Maki, OD, MS, Denise Krohn, M.Ed., Renee Bellanger, PharmD, BCNSP, & Michael Forrest, J.D.

A combined coalition of the Women's Global Connection, the Ettlign Center for Civic Leadership, and faculty from the health professions and business schools designed a medical mission for December 2015 that served as a rich environment for experiential learning for optometry students and volunteers, from other disciplines at UIW. The hope in promoting the vision campaign was that awareness of the participating students would increase, and the trip would enrich the participants' professional and personal development. There were 21 participants, including five optometry and three undergraduate students.

Various services were provided from general health screenings, nutrition consultation, and vision services from assessment to correction for over 400 Peruvians, between the ages of 1 and 100. Local missionaries, volunteers from the Sistema de Salud del Verbo Encarnado clinic, and members from the local Pushaq Warmi group assisted with intake.

Pre-scheduling of community members was conducted by the Sistema De Salud del Verbo Encarnado (SSVE) health clinic in Chimbote and health workers in Cambio Puente, Peru, prior to the group from UIW's arrival. The health screenings and optometric tests performed were organized around stations. The patients entered the make-shift clinics and gave case histories.

Conditions in Peru were rudimentary, equipment was minimal, paper "eye charts" were used for screening, hand held evaluation tools and pre-cut lenses with a decidedly utilitarian design were utilized, and a lack of other amenities added to some of the stress of seeing hundreds of patients over a short period of time. The multidisciplinary team nonetheless stepped up to the challenge.

**Collaborative study between Rosenberg School of Optometry, Ettlign Center for Civic Leadership, Feik School of Pharmacy, & HEB School of Business and Administration*

Pre-lab Assignments are Associated with Performance in a Gross Anatomy and Histology Course for First year Optometry Students

Patricia C. Sanchez-Diaz, PhD, DVM, FAAO & David S. Fike, PhD

Blended-learning and flipping are becoming popular strategies that aim to prepare students for higher-order thinking activities during class and laboratory sessions. A flipped strategy was used in the Gross Anatomy and Histology course to evaluate if pre-lab work was associated with student performance.

There is a need to find ways to make basic science courses more meaningful for healthcare students, especially when face-to-face time is tight. By asking students to become an active part in the learning process, they may be able to obtain deeper knowledge and to better identify the underlying causes of disease. This will result in a more efficient use of their study time as they prepare for subsequent tests.

One hundred and thirty-five first year optometry students participated in this study. Students took a test during the first week of the semester (i.e. “pre-test”) to obtain a baseline of prior anatomy knowledge. The intervention group (N = 68) was asked to complete weekly pre-lab work. No pre-lab work was given to the control group (N = 67). During lab, students worked on teams of 4-6, on a clinical case. At the end of the lab session we held a group discussion of the case and then, students were given a quiz.

Statistical analysis: Predictors of course performance were analyzed using partial correlation and linear regression analyses (IBM SPSS 22). The effect of pre-lab work on lab-quizzes was measured using partial correlations. In the regression analyses we used “midterm 1”, “midterm 2”, or “final exam grades” as dependent variables and “pre-test grade”, “pre-lab work”, and “lab-quiz average” as predictors. In all tests $p \leq 0.05$ was used as cutoff for significance.

After controlling for student differences in knowledge at baseline (i.e. “pre-test grade”), students in the pre-lab group performed better on lab quizzes than those in the control group (partial correlation test; $p = 0.003$). Subsequent regression analyses revealed that lab quizzes were significant predictors of midterm and final exam scores ($p < 0.001$).

Our findings suggested that pre-lab work produced better lab quiz scores, which in turn led to better midterm and final exam grades. Thus, pre-lab assignments may improve student learning outcomes.

**Collaborative study between Rosenberg School of Optometry and Texas Tech University Health Science Center*

Ubiquitin Carboxyl-Terminal Esterase L1 (UCHL1) and its Associated Gene Network as Potential Regulators of the Glioma Cancer Stem Cell Niche

Patricia C. Sanchez-Diaz, PhD, DVM, FAAO, Judy C. Chang, Tu Dao, Yidong Chen & Jaclyn Y. Hung

Recent data from our group and others suggests aberrant expression of the deubiquitinase UCHL1 may be clinically relevant in glioma. Cancer cells with stem-like properties (CSCs) have been identified in gliomas and have been proposed as the basis for the plasticity and survival of these malignant tumors. These CSCs are able to regenerate themselves, to differentiate into the cells forming the bulk of the tumor, and to communicate with their microenvironment to increase angiogenesis or to recruit inflammatory cells that sustain tumor growth and survival. Ubiquitin Carboxyl-Terminal Esterase L1 (UCHL1) is a deubiquitinase highly expressed in the nervous system and in some cancers. Recent studies have demonstrated that UCHL1 can affect invasion, epithelial-mesenchymal transition, chemosensitivity, and cell cycle among other functions. Previous work from our group suggested a potential role of UCHL1 in high-grade pediatric glioma invasion and self-renewal. In this scenario, identifying pathways that impart stem-like characteristics to glioma cells can offer radical advances to the treatment and diagnosis of this devastating childhood cancer.

SJ-GBM2 cell line was obtained from the Children's Oncology Group (COG) Cell Culture and Xenograft Repository. Stable UCHL1 KDs were obtained through a lentiviral transduction system (Addgene) using puromycin as marker for selection. Two different shRNA constructs targeting UCHL1 coding region were used. Cells infected with shTurboGFP vector were included as control in all experiments. RNAseq (Illumina), Gene Ontology (DAVID), and Ingenuity Pathway Analysis (Qiagen) were conducted to identify UCHL1-associated gene networks.

Transcriptome comparisons of UCHL1 KDs versus controls identified 306 differentially expressed genes in SJ-GBM2 cells ($p < 0.05$). Wnt targets POSTN, SP7, and DLL1, of the transporter ABCA4, of the homeobox gene DLX4, and of some genes recently linked to cancer progression ACTA2, AQP4, GRAP2, and ALK were found within the list of top downregulated genes in the KDs. Gene Ontology (GO) analysis with this gene set revealed significant enrichment in “signal peptides”, “extracellular matrix”, and “secreted proteins” GO terms. “Angiogenesis and blood vessel development”, “neuron differentiation/development”, cell adhesion”, and “cell migration” also showed significant enrichment. Top canonical pathways identified by Ingenuity Pathway Analysis included “Clathrin-mediated Endocytosis Signaling” ($p = 5.14 \times 10^{-4}$), “Virus Entry via Endocytic Pathways” ($p = 6.15 \times 10^{-4}$), and “High Mobility Group-Box 1 (HMGB1) Signaling” ($p = 6.15 \times 10^{-4}$). While FGF2, IL1B, TNF and PDGFB were predicted as top upstream regulators ($p = 2 \times 10^{-16}$) of the UCHL1 KD-associated transcriptome. Given the relevance of the cancer microenvironment in sustaining the CSC niche, studying UCHL1 as a potential mediator of the interactions between glioma cancer cells and the tissue microenvironment may lead to novel therapeutic targets for this childhood malignancy.

**Collaborative study between Rosenberg School of Optometry, Greehey Children's Cancer Research Institute, & University of Texas Health Science Center*

Why Get a Dilated Eye Exam?

Narges Kasraie, OD, FAAO, Diplomate of ABO, Yutaka Maki, OD, MS, FCOVD, & Wendy Lopez

This is a clinical case that can be used to raise public awareness regarding the importance of dilated eye examinations.

A 24 year old asymptomatic Hispanic, female optometry intern with no prior history of any ocular problems was dilated as part of a laboratory assignment in her second year of optometry school. Patient had been wearing glasses since 4th grade, with no prior knowledge of any ocular conditions and an unremarkable systemic health. With her current glasses, patient's vision is correctable to 20/20 in both eyes, however, she had never had a dilated eye exam prior to entering optometry school. Unfortunately, some eye care providers skip performing a dilated eye exam on asymptomatic young healthy patients, however, this can put patients at risk for certain ocular conditions that may lack any immediate presenting signs/symptoms.

A drop of Proparacaine hydrochloride 0.5% ophthalmic solution followed by a drop of Tropicamide 1% ophthalmic solution were instilled in both eyes in order to allow for pupillary dilation. The fundus finding was photo documented using a Daytona plus Optos camera. A Humphrey visual field test was also performed.

The dilated exam revealed that our asymptomatic patient had a peripheral retinoschisis located on the superior-temporal retina in her left eye with an accompanying retinal hole. Patient was educated about the retinal finding and her risks and the most appropriate treatment option at this point in time. This was a great example of how a dilated fundus evaluation can help reveal ocular risks and conditions that may be otherwise unknown to the patient.

Low Vision Rehabilitation in Cone-Rod Dystrophies

Justin P. Kozloski, OD, Stephanie Schmiedecke Barbieri, OD, FAAO, Diplo Low Vision, Matt Valdes, OD, FAAO, Jeff Rabin, OD, M.S., PhD, FAAO, Diplo Vision Science

Cone-Rod Dystrophy (CRD) refers to a group of genetic diseases that affect the photoreceptors of the eyes in a way that irreversibly decreases functional vision. This case study aims to evaluate the quality of life changed by optimization of remaining vision through the use of low vision devices in CRD. This case report follows the examination of a 19-year-old male that has lost a majority of his functional vision and strives to keep up with his college classes. Device acceptance, device compliance, and overall quality of life is presumed to be increased through Low Vision Rehabilitation in the visually impaired population.

Low Vision rehabilitation examinations specifically target finding the proper tools to help meet patient goals. Near goals: To efficiently read school books and notes in order to continue pursuing a college degree. Distance goals: To safely drive again, read off the school board, and see street signs. Functional goals: Perform activities of daily living without debilitating glare and photophobia.

In order to best assist the patient's function, the provider must first have a clear diagnosis. Specialty testing consisting of ERG, mfERG, HVF, and FAF display reduced central vision along with decreased peripheral function suggesting a diagnosis of (CRD). Optical devices are then evaluated to find suitable aids for the patient's goals. Near goals were evaluated with hand-held magnifiers and portable closed circuit televisions (CCTV). Distance goals and functional goals were evaluated with telescopes and filters respectively. The patient's acceptance of the CCTV resulted in an ability to once again fluently and continuously read college text.

Currently, there is no cure for Cone-Rod Dystrophy. Therefore, treatment is aimed at improving quality of life with LVR and managing the psychological sequela associated with the disease. With the appropriate devices our patient went from a Snellen equivalent of 20/166 to 20/33 at near. This level of visual acuity has provided the ability of continuous fluent reading of target goal size at a level that will allow him to keep up with a college workload. LVR is an ongoing process. New goals are assessed as they arise and new devices are prescribed to meet those goals. Through completing goals and gaining independence, LVR, in this example, has allowed a student to stay enrolled and be inspired to further participate in the workforce.

*Normative Values and Repeatability of Small Letter Cone Contrast Sensitivity*Nam-Phong Le, BS, Matheus Ozbrek, BS, Eddy Sidra, BS, & Jeff Rabin, OD, MS, PhD

The purpose of our study was to develop normative values, confidence intervals, repeatability, and initial clinical efficacy of the cone contrast sensitivity tested with small letters as well as macular pigment optical density.

Color vision is typically assessed with large targets but critical color discriminations aviation and related fields use small targets wherein accurate color discrimination is essential for optimal performance and safety. In addition, the density of the pre-retinal blue absorbing macular pigment (MPOD) can impact color vision and related tasks. Our purpose was to establish normative values and repeatability for distance color vision and MPOD testing.

Thirty visually normal subjects participated in this study after providing written informed consent in accord with the Declaration of Helsinki. The cone contrast test was conducted at 4 meters yielding letters 4X smaller than the standard size (20/300) decreasing size to 20/75. MPOD was measured with a validated technique based on heterochromatic flicker photometry (QuantifEye MPS II). All measures were repeated twice to determine coefficients of repeatability.

Mean red (70), green (62), and blue cone (52) responses were significantly less than near vision results with large letters. MPOD values showed a mean of 0.51 with coefficient of repeatability of 0.12 indicating that a value differing more than about 0.11 should be considered a change in MPOD attributable to disease or possibly dietary changes.

Small letter cone contrast testing and MPOD offer adjunctive testing to assist in occupational vision performance assessment as well as disease detection and monitoring.

*Do students' clinical optometric skills become worse with additional practice?*Yutaka Maki, OD, MS, FCOVD, & Brian Foutch, OD, PhD, FAAO

The purpose of this study was to prove the hypothesis that students who practice more hours will perform better on their pre-clinical assessments.

Our past experiences often provide us with the assumption that the more you practice or study, the better the results will be. If this is true, it would only make sense that support for students struggling in pre-clinical optometry laboratory courses should include assigning additional practice outside of scheduled laboratory times.

Data from 130 first year students were used in this retrospective study. Students learned new clinical skills (retinoscopy, refraction, binocular tests) each week in their laboratory and each new skill set was assessed in the subsequent lab. There was a total of nine checkouts (short clinical skill assessments), one midterm proficiency, and one final proficiency. The number of hours each student practiced in the clinical laboratory room was recorded every week. At the end of the semester, the final laboratory grades were compared with the accumulative practice hours to calculate Pearson correlation coefficient (R) and its P-value.

Contrary to the hypothesis, practice hours and student performance were actually negatively correlated: $R = -0.27$ (P-value < 0.01). The top 10% and 11-20% of students practiced only 72.5 and 81.1 hours, respectively, while the bottom 10% and 11-20% practiced significantly more (89.9 hours and 100.63 hours, respectively). Interestingly, however, the bottom 11-20% actually practiced 10.7 hours more than the bottom 10%. Surprisingly, nearly half of the bottom 10% had been practicing fewer than average practice hours up to the final proficiency.

The study showed that students did not necessarily perform better by practicing more. Often students adjusted the amount of hours they practiced according to their skill set; stronger students practiced less and struggling students practiced more. The students who were in the bottom 10% of the class, however, did not adjust their practice time according to their skill set or performance. Whether practice patterns are a matter of aptitude, awareness, or attitude deserves further study.

eLearning to fixate as an adult with a strabismic amblyopia; supportive evidence of neuroplasticity

Yutaka Maki, OD, MS, FCOVD, & Russell Coates, OD

The purpose of this case study is to provide supportive evidence that neuro-plasticity still exists in adults, thus vision therapy is a viable option for adult patients.

Many recent studies have shown that neuro-plasticity is still present in adults. Because of this, adult strabismic/amblyopic patients can show remarkable improvements in their vision through vision therapy. Although the patient's age has a large impact on the patient's prognosis, it is only one of the deciding factors. Patient goals/motivation, fixation, correspondence, magnitude and frequency of strabismus, suppression, degree of fusion, etc., also have significant impact on the patient's prognosis.

Case Summary: A 34 year-old Caucasian female with long-standing strabismus and amblyopia (without visual symptoms) presents with a goal to improve her vision in the left eye (due to a diagnosis of a glaucoma suspect). The medical history was unremarkable except high blood pressure and osteoarthritis for which she takes Metoprolol and Mobic. Her best corrected visual acuities were 20/20 OD (right eye), 20/100-2 OS (left eye) at distance. Other pertinent findings included: 4-6 PD (prism diopter) constant left esotropia, anomalous correspondence at near, steady central fixation OD, steady 1.5 PD nasal eccentric fixation OS, central suppression OS, flat fusion @ 40cm and 1m, simultaneous perception (eso) at 2m with partial suppression OS, and suppression OS at 3m. The patient was informed of a guarded prognosis and a 10 session trial basis course of vision therapy was initiated.

After 18 weeks of vision therapy the patient's best corrected visual acuity OS improved from 20/100-2 to 20/40. The patient's degree of eccentric fixation changed to unsteady 0.5 PD nasal eccentric fixation OS. The significant improvement in her left visual acuity was evidence of neuro-plasticity in adult patients. The most probable reason for the improvement in her visual acuity was the improvement of her monocular fixation. In addition, her strong motivation and compliance to vision therapy homework led to success in her therapy.

Normative Values, Repeatability and Clinical Efficacy of the Diopsys® Photopic Negative Response

Ozbrek Matheus, BS, Eddy Sidra, BS, Nam Phong Le, BS, & Jeff Rabin, OD, MS, PhD

The purpose of our study was to develop normative values, confidence intervals, repeatability, and initial clinical efficacy of a new test of inner retina and optic nerve performance, the Diopsys® photopic negative response (phNR). In prior studies using custom equipment, the phNR has been shown to reveal dysfunction in glaucoma, diabetic retinopathy and other conditions. A primary advantage of this test is that it does not require normal visual acuity or fixation to administer, but reveals an overall index of inner retinal and optic nerve function.

The phNR is a negative waveform following the b-wave of the photopic (daylight adapted cone only electro-retinogram-response to a flash of light) which is indicative of inner retinal and ganglion cell function. It is administered with a diffuse light source which does not require accurate fixation or cognition from the observer. It complements the time-honored flash ERG which separates rod, cone, and bipolar cell function but does not provide metrics of inner retinal function. The phNR is recorded with a Diopsys® infraorbital skin electrode which is applied to the lower lid. A hand-held Ganzfeld (hemispherical white dome) is held by the patient before the tested eye while she/he fixates a distant target. A red light flashes against a blue background to maximize the cone and ganglion cell responses. A total of 30 visually normal subjects were tested twice on their preferred eye to assess normative values and repeatability.

Mean (\pm SD) phNR mean amplitude was $-5.13 \pm 1.26 \mu\text{V}$ and mean latency was $87.20 \pm 4.12 \text{ msec}$. The coefficient of repeatability which is the 95% interval for repeated performance currently is $3.4 \mu\text{V}$ for amplitude and 5.0 msec . for latency. The vast majority of phNR components were highly correlated with pattern ERG components which selectively assess optic nerve function. Brief results from clinical cases will be included to demonstrate the efficacy of this technique.

The Diopsys® photopic negative response is a clinically expeditious technique which can contribute to the diagnosis and monitoring of vision threatening disease. Insofar as the approach is highly non-invasive, requires no dilation, and is very brief, it will prove useful for exacting diagnosis as well as visual screening settings including occupational testing and sports vision.

*Retinal Electro-diagnostic Signals Predict Performance on a Simulated
Marksmanship Task*

Jeff Rabin, OD, MS, PhD, Matheus Ozbek, BS, Eddy Sidra, BS, & Nam Phong Le, BS

The purpose of our study was to develop and/or validate a battery of tests to identify individuals with optimal central vision to perform challenging tasks such as marksmanship and optimal athletic performance in visually guided tasks. It is anticipated that the findings will prove useful to military, law enforcement and athletic organizations alike.

Visual acuity (VA), the smallest letters one can read, remains the cornerstone of clinical vision care. Yet numerous studies have shown that performance can suffer and patients manifest symptoms despite normal VA. Adjunctive testing, including low contrast target detection, motion perception, color vision, as well as reaction time and various visual electro-diagnostic tests are equally important to assess potential for success in various occupations. It would be useful to develop a battery of clinical tests which can be administered expeditiously to identify the potential for optimal visual performance on targeting and related tasks.

Each subject was refracted to best visual acuity on their preferred eye. This was followed by small letter contrast sensitivity, small target cone contrast color testing, macular pigment optical density, and numerous Diopsys® visual electro-diagnostic tests. This included various types of electro-retinograms (ERGs), which provide objective measures of retinal and optic nerve function and visual evoked potentials (VEPs), recorded with skin electrodes from the scalp overlying the visual cortex; the site of conscious visual perception. After clinical testing, each subject completed a Wii shooting game with their preferred eye which provided both accuracy and time for completion. A total of 30 visually normal subjects (mean age 25±4, 16 females) participated in the study, after completing written informed consent documents, in accordance with the Declaration of Helsinki.

Surprisingly, standard and adjunctive measures of visual function including VA, CS, color thresholds, and VEPs were not predictive of accuracy or time for completion on the marksmanship task ($p>0.4$). However, when accuracy score for each subject was divided by time for completion, a metric known as throughput (TP), which incorporates both accuracy and time, revealed significant correlations between ERG parameters and TP. Specifically, the low contrast pattern ERG (measures optic nerve function), multifocal ERG 1st ring latency (measures timing around the point of fixation), and b-wave amplitude from the photopic negative response (phNR) of the ERG, were predictive of marksmanship TP (multiple regression model: $F=3.82$, $p=0.023$). The phNR amplitude and mfERG foveal latency approached significance in predicting TP, but their inclusion in the multiple regression model did not improve overall predictability. These findings indicate that early stage processing in the retina may be predictive of performance on real world tasks, and inclusion of these ERG tests may have application in selection and monitoring of individuals visually demanding occupations including military, aviation, law enforcement, and athletic performance.

Normative Values and Clinical Efficacy of the Diopsys® Multifocal Electroretinogram

Eddy Sidra, BS, Matheus Ozbrek, BS, Nam-Phong Le, BS, & Jeff Rabin, OD, MS, PhD

The purpose of our study was to develop normative values, confidence intervals, and initial clinical efficacy of the Diopsys® multifocal electro-retinogram (mfERG).

The standard ERG uses a flash of light but does not provide information about focal areas of retinal disease. The mfERG presents discrete bright (cone receptor) stimuli across the visual field to gain an objective field map of retinal cone and bipolar cell function from discrete points in the visual field and retina to enhance detection of localized dysfunction. Standard mfERG testing requires at least 30 minutes while the new Diopsys® system requires only 4 minutes per eye, and can be recorded less invasively with skin electrodes versus corneal electrodes.

The mfERG was recorded from 30 visually normal subjects without dilation at the recommended distance of 14 inches, without optical correction. Infra-orbital skin electrodes were used for recording. Mean and confidence intervals were established for the foveal central retinal response as for the 1st and 2nd surrounding rings. All subjects provided written informed consent in accord with the Declaration of Helsinki.

mfERG b-wave latencies were constant at approximately 43 msec. centrally and peripherally and b-wave amplitude decreased from 35 to 12 μ V from center to periphery, consistent with the substantial decrease in density of the retinal cones. The confidence intervals established in this preliminary study allow for identification of anomalous findings characteristic of eye disease. The longer latency component was correlated with the photopic negative response which derives from ganglion cells suggesting that the mfERG may be useful for inner retinal/ganglion cell analysis. Several cases will be included to demonstrate its efficacy. The Diopsys® mfERG provides an expeditious focal assessment of retinal function which can be administered in 1/5th of the standard time for this test. It provides an extremely expeditious measure of focal retina function throughout the visual field.

A Case for Quality Clinical Experiences to Influence a Student's Desire to Practice Low Vision

Matt Valdes, OD, FAAO

The purpose of this study was to examine how clinical exposure influences a student's decision to practice low vision upon graduating.

The optometric curriculum is continually expanding in order to keep up with new diagnostic and treatment options. Educators, challenged with limited time and resources while seeking high academic standards and quality clinical experiences, have attempted to address this by recommending low vision be offered as an elective. Unfortunately, the demand for low vision services is expected to increase as student desire to practice low vision remains low.

Students (n=40) enrolled in a Low Vision Rehabilitation (LVR) clinic course (OPT 409) were given an eight question survey at the end of their low vision rotation. Questions addressed a student's understanding, appreciation, and interest in the area of low vision. Responses were recorded using a 5-point Likert scale. Data were compared with results collected following the completion of the LVR didactic course (OPT 312) and analyzed using descriptive and inferential statistics through SPSS, Version 21.

Post clinical scores regarding understanding and appreciation of LVR were slightly improved from post didactic scores ([didactic/clinical]: [4.23/4.35], [4.62/4.68]), but failed to reach statistical significance (t [p-value]: t = -0.808 [p = 0.43], t = -0.391 [p = 0.697]). Interest in LVR showed modest improvement [2.90/3.40] and reached statistical significance (t = -2.565 [p = 0.012]) with a 13.8% increase in those somewhat or very interested in low vision.

Prior research suggested no observable correlation between one's understanding or appreciation for LVR and the desire to practice low vision. These data results suggest a closer link between clinical exposure and one's interest in practicing low vision. Other factors identified as barriers include long exam times, complex calculations, and insufficient practice management implementation.

Role of dopamine and COX-2 in retinal microvascular angiogenesis

Emily Zediker, Wenijing Yong, FNU Gerilechagetu, Rene C. Renteria, & Loudres M. Alarcon Fortepiani, MD, PhD, FAAO

We hypothesize that VEGF induced COX-2 expression is decreased via dopamine type 2 receptor activation in human retinal microvascular endothelial cells (HRMECs). Angiogenesis is a compensative mechanism associated with tumor pathophysiology as well as other disease states. This growth of new blood vessels, also known as neovascularization, is frequently associated with leakage and hemorrhage. In the retina, neovascularization can result in vitreous hemorrhage, retinal detachment, and eventual complete vision loss as seen in “proliferative” diabetic retinopathy.

A critical factor in this process is vascular endothelial growth factor (VEGF), which promotes angiogenesis partly due to cyclooxygenase-2 (COX-2) activation in microvascular endothelial cells (MECs). Consequently, VEGF is a target for anti-angiogenic drugs. Anti-VEGF antibodies are an effective treatment against proliferative diabetic retinopathy; however, detrimental side effects have been reported. Recently, dopamine has been shown to block VEGF-induced angiogenesis in tumors by activation of dopamine 2 receptors (D2R) in endothelial cells; however, whether this pathway plays a role in diabetic retinopathy is unknown. Because of the high prevalence of neovascularization in the retina, associated with vision loss, we are investigating the role of the D2R agonist quinpirole in suppressing VEGF-induced signaling in human retinal MECs (HRMECs). The findings from this study will provide insight in the use of D2R agonists as a novel anti-angiogenic adjunct therapy.

HRMECs were plated on six well plates containing plasma serum and grown to approximately 70-80% confluence (3-5 days). The media was replaced with serum free media with quinpirole (1 μ M or 10nM) or vehicle for 30-60 minutes pretreatment. Then, cells were incubated with human VEGF (isoform A-145; 25ng/mL) or vehicle. After an additional 16 hours at 37°C, the cells were washed and protein was harvested by lysis in a RIPA buffer containing protease and phosphatase inhibitors. Sample protein concentrations were determined using a colorimetric assay. COX-2 expression was determined by western blot after gel electrophoresis (20 μ g protein per sample). The PVDF membranes were probed with COX-2 and GAPDH (as normalizing control) primary antibodies followed by appropriate secondary antibodies. The blots were scanned using LI-COR Odyssey software and analyzed using Image Studio Lite 5.2.5. Values were normalized to control levels for that experiment and from samples run on the same blot. Experiments in which VEGF increased COX-2 expression by 20% or greater are reported here because not all cultures demonstrated VEGF-responsiveness. Reasons for this behavior are currently under study.

VEGF caused an increase in COX-2 expression in HRMECs relative to control cultures (3.23 ± 0.81 fold, $n = 10$; all values are mean \pm sem). Quinpirole (1 μ M) incubation significantly decreased this VEGF-induced COX-2 expression (1.36 ± 0.19 ; $n = 10$; $p = 0.040$); quinpirole at 10nM appeared to do the same, but the trend did not reach significance due to slightly higher variability (1.17 ± 0.19 ; $n = 11$; $p = 0.051$). The data suggest that the D2R agonist quinpirole could be used as a therapeutic approach to reduce compensatory VEGF-mediated effects in retinal microvasculature in pathological situations such as proliferative diabetic retinopathy.

REFERENCE

Boyer, E.L. (1990). Enlarging the Perspective. *Scholarship Reconsidered: Priorities of the Professoriate* (pp. 15-25). New York, NY: The Carnegie Foundation for the Advancement of Teaching.



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