2019 Student Creative Arts and Research Symposium
WELCOME

to the 2019 Student
Creative Arts & Research Symposium

The Symposium Planning Committee is pleased to welcome you to the 2019 Annual Student Creative Arts & Research Symposium. Over the past years we have honored students, both artists and scholars, who have since gone on to fulfill the promise they first demonstrated at these Symposia. These students have become researchers, teachers, artists, health care providers, and working professionals contributing to society and serving as positive role models as graduates of TWU. We are celebrating our 22nd year of meeting the following goals:

- Providing opportunities for all students to share their scholarly pursuits and build leadership and other professional skills, and
- Celebrating student-mentor achievements in a way that promotes a culture of scholarship and community at TWU.

We continue to offer various venues for presentations including poster and platform sessions and virtual presentations. Thank you for joining us in this joyous celebration of a culture of scholarship at this, our 22nd Annual Symposium!

2019 Symposium Planning Committee

- Chair: Don Edwards, Chair and Professor, Mathematics and Computer Science
- Heidi Collins, Associate Director, Teaching and Learning with Technology
- Diana Elrod, Director, Center for Student Research
- Helen Everts, Assistant Professor, Nutrition and Food Sciences
- Mark Hamner, Vice Provost for Institutional Research and Improvement; Associate Professor, Mathematics and Computer Science
- DiAnna Hynds, Professor, Biology
- Tracy Lindsay, Director of Operations, Research and Sponsored Programs
- Meredith Maddox, Assistant Director, Residence Education
- Sarah McMahan, Associate Professor, Teacher Education
- Aimee Myers, Assistant Professor, Teacher Education
- Elizabeth Restrepo, Associate Clinical Professor, Nursing
- Shannon Scott, Chair and Professor, Psychology and Philosophy
- Donna Scott Tilley, Vice Provost for Research; Professor, Nursing
- Sumod Sebastian, Graduate Student Representative
- Gary Washmon, Professor, Visual Arts
ACKNOWLEDGEMENTS

The Symposium Planning Committee is grateful to the many people whose support has made the 2019 Student Creative Arts & Research Symposium possible. The student presenters and mentors are thanked for their participation and congratulated on their accomplishments! All participating mentors and featured speakers are dedicated scholars who care about inspiring student researchers and artists.

The Symposium Planning Committee was fortunate to receive support from several sources this year in addition to TWU budget support. We are especially grateful for the generous support provided by:

- Research and Sponsored Programs;
- Center for Student Research;
- Office of the Provost and Academic Affairs; and
- Office of Technology.

Many members of the University community graciously provided their time and expertise to support Symposium functions. We want to thank the members of the Symposium Planning Committee for their guidance and the members of the Research Committee of the Graduate Council for the final selection of the Chancellor’s Student Research Scholars and Graduate Council Awardees for Exceptional, Original Scholarship. We are grateful to personnel in Learning Technologies Support for their assistance with the media needs of our speakers and student presenters during the conference. In addition, staff members in the Office of Research and Sponsored Programs deserve special recognition for their work to make this program a success.

A special thank you goes to Leslie Mauldin, a visual artist based in North Texas, for her work titled Experiment 16 (medium: alcohol ink, phosphorescent pigment, and resin on steel), on the cover of this program. Leslie received a Bachelor of Fine Arts from the University of North Texas in 2018, and is currently working on her Master of Fine Arts degree, Class of 2021, with a concentration in Sculpture. She is currently the Wood and Metal Shop Graduate Assistant, and the Treasurer of the Graduation Association of Visual Art at TWU. Exhibitions of her works include The Search for Intelligent Life, in the 010 Student Art Gallery at TWU, plus two shows later this spring: Temporary Collectives in Dallas, TX, and Casted Metal in the TWU Project Space.

The Annual Student Creative Arts & Research Symposium has received University-wide support. This celebration of student discovery and of scholarly discourse across disciplines is a part of TWU’s rich academic tradition. Everyone’s contributions are much appreciated!
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Keynote Speaker - Dr. Erika T. Camacho

The intersection of adversity, resilience, tenacity, and models of photoreceptor degeneration: My story, passion, and research

Tuesday, April 9, 2019, 1:15 pm – 2:30 pm (ACT 301)

Dr. Erika T. Camacho grew up in East Los Angeles and was taught by Jaime Escalante at Garfield High School. She received her B.A. in Mathematics and Economics from Wellesley College in 1997. After earning her Ph.D. in Applied Mathematics at Cornell University in 2003, Dr. Camacho spent a year as a researcher at Los Alamos National Laboratory. She then held a tenure-track faculty position at Loyola Marymount University before joining the faculty at Arizona State University (ASU) in 2007. She was a 2013-2014 MLK Visiting Assistant Professor of Mathematics at Massachusetts Institute of Technology (MIT). She co-founded the Applied Mathematical Sciences Summer Institute (AMSSI) and co-directed other summer programs dedicated to the recruitment of undergraduate women, underrepresented minorities, and those who might not otherwise have the opportunity. She has been awarded the AAAS Mentor Award, the PAESMEM (Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring) from the White House, the Great Minds in STEM Education Award, the SACNAS Distinguished Undergraduate Mentoring Award, and the Hispanic Women’s Corporation National Latina Leadership Award among many others.

Dr. Camacho published the first set of mechanistic models addressing photoreceptor degeneration. While experimental physiologists have been working on this area for decades, Dr. Camacho has provided a new framework through which experimentalists can examine retinal degeneration. Her work examines the mechanisms and interactions of photoreceptors that are critical to their functionality and viability with the ultimate goals of preventing blindness. Dr. Camacho’s passion is to continue the work and legacy of her mentors – to create opportunities for those individuals from marginalized communities and make graduate education attainable to them through intensive research. She truly believes that education is what allows individuals to follow their passion, excel even when the odds against this are many, and realize their dreams. In her own words, “STEM education is what allows us to shape and mold our lives and that of future generations to come. It is the biggest equalizer of life.”
A special category of recognition – the Chancellor’s Student Research Scholars – began in 2004. These student participants were nominated by their faculty mentors for exhibiting outstanding achievement in research or creative arts endeavors. Final selection of these scholars was made by the Research Committee of the Graduate Council. Scholars will be recognized and awarded individually at this session and will briefly share their research experiences.

Congratulations to our 2019 Honorees and their Faculty Mentors:

Doctoral Students:

Marco Avalos, Kinesiology ................................................................. Dr. Kevin Becker
Paramita Basu, Biology ................................................................. Dr. Camelia Maier
Elif Isik, Nursing - Denton ........................................................ Dr. Nina Fredland
Yasar Kasu, Biology ................................................................. Dr. Christopher Brower
Sukhbir Kaur, Biology ................................................................. Dr. Dayna Averitt
Allison Ray Reagan, Sociology & Social Work ................................. Dr. Jessica Gullion

Masters Students:

Anna Benscoter, Occupational Therapy - Dallas ............................. Dr. Asha Vas
Lindsey Haynes, Chemistry & Biochemistry ......................................... Dr. Mary Anderson
Anna Stopper, Chemistry & Biochemistry ......................................... Dr. Mary Anderson
Christine VanBuren, Nutrition & Food Sciences ................................. Dr. Chandan Prasad

Undergraduate Students:

Hunter Hancock, Music ................................................................. Ms. Jennifer Youngs
Hanna McDonald, Biology ........................................................ Dr. Dayna Averitt
Nguyen Ngo, Biology ................................................................. Dr. Camelia Maier
Anjali Perera, Nursing - Dallas ........................................................ Dr. Jennifer Wilson
Anh Vo, Biology ................................................................. Dr. Michael Bergel
SHOWCASE OF STUDENT RESEARCH

Wednesday, April 10, 2019 (1:30 – 2:30 pm) - ACT 301

Heather Gerling, Ph.D. Candidate in Sociology
Megan Flores, PT, Ph.D. Candidate in Physical Therapy
Kathy Nguyen, Ph.D. Candidate in Multicultural Women’s and Gender Studies

These three students were selected by the Research Committee of the Graduate Council as recipients of the 2019 Graduate Council Award for Exceptional, Original Scholarship. Recipients receive a monetary award/scholarship and are asked to showcase their research during the Student Symposium.

Heather Gerling will complete her Ph.D. in Sociology in 2019. Her dissertation focuses on the relatively new and promising field of the Sociology of Human Rights. Ms. Gerling is interested in both quantitative comparative historical sociological and qualitative sociology of inequality, stratification, and urban sociology in the international context. Besides her presentations in regional and national workshops and conferences, Heather has published three articles in professional journals.

Megan Flores is currently pursuing her Ph.D. in Physical Therapy in Houston. She is a Pediatric Clinical Specialist, and has an extensive background in the rehabilitation of pediatric clients, primarily in the home health and out-patient settings. Megan’s dissertation work titled Investigation Trunk Control in Young Children with Down’s syndrome, will be a meaningful contribution to the field of pediatric rehabilitation. Ms. Flores works full-time as an assistant professor at the University of St. Augustine in Austin, Texas; has 15 peer-reviewed manuscripts at the state and national level; and has authored four publications in peer-reviewed journals. Megan has been awarded two grants totaling over $20,000, and was awarded the Adopt-A-Doc Award for exceptional scholarship from the Academy of Physical Therapy in Washington, DC in January of this year.

Kathy Nguyen is a Ph.D. Candidate in Multicultural Women’s and Gender Studies, and has a master’s degree in social work. She is determined to push the boundaries of the field to incorporate her growing interests in feminist science and technology studies and in Asian studies. Ms. Nguyen has published articles that push Women’s and Gender Studies into new and exciting directions. She has participated in initiatives that reflect her love of the art of writing, and she has developed a commitment to addressing social justice issues that impact immigrant communities through research and writing. Kathy has published several peer-reviewed articles and short stories.

Panel Discussion: Why Research?

Wednesday, April 10, 2019, (4:00 – 5:00 pm)
ACT 301

This session will feature a group of panelists representing various perspectives to discuss the topic “How To Engage in Research.” The speakers include representation from graduate students, undergraduate students, faculty, staff, and alumni.

Panelists: Jessica Gullion, Associate Professor and Associate Dean for Research, Sociology and Social Work
Holly Hansen-Thomas, Professor and Associate Dean for Research, Teacher Education
Sumod Sebastian, Doctoral Student, Biology
Patricia Puente, Undergraduate Student, Mathematics and Computer Science
Jennie Wojtaszek, V.P. Laboratory Operations, AIT Laboratories
Leslie Mauldin: Through a combination of vibrant colors, textures, and elements of other-worldly environments inspired by science fiction, my work seeks to explore the limits of 2D and 3D art in an experimental process. The paintings use copper or steel sheet metal as an atmosphere for a mixture of patina, alcohol inks, and phosphorescent powder, all sealed with a glossy coat of resin. The series Experiments is an example of using the painting process to explore uninvestigated space.

Like my 2D work, my sculptures are also centered on the possibility of what may exist beyond the known world. By questioning what life forms and creatures may reside in the universe, I am inspired to create environments for them to inhabit. The sculptures are composed of a multitude of media ranging from metal to foam. Each piece is my interpretation of a form that might be found on another planet, while referencing pop-culture and the theory that “aliens are real”, as presented in the media. Inspirations such as the film The Hitchhiker’s Guide to the Galaxy and video game No Man’s Sky, contribute to the overarching concept.

Creating work that is focused on science fiction’s continual questioning of what “could” be allows for a break in reality and the rigorous demanding world we live in today. These 2D and 3D works bring about a lively and wondrous process as they develop into vibrant and curious beings.
PLATFOM SESSION I-A: ACT 301
Faculty Moderator: Michael Bergel

1. ALLOPREGNANOLONE ATTENUATES ESTROGEN-EXACERBATED INFLAMMATORY ALLODYNA AT THE RAT TEMPOROMANDIBULAR JOINT. R. Hornung, P. Basu, D. Averitt. Department of Biology

Estrogen replacement therapy exacerbates some pain conditions, such as temporomandibular joint disorder, in post-menopausal women. Previously, we found that estrogen triggers the recurrence of mechanical allodynia (tactile sensitivity) at the temporomandibular joint (TMJ), which was rapidly attenuated with progesterone treatments. The progesterone metabolite, allopregnanolone, has known inhibitory neuronal activity and may underlie this pain inhibition. Therefore, we hypothesized that allopregnanolone would rapidly attenuate estrogen’s allodynic effects in a rat model of TMJ inflammation. Baseline mechanical sensitivity was assessed prior to and following an inflammatory insult. Twenty-four hours later, rats were ovariecctomized (ovaries removed). Two weeks later and 1 hour following hormone injections (daily estrogen, daily allopregnanolone, or daily estrogen with either daily or interrupted allopregnanolone), alodynia was reassessed. We report allopregnanolone attenuated estrogen-exacerbated alldbidity only on day 1. Our data suggests allopregnanolone may provide short-term relief, whereas progesterone may provide continual relief, in TMD pain reemergence in post-menopausal women. (Faculty Sponsor: Dr. Dayna Averitt)

Supported by National Institutes of Health grant R15DE025970, TWU Research Enhancement Program, and TWU Experiential Learning.

2. ESTROGEN AND SEROTONIN INTERACT TO MODULATE RODENT TRIGEMINAL SENSORY NeURONS. S. Kaur, H. McDonald, D. Averitt. Department of Biology

Trigeminal pain, like migraine, is more prevalent in women. Calcium influx through transient receptor potential vanilloid 1-ion channels (TRPV1) signals pain and is sensitized by serotonin (5HT). Estrogen modulates pain, but it’s unclear whether high, low, or fluctuating hormones are the trigger. We hypothesized that high levels of estrogen (E2) enhance 5HT-evoked trigeminal pain and calcium signaling in sensory neurons. Ovariectomized rats (ovaries removed) received one injection of 0, 2, or 20µg E2 1hr prior to 5HT-evoked pain behavior testing. A separate group was implanted with slow-release E2 capsules. Sensory neurons cultured for 48hrs were used for calcium imaging. We report 2µg E2 exacerbated and 20µg E2 slowed the onset of pain behaviors, while rats with slow-release E2 were similar to controls. Calcium influx in sensory neurons was detected and we are currently testing E2 modulation. E2 sensitization of sensory neurons may underlie the prevalence of trigeminal pain in women. (Faculty Sponsor: Dr. Dayna Averitt)

Supported by National Institutes of Health grant R15DE025970 and TWU Research Enhancement Program.

3. EFFICACY STUDIES OF NOVEL AMIDOXIMES IN AN ANTI-BREAST CANCER SYNGENIC MURINE MAMMARY MODEL. A. Gekombe, K. Underbrink, E. Meza, V. Thayer, T. Ngo, L. Herd, P. Truong, M. Bergel. Department of Biology

Some of the major challenges in using chemotherapeutic compounds for cancer therapy are their specificity, efficacy, and undesirable side effects. Therefore, the search for new chemotherapeutic agents with higher efficacy is of high significance. In our lab, four amidoximes, JJMB5, JJMB6, JJMB7 and JJMB9, induced apoptosis of human breast cancer, colon cancer, and lung cancer cells in culture and inhibited core histone acetylation. Three of the amidoximes also induced cell death in murine mammary malignant cell lines 4T1, Ephi4 1424, and Ephi4 1424.D. Their toxicity in BALB/c mice was tested and maximal tolerated doses (MTD) were established as follows: 0.26 mg/kg for JJMB5, 1.56 mg/kg for JJMB7 and 0.78 mg/kg for JJMB9. Amidoxime JJMB7 has demonstrated significant tumor volume reduction compared to vehicle treated group and JJMB9 showed significant tumor volume reduction until day 21 compared to the vehicle treated group. (Faculty Sponsor: Dr. Michael Bergel)

4. EXPLORING LIAT1 INTERACTIONS AND FUNCTION USING BIOMOLECULAR FLUORESCENCE COMPLEMENTATION. A. Arva, J. Duncan, Y. Kasu. Department of Biology

The LIAT1 protein was discovered through its ability to interact with ATE1, an enzyme catalyzing the post-translational arginylation of cellular proteins. Subsequently, LIAT1 was shown to interact with JMJD6, a bifunctional arginine demethylase and lysyl-hydroxylase. In efforts to understand LIAT1 function, we carried out bimolecular fluorescence complementation (BIFC) using LIAT1 fused to one-half of YFP, and its binding partners fused to the complementary half. While neither fusion protein fluoresces by themselves, an interaction unites the complementary halves of YFP and reconstitutes florescence. Surprisingly, we found that LIAT1 assembles with ATE1 into cytosolic granules, whereas its interaction with JMJD6 is detected as either diffuse or granular within the nucleus. Consistent with low complexity regions contained within its amino acid sequence, using BIFC we also found that LIAT1 interacts with itself which may facilitate liquid-liquid phase separation. These studies provide spatial information of LIAT1 interactions and provide insight into LIAT1 function. (Faculty Sponsor: Dr. Christopher Brower)

5. EFFECTS OF RHOA AND RAC1 PRENYLATION ON ALZHEIMER’S DISEASE PROTEINS. R. Chabaya, D. Hynds, J. Reddy. Department of Biology

Alzheimer’s disease (AD) is a fatal neurodegenerative disorder that is characterized by the formation of amyloid plaques and neurofibrillary tangles in the brain. Aberrant cleavage of the amyloid precursor protein (APP) produces beta amyloid plaques. Hyperphosphorylation of a microtubule associated protein, tau, forms the neurofibrillary tangles. Small Rho GTPases (guanosine triphosphatases) have been implicated in many neurological diseases, including AD. The purpose of this study was to determine the effects of manipulating Rho GTPases on the production of AD’s proteins. For that purpose, B-35 cells were transfected with EmGFP,
EmGFP- RhoA, EmGFP-RhoAC190A, EmGFP-Rac1, and EmGFP-Rac1C196A to detect changes in APP and tau levels. APP levels decreased in the cytosol and at the membrane when transfected with EmGFP-Rac1 and Rac1C196A, while levels of tau increased when transfected with EmGFP-RhoA. (Faculty Sponsor: Dr. DiAnna Hynds)

### PLATFORM SESSION I-B: ACT 501
**Faculty Moderator:** Theresa Lindsay

1. **ATTENTIONAL FOCUS IMPACTS MUSCLE ACTIVATION DURING ISOKINETIC BICEP CURLS.** M. Avalos, P. Thomas, K. Becker.
   Department of Health Promotion and Kinesiology

   Using an external focus (i.e., focusing on the effects of the movement) as opposed to an internal focus (i.e., focusing on body movement) increases force production and lowers muscle activity. Recent research suggests a holistic focus (i.e., focusing on the general feeling) improves jump distance, but it is unknown how muscle activity is impacted. The purpose of this study was to understand how attentional focuses impacts muscle activation of arm muscles while performing isokinetic bicep curls. Fifteen young adults (18-44 years) were tested on four sets (i.e., Control, Internal, External, and Holistic focus) of five isokinetic repetitions. Normalized EMG values were influenced by focus for the biceps (p=.04), but not the triceps (p=.43). For the biceps, a holistic focus resulted in marginally higher activation than an internal focus (p=.07). A holistic focus (i.e., feeling explosive) may increase muscle activation, but further investigation is suggested. (Faculty Sponsor: Dr. Kevin Becker)

2. **MEDICINAL AEROPONICS TO SUPPORT RESOURCE CONSTRAINED ENVIRONMENTS.** J. Thomas, D. Gardner.
   Department of Mathematics & Computer Science

   The purpose of this research project is to explore, and lay the foundation for further exploration, of the use of aeroponic technology to grow medicinal herbs to support the needs of humans who lack medical resources in their constrained environment. This project will give me direct experience exploring a technology supported need in our space program and has the potential to support the needs of humankind as it could be applied to our world’s changing environment and health-care system. Aeroponics is a form of hydroponic plant cultivation in which plant/herb roots are suspended in a closed chamber and misted with a complete nutrient solution. Aeroponics requires no soil or aggregate growing medium and allows for easy access to roots. The chamber and misting system provide complete control of the root zone environment, including temperature, nutrient level, pH, humidity, misting frequency and duration, and oxygen availability. Plants often exhibit accelerated growth and maturation in aeroponic systems. (Faculty Sponsor: Dr. David Gardner)

Supported by TWU Experiential Learning.

3. **COMMUNITY ENRICHMENT PROGRAM.** K. Carroll, N. Gillum.
   Department of Family Sciences

   Family-focused programs can be beneficial to the strong development of families. For example, evidence based parenting programs have shown that proper parent education can help to reduce child behavioral problems and increase children’s social skills (Hagen & Ogden, 2017). Programs focused on marital communication can also be instrumental to family life. Establishing effective communication in romantic relationships can help couples deal with stress, foster trust, and increase intimacy; all the while mediating the risk for divorce (Yoo Bartle-Haring, Day, & Gangamma, 2014). The Community Enrichment Project was created to develop workshops on stress, communication, and parenting to help contribute to the betterment of individuals in the community. During this presentation, the project outline, feedback from participants, and implications will be discussed. (Faculty Sponsor: Dr. Nerissa Gillum)

Supported by TWU Experiential Learning.

   Department of Multicultural Women’s and Gender Studies

   The purpose of this phenomenological qualitative study was to unearth the lived experiences of Black women doctoral candidates. Specifically, this study sought to illuminate the ways in which Black women perceive their relationship with their dissertation advisor. Four major themes emerged describing the factors that impact the advising relationship: (1) communication, (2) types of support, (3) showing up, and (4) considering social location. This study provides important understanding for how Black doctoral women perceive support and how dissertation advisors can serve this population. (Faculty Sponsor: Dr. Theresa Lindsay)

### PLATFORM SESSION I-C: ACT 601
**Faculty Moderator:** Philip Yang

1. **T-SHIRT IDEOLOGIES: QUEERING AN AMERICAN FASHION ICON THROUGH A CRITICAL ANALYSIS OF RACE, SEX, AND GENDER.** K. Bravo.
   Department of Multicultural Women’s and Gender Studies

   The white cotton t-shirt is an object so common place that its political meaning is often overlooked. Exploring the making of a t-shirt, its wear within the U.S., and its eventual disposal, can lead towards a more nuanced reading of American fashion history as seen through visual culture. Using a feminist media research approach, I will analyze various forms of media such as fashion magazines, newspapers, and film to discover more about an iconic item of dress. Although the t-shirt may appear devoid of controversy, in this essay I ask: in what ways does the t-shirt embody oppressive ideologies and what are the underlying motivations? And how does manufacturing the t-shirt impact people and environment? A Critical Race Theory framework along with queer theories will guide my analysis. (Faculty Sponsor: Dr. Sara Ishii)

2. **WILD MAGIC: THE ETHICS OF CROSS-SPECIES KINSHIP IN TAMORA PIERCE’S THE IMMORTALS QUARTET.** C. Gilrich.
   Department of Multicultural Women’s and Gender Studies

   Within ecofeminist circles, pet ownership is fraught with controversy. Some compare pet ownership to slavery, asserting any affection shown by pets is purely psychological conditioning similar to Stockholm syndrome. Others call pets their “furbabies,” a term likening non-human family to human offspring. Recognizing my bias as a lifelong pet lover, I argue that we can kinship with pets in ethical ways, even in a post-humanist ethico-ontology. In particular, I analyze Tamora Pierce’s young adult fiction, The Immortals Quartet, through a posthumanist lens to explore ethical kinship practices across species. (Faculty Sponsor: Dr. AnaLouise Keating)

3. **DEAD MATTER(S).** V. Popp.
   Department of Multicultural Women’s and Gender Studies

   The dead haunt. They follow us literally as ghosts or metaphorically as memories of lost loved ones. What is the reality behind the memories? New feminist materialists theorize on the potentiality of non-human agents; however, they fail to account for the agency of the dead. What can these theories tell us about exploring the agency, embodiment and materiality of the dead? Does being “alive...
in our hearts” mean active response to humans? If new feminist materialist approaches involve looking at the non-human and not quite human, then examining those who were previously human lights the way towards the dissolution of the social/nature binary. The aim of this exploration is to rethink what counts as new materialism(s). The dead are agentic and few (if any) theorists discuss and theorize the dead. (Faculty Sponsor: Dr. AnaLouise Keating)

4. FREEING YOUTH FROM SEX TRAFFICKING: UTILIZING LEGISLATION AS A PATHWAY TO FREEDOM. R. Baugh. Department of Sociology & Social Work

There are an estimated 40.3 million victims of trafficking globally. In Texas, there are an estimated 313,000 victims of trafficking, costing the state an estimated 6.6 billion dollars, and the sexual industry in the Dallas/Fort Worth area costs the metroplex and estimated 98.8 million dollars. Many victims of trafficking encounter emergency personnel, the judiciary system and most frequently law enforcement. Through interviews with prominent figures in the fight against human trafficking in Texas, I explored the level of impact of anti-human trafficking legislation in local communities. Themes that emerged in this research were inter-agency communication, an increase in funding, and broad sweeping education for civilians and a range of professionals on recognizing, reporting and preventing human trafficking in their communities. The overall results of my research concluded that the 85th Legislative Session for Texas, with immense pressure from the Governor, had a positive impact including education for CDL license holders and cosmetologists, as well as increased funding for programs supporting victims of trafficking. (Faculty Sponsor: Dr. Nila Ricks)

5. IT IS NOT ABOUT THE SEX: A QUALITATIVE STUDY OF MALE INSTRUCTORS’ PERCEPTIONS OF FEMALE SUPERVISORS. W. Smith. Department of Sociology & Social Work

Gender-based study of leadership efficacy is increasingly rich as female organizational leaders continue to emerge. Yet, research is needed to address the way in which female supervisors in fields associated with “women’s” work are perceived by male subordinates. This qualitative research explores the perceptions of male instructors toward female supervisors. Research participants were collected via convenience sample. I found that female supervisors who convey communal traits such as providing care, nurture, mentoring, and support are as focal, or more so, than traditionally masculine, agentic traits. This study contributes to the body of literature by addressing the gender dynamic and the supervisory relationship in school-level educational contexts. This research provides recommendations for school teacher and administration preparation courses as to what they can emphasize and cultivate as administrator traits that are perceived as praiseworthy, thereby improving the efficacy of school leadership training programs and school organizational culture. (Faculty Sponsor: Dr. Philip Yang)

POSTER SESSION I: ACT 2


Background: The complete sequencing of the human genome and a better understanding of epigenomic regulation of gene expression has made personalized nutrition possible in the near future. This study examines the differences in perceived need, interest and knowledge of nutritional genomics between nutrition and dietetic students from Texas Woman's University (TWU) and Universidad Autónoma de Nuevo León (UANL).

Method: Students from both universities were sent an email link assessing the student’s knowledge, perceived need, and interest in nutrigenomics. Differences were assessed using Chi-Square test of homogeneity and Fisher’s Exact Test.

Results: Students from TWU and UANL exhibited differences in their knowledge, desire to learn more, and perceived need of ‘omic’ science in some but not all categories. Conclusions: Undergraduate nutrition students from both the United States and Mexico lack a high level of knowledge in different ‘omic’ topics, but differ in their desire to learn more about different ‘omic’ technologies. (Faculty Sponsor: Dr. Chandan Prasad)

2. A SCREEN FOR MODULATORS OF THE N-ENd RULE PATHWAY. R. Dasgupta, C. Brower. Department of Biology

Arginyl-tRNA-protein transferase (ATE1) is responsible for the post-translational transfer of arginine onto proteins bearing N-terminal acidic amino acids. The N-end rule pathway of the ubiquitin proteasome system recognizes proteins bearing N-terminal hydrophobic or basic amino acids such as arginine. These N-terminal amino acids function as degradation signals called N-degrons. We discovered that ATE1 is required for the degradation of TDP43, a specific fragment of the human TDP43 protein associated with Amyotrophic Lateral Sclerosis and other forms of dementia. Here, we generated a fluorescent GFP reporter bearing the N-degron of TDP43 (247- DLIKGISVHISNAEPK-263) which elicits a “digital response” with respect to degradation by the N-end rule pathway. Using this reporter, we are developing a highly sensitive, cell-based screen to identify chemical or genetic modifiers of the N-end rule pathway. Ultimately, this work may offer therapeutic potential in treating neurodegeneration. (Faculty Sponsor: Dr. Christopher Brower)

3. ACTIN REGULATION INVOLVED IN NON-PRENYLATED RHODA AND RAC1 IN NEURONAL GROWTH AND CELL CLUSTERING. N. Raut, J. Reddy, D. Hynds. Department of Biology

Encouraging axon regeneration after traumatic lesions to the central nervous system (CNS) or the onset of the neurodegenerative conditions like Alzheimer’s diseases (AD) may increase the recovery of the lost functions. We have designed non-geranylated RhoA and Rac1 constructs to test how inhibiting geranylation affects morphology, localization of active RhoA and Rac1 and cell signaling pathways. Western blot analysis and confocal microscopy shows that expressing non-geranylated constructs alters actin filament content in growth cones of neuroblastoma cells and rat primary cortical neurons. With emerging evidences of Rho GTPases based on their subcellular localization, elucidating the signaling cascades of the active GTPases and the effect on actin may identify the distinct functions of these GTPases that can be used as a novel targets to facilitate axon regeneration in traumatic or degenerative neurological conditions. (Faculty Sponsor: Dr. DiAnna Hynds)

Supported by TWU Center for Student Research, TWU Research Enhancement Program, TWU Proposal Development Grant Program, and TWU Department of Biology.


Boolean Algebra is a very important portion of mathematics. It uses a set of laws and theorems to define the operations of digital logic circuits. With only two possible values, a logic “0” and logic “1”, there can be an infinite number of variables to represent inputs to
these expressions. A lot of people have not heard of Boolean algebra, yet it is vastly used in our day to day lives. In this project, we will discuss what is Boolean algebra, its history, some theorems, and applications to coding. (Faculty Sponsor: Mr. Paul Ingram)

5. CAN SPECTROSCOPIC TECHNIQUES SUCH AS SURFACE-ENHANCED RAMAN SCATTERING, CIRCULAR DICHROISM, AND UV-VIS SPECTROSCOPY REVEAL HOW CARBOPLATIN MODIFIES DNA? S. Williams, C. Fraire, A. Salmon, R. Sheardy, N. Mirsaleh-Kohan. Department of Chemistry & Biochemistry

Spectroscopic techniques have been used to understand the interactions between the anti-cancer drug carboplatin and the DNA oligomer COTAR 2: ATT AAT GGA TTC ATT AAT. This is a self-complementary sequence that has been previously shown to bind $[\text{Co(NH}_3)_2\text{(OH}_2)_2]_3^+$ with high specificity and is of interest because it contains two isolated G-G sites. Both cisplatin and carboplatin are known for binding preferentially to G-G sites. These anti-tumor drugs are commonly used in chemotherapy treatments and are known to have adverse side effects. In order to improve treatment options, it's necessary to understand the molecular basis of their interactions with DNA. The binding of carboplatin with COTAR 2 has been analyzed using Stopped-Flow Circular Dichroism (CD), Surface Enhanced Raman Scattering (SERS), and UV-Vis Spectroscopy. The combination of these techniques allows for better understanding of structure and stability of platinum-DNA complexes, as well as binding kinetics. The results of these studies will be presented, and our current understanding of this interaction will be discussed. (Faculty Sponsor: Dr. Nasrin Mirsaleh-Kohan)

Supported by Robert H. Welch Foundation, TWU Chancellor’s Research Fellows Program, TWU Research Enhancement Program, Undergraduate Research Microgrant, and TWU Quality Enhancement Program.

6. CARDIORESPIRATORY RESPONSES FOLLOWING EXERCISE ON TREADMILL WITH BODY WEIGHT SUPPORT. S. John, C. Sun, A. Mathis, K. Biggerstaff. Department of Health Promotion and Kinesiology

This study examined the cardiorespiratory responses during recovery from exercise on a standard treadmill (ST) versus a body weight supported treadmill (BWST). Eight participants came in to walk on the ST and came in on a separate day to walk on the BWST. A walking treadmill protocol that increased in incline was followed. Recovery values were recorded during the cool down stage on the treadmill and during the 10-minute seated recovery. Analysis of the collected data has shown that there was no significant difference in HR, VO2, blood pressure, or RER between the two treadmills. This may be due to the small sample size of this study. It may also be because the exercise intensity was not high enough to evoke significant cardiorespiratory responses. Further research should be done to investigate the relationship between the aforementioned variables and the intensity of the protocol on the ST and the BWST. (Faculty Sponsor: Dr. Kyle Biggerstaff)

7. CULTURAL PERSPECTIVES OF CARIBBEAN IMMIGRANT PARENTS PREPARING CHILDREN FOR KINDERGARTEN. S. South. Department of Family Sciences

Parents play an important role in the development and preparation of children being ready for school. The cultural perspectives of parents vary and therefore impacts children’s readiness for the academic environment. The rationale for this presentation is to explore literature on the cultural perspectives of Caribbean immigrant parents preparing children for kindergarten. Literature was identified by searching EBSCOhost, ERIC, Google Scholar, and ProQuest. The preliminary findings revealed that the acculturation challenges of immigrant parents may affect a child’s development and preparedness for school. The cultural perspectives of parents provide rich thick descriptions of their lived experiences in a new environment. Parents’ roles are to prepare and support children’s early learning skills for later academic outcomes. Overall, being knowledgeable about the lived experiences of Caribbean immigrant parents is instrumental in shaping future research in this area. Keywords: Caribbean immigrants, cultural perspectives, transition, parent involvement (Faculty Sponsor: Dr. Sharla Snyder)

8. DIFFERENTIAL EQUATIONS IN THE FOOD CHAIN. S. Arnott, C. Bates. Department of Mathematics & Computer Science

Nonlinear differential equations can be used to map possibilities in a predator-prey relationship within a Lotka-Volterra Model. This investigation covers how short-horned grasshoppers can change the success of crops, namely alfalfa or soybean, which would in turn affect the human population that collet revenue thereof. The research includes predictions on how detrimental they can be without opposing factors, such as pesticides or rodents diminishing their population. (Faculty Sponsor: Dr. Ellina Grigorieva)


In this research we will explore, the probability of two weighted (loaded) die versus a fair die through conditional probability. In order to further our understanding, we will explore the Discrete Probability Theory. This theory explains the relationship between discrete random variables and their probabilities. Using the probability function we can infer probability outcomes and then compare these outcomes with the results of the die. (Faculty Sponsor: Mr. Paul Ingram)

10. EFFECT OF PHYSICAL ACTIVITY ON ON-TASK BEHAVIORS OF STUDENTS WITH AUTISM SPECTRUM DISORDER: A SYSTEMATIC REVIEW. Q. Yang, E. Keener, S. Dillon. Department of Health Promotion and Kinesiology

Background: To address the learning needs of students with autism spectrum disorder (SwASD), educators have developed strategies to increase on-task behaviors (OTB) of SwASD in school settings. The purpose of this study was to systematically review the literature and evaluate empirical support for the use of physical activity to improve OTB for SwASD, aged 3 to 21 years. Method: A multi-step systematic review of the literature, published between 1998-2018, was conducted using inclusion criteria. All articles that met the inclusion criteria were evaluated using the Adapted Physical Activity Taxonomy (APAT; Carano et al., 2014). Results: From the 64 articles identified, five articles met the inclusion criteria were evaluated. The APAT Level of Quality for all five articles was weak; however, the APAT Level of Recommendations were all determined to be Level A. Conclusion: While limited, there appears to be empirical support that physical activity can positively effect OTB for SwASD. (Faculty Sponsor: Dr. Suzanna Dillon)

11. EFFECTS OF CLIMATE CHANGE IN HAWAII. M. Bryce, A. Makkieh, K. Haranda. Department of Chemistry & Biochemistry

Hawaii is conglomerate of islands ranging from tourist attractions to protected natural environments. Due to its isolation it is made up of completely unique flora and fauna. Native Hawaiians have relied on these resources for hundreds of years, however, with melting caps and rising sea levels, as well as the introduction of non-native species, they are at risk for extinction. (Faculty Sponsor: Ms. Alana Taylor)
12. EPIDEMIOLOGY OF INFECTIOUS DISEASES. C. Noel, E. Grigorieva. Department of Mathematics & Computer Science

Epidemiology is the study of patterns, causes and effects of health and disease conditions in a population. It provides critical support for public health by identifying risk factors and targets for preventive medicine. The following parameters associated with a disease such as C- the number of contacts an infectious person makes per unit time, P- the probability of transmission per contact with an infectious person and D- the duration of the infection can be calculated from statistical data. Their product, $R_0=C*P*D$ is a basic reproductive number or the number of expected secondary infections resulting from a single infectious case. However, the quantities C, P and D do not give us insight into the spread and evolution of the disease that can be done by building a mathematical model of the disease phenomenon. In this study we consider a mathematical model of an infectious disease in a population of constant size N. Our SIR model is represented by a system of three nonlinear differential equations with the following variables (compartments): Susceptible, S, Infected, I, and Recovered R. (Faculty Sponsor: Dr. Ellina Grigorieva)

13. EVOLUTION OF AMERICAN NEUTRALITY LEGISLATION PRIOR TO WORLD WAR II. M. Jones. Department of History & Government

My argument for my poster is that from 1935 to 1939 American Neutrality Legislation gradually moved towards supporting entry into WWII. Legislation shifted reflecting growing public support of American entry into the war, along with economic interests in US involvement. The three Neutrality Acts were passed in 1935, 1937 and 1939. I also included the Gold Reserve Act of 1935, as it reflects the economic interests America had in Europe during the time period I focused on. Although, more legislation was passed between 1935 and 1940, the Gold Reserve Act cannot be overlooked in its significance relating to American Neutrality in World War II. I show the shift away from neutrality during the years leading up to WWII and connect the importance of the Gold Reserve Act and American economic interests in Europe to the shift towards active involvement in the War. (Faculty Sponsor: Dr. Katherine Landdeck)


This study will investigate gender differences in adult’s use of praise and punishment with children. A child’s behavior pattern is shaped by internalization of praise and punishment and influencing how they perceive themselves. Researchers can better educate with expanded knowledge on the relation between adults’ gender attitudes and interactions. The project will examine relationships that exist between language and gender attitudes when praise and punishment are implemented on children. Researchers will use vignettes offering participants the opportunity to praise and punish children and assess their gender attitudes. Researchers will code free responses for type of praise and punishment used as well as use the LIWC software to analyze responses for psychological content. Researchers predict participants will use more personality praise with female praise vignettes than with male praise vignettes, as well as a harsher response to the male punishment than female punishment. Researchers expect gender attitudes to predict gendered responses. (Faculty Sponsor: Dr. Lisa Rosen)

Supported by TWU Experiential Learning.


Athletes in sports such as cross country, track, basketball, soccer etc. benefit greatly in their performance when having appropriate gait mannerisms. These mannerisms can be achieved through the use of a supportive shoe that can allow proper foot and ankle alignment. Foot orthoses have been known for providing proper alignment, therefore improving gait patterns, for those experiencing issues such as pronation, supination, and flat feet that cannot be corrected with shoes alone. A complete review of the published literature will be constructed and compile available data related to the use of orthotics in improving athletic performance. This review will include a search for orthotics related to athletic performance in a variety of sports. The purpose of this review is to increase awareness of how foot orthoses can enhance an athlete’s overall performance. (Faculty Sponsor: Dr. Young-Hoo Kwon)


Skeletal muscle (SKM) is a prime regulator of metabolism. Exercise greatly enhances this regulation by increasing SKM metabolism and growth. PURPOSE: The purpose of this study was to explore the effects of an exercise mimetic, Formoterol (FORM), on the expression of genes related to SKM mitochondrial biogenesis and metabolism in Vitro. METHODS: Human SKM myofibers were treated with FORM or DMSO starting at 24hrs post differentiation, which continued until day 6 of differentiation. Total RNA was extracted on one day (D1), four days (D4), and six days (D6) post differentiation. Gene expression for TFAM, ERRα, Nrf1, Nrf2, and ATGS was analyzed by qPCR. RESULTS: FORM preserved genetic expression for TFAM, ERRα, Nrf1, Nrf2 and ATGS at D4 compared to D1. CONCLUSION: Formoterol preserved mitochondrial biogenesis and reduced autophagy signaling at D4. (Faculty Sponsor: Dr. Anthony Duplany)

17. FRONTOTEMPORAL DEMENTIA. M. Nolton. Department of Communication Sciences & Oral Health

Frontotemporal Dementia (FTD) is a type of dementia referring to a group of disorders caused by progressive nerve cell loss in the brain. The three types of FTD all affect brain cells causing them to lose their ability to function. This disorder affects the frontal and temporal lobes of the brain and is commonly known for affecting a person’s personality, behavior, emotions, and communication. From the onset of symptoms, it can take multiple years to diagnose FTD since there is no single test that can do so. Due to the complex nature of FTD and the implications of an incorrect diagnosis, individuals with FTD usually require a referral to a specialty center for cognitive disorders. While there is currently no cure, treatment for FTD includes speech therapy, occupational therapy, and medications to treat symptoms. This poster presentation will discuss the diagnosis and treatment options for this lesser known disease. (Faculty Sponsor: Ms. Kimberly Mory)

18. GONE WITH THE WIND. J. Pham, B. Hitt, E. Boatwright, A. Tang, L. Mcinnis, R. Maganti, Z. Rivera. Department of Chemistry & Biochemistry

Wind turbines are becoming more and more popular and important as the concern for sustainability increases and the world turns toward renewable energy sources. Many benefits are attributed to this energy source. However, their effects on the environment are not thought of often. The advantages of wind turbines include lowered electricity rates, increased jobs and income, and of course, a renewable energy source, making electricity from kinetic energy.
But the downside is that wind turbines require nonrenewable sources, such as copper, for their construction while their deconstruction is still hazardous for the environment and wildlife. It is important to consider if wind energy is really an energy source that is sustainable, efficient and where the pros outweigh the cons. In this project, we show the benefits and drawbacks of wind turbines through literature sources in order to provide information about an industry that shows no signs of slowing down. (Faculty Sponsor: Dr. Mary Anderson)

Supported by TWU Department of Chemistry and Biochemistry.


Understanding health-information seeking behaviors (HISB) can help guide health interventions to improve health and well-being, particularly among special populations and those with high perceived cancer risk (HPCR). Little is known about the HISB of deafened adults with HPCR; therefore, the purpose of this study was to examine: HISB of deafened adults with HPCR, which HI sources deafened adults with HPCR trust, and whether there is a relationship between deafened adults with HPCR and their HISB. Data from the Health Information National Trends Survey 4 Cycle 3 were analyzed. Results revealed that participants first sought HI from the internet and then from healthcare professionals. Nevertheless, participants reported that their most trusted HI sources were doctors. There was no significant relationship between PCR status and degree of trust in HI sources. Healthcare professionals and health educators should be culturally sensitive and provide accessible HI for the deafened population, including those with HPCR. (Faculty Sponsor: Dr. Marilyn Massey-Stokes)


The world’s ecosystem is facing an energy and environmental crisis, perhaps exacerbated by the use of gas vehicles. Hybrid/electric cars promise more eco-friendly and cost effectiveness. Since introduction in 1997, the truths and myths underlying of hybrid vehicles have surfaced. What is the truth behind these “green” cars and is it as eco-friendly as presented? Using existing literature, we analyze the fiscal cost, production value of materials, and environmental benefits and concerns. Our research investigates the efficiency compared to gas cars in its more complex engine system, promoting methods of recyclability in its mining and manufacturing of materials, and reduced greenhouse gas emissions for a healthier environment. We present the facts on hybrid vehicles to inform readers on the pros and cons and raise awareness on the environmental issues. (Faculty Sponsor: Dr. Marilyn Massey-Stokes)

21. INFLUENTIAL FACTORS OF PARENTAL CARE DECISIONS MADE BY ADULT CHILDREN OF PARENTS WITH ALZHEIMER’S DISEASE OR A RELATED DEMENTIA. I. Foussell. Department of Family Sciences

Parental care is a growing concern among families with aging parents, especially those with parents with Alzheimer’s disease or a related dementia. In the United States, there are approximately 5 million people living with Alzheimer’s disease or a related dementia, and this number is projected to increase to approximately 16 million by 2050. There is a lack of research regarding how adult children make parental care decisions for their parents with Alzheimer’s disease or a related dementia. The intent of this study is to determine factors that influence the decisions of adult children regarding their method of care for their parent through an anonymous or confidential online survey. The survey will examine the relative importance of various features of informal/formal parental care arrangements to adult children of various demographics and differing family role ideologies when examined conjointly. (Faculty Sponsor: Dr. Katherine Rose)

Supported by TWU Center for Student Research and TWU Experiential Learning.

22. INVESTIGATING THE WAGE GAP BETWEEN MEN AND WOMEN. H. Dean. Department of Mathematics & Computer Science

As a future engineer, examining the disparity between salaries for men and women in engineering is a important topic for my future career goals. Through this research, I examined the salaries of women and men in engineering, as well as how these salaries compare to other STEM fields. Implications of the salary findings to the future of women in engineering will also be discussed. (Faculty Sponsor: Dr. Ann Wheeler)

23. LGBTQ IN STEM FIELDS. M. Castillo Valdez. Department of Mathematics & Computer Science

There has always been discrimination in STEM fields. While women are just now getting the recognition they deserve in STEM fields, we’re going to focus on the LGBTQ community and see the different obstacles they’ve had to face, whether it’d be the difference in pay or just trying to get a job in a STEM field. We’re finally pushing for equal rights for the LGBTQ, but we want to see if in their work life they’re being treated equal and if not what we can do to have them be represented more in these STEM fields. (Faculty Sponsor: Dr. Ann Wheeler)

24. LITERATURE REVIEW ON STRATEGIES THAT TARGETS READING INTERVENTIONS TO INCREASE READING COMPREHENSION IN “AT-RISK” STUDENTS. A. Brandt. Department of Teacher Education

This integrated literature review details interventions designed to improve reading comprehension in elementary aged students identified as “at risk” for not reading on grade level with their peers within the same grade level. This will be identified through professional development for the staff members, along with classroom based interventions which are designed to improve reading comprehension. (Faculty Sponsor: Dr. Randa Keeley)

25. MATHEMATICAL MODELING OF NEURONAL OSCILLATIONS. N. Tuttle, Z. Asiri. Department of Mathematics & Computer Science

Neurons are specialized cells that receive, transmit, and conduct electrical signals. If the received signal meets the required threshold, a wave of electrical oscillations is triggered within the neuron. As this wave, also known as an action potential, travels down the axon, it maintains its strength due to voltage-gated channels. The exchange of sodium and potassium across these channels causes depolarization and repolarization of the electrical signal, leading to oscillations. Hodgkin and Huxley developed a mathematical model of these oscillations by measuring action potentials, for which they were awarded a Nobel Prize. To simplify this model, FitzHugh and Nagumo limited the model to only one type of channel, thus developing their own model of neuronal oscillations. The purpose of this research project is to describe both methods of modeling neuronal oscillations and give a step-by-step approach to the use of differential equations in the models. (Faculty Sponsor: Dr. Ellina Grigorieva)

26. MINORITIES THRIVING IN STEM FIELDS. S. Pierce. Department of Mathematics & Computer Science

These fields have been predominantly held by Caucasian men. That
changed in 1953 when NASA employed three African American female mathematicians, Katherine G. Johnson, Dorothy Vaughn, and Mary Jackson. Their hard work has made it possible for new African American and other minority youth to excel in the many engineering fields today. Highlighting minorities thriving in challenging fields will hopefully encourage other minorities to strive for excellence in STEM fields knowing that the original barriers have been knocked down for them to achieve greatness. (Faculty Sponsor: Dr. Ann Wheeler)

27. MOLECULAR ANALYSIS OF MEDICAGO TRUNCATULA NODULE-SPECIFIC MTPNP GENES. H. Samara, C. Pislariu. Department of Biology

Legumes are essential for sustainable agriculture because of their ability to establish symbiotic associations with nitrogen-fixing soil bacteria called rhizobia. In this association, rhizobia enter the root tissue, and are accommodated inside root nodules, where they fix nitrogen. Symbiotic nitrogen fixation (SNF) requires coordinated regulation of thousands of plant and bacterial genes. We are studying SNF in the model system Medicago truncatula - Sinorhizobium meliloti. Forward genetic screening of a tobacco retrotransposon Tnt1- insertion mutant population identified a nodule-specific gene encoding a single PLAT (Polycystein-1, Lipoxigenase, Alpha-Toxin) domain protein (MTPNP1), belonging to a cluster of 5 nodule-specific family members1,2. Nodules of npd1 mutants remain underdeveloped, rhizobia fail to fix nitrogen, and die prematurely. Preliminary work revealed that MTPNP genes may have non-redundant roles in SNF. We are functionally characterizing the five MTPNP genes by utilizing yeast two hybrid assays, protein localization, microscopy, and transcriptomics. Representative results will be reported. (Faculty Sponsor: Dr. Catalina Pislariu)


This research investigates the modifications carboplatin, cis-diamine (1,1-cyclobutenedicarboxylato) platinum (II) and cisplatin, cis-diaminedichloroplumatin (II) cause on GG-DNA stability and structure. A combination of chromatographic and spectroscopic techniques - Surface-enhanced Raman Scattering (SERS), Normal Raman, and High-performance liquid chromatography (HPLC) are implemented to closely monitor the drug-DNA complex interaction. For both HPLC and SERS Triethylammonium acetate (TEAA) will be the solvent for the drug and DNA solutions as well as a gradient solution for HPLC. Each complex consists of various drug:DNA ratios, pH, temperatures, and incubation periods. The goal of this study is to utilize several analytical techniques to closely monitor and better understand the interaction between platinum drugs and DNA on behalf of future drug development. The results of these studies and future experiments will be discussed during this presentation. (Faculty Sponsor: Dr. Nasrin Mirsaleh-Kohan)

Supported by Robert H. Welch Foundation, TWU College of Art and Sciences, TWU Department of Chemistry and Biochemistry, and TWU Quality Enhancement Program.

29. MOTIVATIONAL FACTORS THAT CONTRIBUTE TO FAN ATTENDANCE IN HIGH SCHOOL SPORTS. K. Griner, G. Weatherford. Department of Health Promotion and Kinesiology

Motivation is the activation of goal-oriented behavior and is said to be intrinsic or extrinsic. This includes behaviors that are either innate or learned pleasures that fulfill social or psychological needs. Research on this topic will investigate motivational factors that drive fans to attend high school sports in North Texas. Sport managers and athletic directors are faced with the challenge of identifying a target market to generate more revenue and keep their spectators engaged. According to research by D.L. Wann there are 8 motivation profiles that identify with sports fans (Wann, 2008). Those profiles are, escape, economic, eustress, self-esteem, group affiliation, entertainment, family, and aesthetics. The SFMS (Sports Fan Motivation Scale) be used to assess the profile that drives fans the most and least to participate in attending a high school game of any sport. The findings will help athletic directors develop a marketing plan to increase fan attendance and engagement. (Faculty Sponsor: Dr. Gwendolyn Weatherford)

Supported by TWU Experiential Learning.

30. NEURAL OSCILLATIONS, FITZHUGH-NAGUMO MODEL. M. Lobb, M. Yeasmin, C. Olmeda, E. Grigorieva. Department of Mathematics & Computer Science

Neurons are cells in the body that transmit information to the brain and the body by amplifying an incoming stimulus (electrical charge input) and transmitting it to neighboring neurons, then turning off to be ready for the next stimulus. These cells also have fast and slow mechanisms to open ion channels in response to electrical charges. Voltage-gated channels exist for each kind of ion, which open and close in response to voltage difference. If the electrical excitation reaches a sufficiently high level, called an action potential, the neuron fires and transmits the excitations to other neurons. In this work we are modeling neuron action by a nonlinear system of differential equations and investigating properties of our model analytically and numerically to demonstrate its behavior. This work will help individuals studying neuroscience, biology, and/or psychology correlate neural behavior with mathematical models. (Faculty Sponsor: Dr. Ellina Grigorieva)

31. NEW HETEROLEPTIC COPPER(II) AND SILVER(II) COMPLEXES WITH EXCITING PHOTOPHYSICAL PROPERTIES. A. Kolek, R. Kidwell, V. Nesterov, M. Rawashdeh-Omary. Department of Chemistry & Biochemistry

Coinage metal azolates have been receiving increased attention due to their captivating luminescent properties, possessing not only bright luminescence but also tunable luminescence (with regard to excitation wavelength, temperature, solvent, and concentration), which could be utilized as potential applications as organic light-emitting diodes (OLEDs) and/or sensors for volatile organic compounds (VOCs). The research presented focuses on the syntheses and characterizations of mixed-ligand Cu(I) and Ag(I) complexes with fluorinated pyrazolate and phenanthroline-based ligands. The synthetic routes for these complexes consisted of both “green” solventless syntheses (using mechanical grinding and heating) and solvent-mediated syntheses (using Schlenk technique, under nitrogen atmosphere). The structural, physical, and photophysical properties were obtained through the following methods of characterizations: single crystal X-ray diffraction, elemental analysis, proton NMR, FTIR spectroscopy, melting point, thermogravimetric analysis, photoluminescence spectroscopy, and UV-Vis absorption spectroscopy. (Faculty Sponsor: Dr. Manal Rawashdeh-Omary)

Supported by Robert A. Welch Foundation and TWU Department of Chemistry and Biochemistry.

32. PLANNING AND IMPLEMENTING HOME-BASED INTERVENTION FOR YOUNG CHILDREN WITH COMPLEX SPECIAL NEEDS: PREPARING FOR SCHOOL READINESS. R. Myers, P. Navarrete. Department of Communication Sciences & Oral Health

Abstracts – Session I: Tuesday, April 9 (9:00 – 10:20 am)
The purpose of this case study is to formulate intervention strategies, provide resources, and offer support for two children who have special needs in a homeschool setting in order to overcome challenges which include: communication skills, pragmatic abilities, and self-help development. The TWU students have worked with two girls who are five-years-old and adopted from China. Both girls have Down's Syndrome; one student is deaf and being legally blind, while the other student needs support in speech and language. While providing direct instruction for both girls, support for the family was included. The students used different assessments which include: the MacArthur- Bates Communicative Development Inventories (measures their vocabulary inventory), the Pragmatic Checklist (social communication skills), and the Battelle Developmental Inventory (screens for school readiness and eligibility for special education services) to set goals with a series of measurable benchmarks to note progress and then plan activities that target the objectives. (Faculty Sponsor: Dr. Sarah Wainscott)

33. POLLUTION IN CHINA. E. Dennis, M. Thompson, A. Luu. Department of Chemistry & Biochemistry

In our research we studied the effects on how China’s pollution is affecting the country. The main areas of focus are water, air, and soil contamination. We want to determine what’s causing the pollution and how are the people in China creating and fixing this problem. Although 20% of China’s water is used for agriculture, but cannot be used by humans, while 13% of the water is useless to the country. With arguments that China has the highest air pollution rate in the world W.H.O established air quality guidelines. The air quality is so severe in China that it can potentially cause health related issues. With the use of coal-fired power plants and vehicles the air pollution continues to rise. Mainly used for agriculture, China’s soil is contaminated with heavy metals such as mercury. China has adopted a soil pollution plan (2016) that holds companies liable to contaminating the soil. (Faculty Sponsor: Ms. Alana Taylor)

34. SCHOOL NURSE-LED ASTHMA INTERVENTION FOR ELEMENTARY SCHOOL-AGED CHILDREN LIVING WITH ASTHMA. E. Isik, N. Fredland. College of Nursing - Denton

Studies reported that 6.1 million children in the United States have asthma and 3.3 million children experienced an exacerbation of asthma symptoms in 2016. The study purpose is to examine the effectiveness of a nurse-led asthma intervention program on asthma management, peak flow meter usage, school absenteeism, and daily activities. A randomized control pilot study was conducted with elementary school-age children. The Asthma Control Questionnaire and Paediatric Asthma Quality of Life Questionnaire assessed outcomes at baseline, six weeks and twelve weeks post-intervention. Repeated measures analysis of variance was used to analyze the data. Significant differences were found related to asthma management, peak flow meter usage, school attendance, and daily activities for the experimental group. The study findings have the potential to increase school nurses’ awareness about the importance of teaching asthma self-management to elementary school age children. (Faculty Sponsor: Dr. Nina Fredland)

Supported by TWU Center for Student Research.

35. SIR MODEL OF INFLUENZA AT AN ENGLISH BOARDING SCHOOL. N. Quinn, V. Samararatne. Department of Mathematics & Computer Science

In 1978, an all-boys boarding school in England was plagued with an influenza epidemic from January 22nd to February 4th, causing 512 out of 763 boys to be bedridden. In this work, we will model the data with Kermack and McKendrick’s SIR epidemic model to understand how the epidemic affected the school. This epidemiological model describes the dynamics of the susceptible, infectious and recovered individuals through a system of differential equations. We will estimate the parameters of the SIR Model and compare the solution of the model with the data. This work will benefit individuals interested in predicting the future course of an outbreak and assist in understanding how infectious diseases progress in society. (Faculty Sponsor: Dr. Ellina Grigorieva)

36. TELEPRACTICE TO TELEPERFECT. M. Stewart. Department of Communication Sciences & Oral Health

Telepractise is the application of telecommunications technology to deliver speech language pathology and audiology professional services at a distance by linking clinicians to clients or to clinicians. We know that not all families have the means of getting their child to some sort of facility for therapy, sometimes it is more feasible to get on a computer, or tablet. Texas is very big and has a large rural population, so transportation may also be problematic. Another problem that we see is the lack of preparedness that students have when they graduate. Universities such as TWU don’t help prepare us for it. We need to know the steps to start this, what new technology is necessary, what are the local telepractice companies, and does conferencing online still compile with HIPAA. How will insurance companies assist with telepractice. These are some of the things that I will cover in my presentation. (Faculty Sponsor: Dr. Sarah Wainscott)

37. TEXAS COLLEGE STUDENTS PERCEPTIONS OF FAMILY SERVICES. M. Gross, A. Manohar. Department of Family Sciences

This project aims to understand factors influencing student opinions toward family services which may influence their willingness to report or refer to appropriate services as professionals. In 2017, 1,532,500 students were enrolled in colleges in the state of Texas. These students will soon graduate and enter the workforce. We will recruit and survey 168 college students from across the state of Texas who plan to enter the “helping fields”. Though there is little research over student perceptions, there is literature on parent perception of services their child receives. Previous studies found that after a child received family-centered services, parents viewed that particular service positively. Staniforth, Deane, & Beddoe (2016) found the media to be the largest influence on public perceptions of social services, and that media presentation of social services are strongly negative. They also found a positive correlation between education level and positive opinions of social services. (Faculty Sponsor: Dr. Katherine Rose)

Supported by TWU Honors Research Grant.

38. THE "FLYING TIGERS": AN AMERICAN SUCCESS STORY. R. Parr. Department of History & Government

This is my assessment of the early days of the group known as the “Flying Tigers” and figuring out if they were America’s first true success story to come out of the early dark days of the Pacific War. I will discuss the events that led up to the establishment of the “Flying Tigers” and their early battles against the Imperial Japanese Air Force over mainland Asia. Let’s see if the “Flying Tigers” truly became America’s first success story of the Second World War. (Faculty Sponsor: Dr. Katherine Landdeck)

39. THE EFFECT OF DANCE PRACTICE ON BALANCE PERFORMANCE. M. Hernandez, C. Hung. Department of Health Promotion and Kinesiology

A previous study conducted by Kostić et al. (2010) had shown that
the organized dance activities improve static and dynamic balance in middle-aged women population. The benefit of the dancing program to the elderly population is unknown. The purpose of this case study is to investigate the effects of dance training on the balance performance of a senior woman. The dance training program will consist of eighteen, hour-long sessions in six weeks. Each session will include a warm-up of stretching and light cardio, dance conditioning exercises, and dance combinations. Balance performance will be tested before the training and every two weeks by using the Balance Master system. At the end of the six week training, the scores from each test will be plotted to demonstrate the changes of balance performance over time. (Faculty Sponsor: Dr. Vic Ben-Ezra)


Aphasia is a disorder of language and communication that occurs after a stroke on left side of the brain. Wernicke's aphasia affects both language understanding and language expression. Wernicke's aphasia clients have effortless speech and grammatical completeness in their conversational skills; however, content lacks meaning. Numerous spoken errors are evident characterized by word and sound substitutions known as paraphasias. Reading and writing deficits may also occur. Determining aphasia treatment for Wernicke's clients is challenging due to severity of the language impairments. Context-Based intervention (Marshall (2001)) was developed to improve language skills in contextual situations and enhance life participation. We describe a single case study of an individual with Moderate Wernicke's aphasia who received Context-Based approach over a six week period at The Stroke Center –Dallas. (Faculty Sponsor: Ms. Alisa Woods)

41. THE EFFECTS OF DIFFERENT INSTRUCTIONS IN SPEECH OF INDIVIDUALS WITH PARKINSON'S DISEASE. L. Bradford, S. Moreland, J. Levitt, Department of Communication Sciences & Oral Health

Parkinson's disease (PD) is the second most common neurodegenerative disease. Approximately 90% of individuals with PD experience voice disorders. The present study examined the outcome of two different instructions, “Speak Loud” and “Speak with Intent.” The effects of these two instructions have been examined and reported separately but not in a within-subject context. The information gained from the present investigation could facilitate optimal therapy instructions for various cases. Sixteen individuals with PD recorded their voice under three conditions, including “natural,” “Speak Loud,” and “Speak with Intent” in separate blocks. The recorded voice materials were analyzed in terms of the intensity (perceived as “loudness”), fundamental frequency (perceived as “pitch”), and Cepstral Peak Prominence (CPP). To date, the pilot data shows the tendency that the “Loud” instruction increases the intensity and raises the pitch more than the “Intent.” The vocal quality indicated by the CPP figures was higher with the “Intent” instruction. (Faculty Sponsor: Dr. June Levitt)

Supported by TWU Experiential Learning.

42. THE IMPACT OF CLIMATE CHANGE ON JAPANESE CULTURE. D. Douglass, C. Kipp, S. Vazquez. Department of Chemistry & Biochemistry

Climate change has started to alter the life in Japan, and the impact is expected to continue for years. Japan consumes about 70% of the world's freshwater eel catch, but they have been disappearing due to climate change. Japan used to burn their trash, but has now adopted an agreeable recycling program in which some areas recycle 80% of their waste materials. They use environmentally friendly resources such as solar energy and water energy as well as natural solutions for building materials. Japan has some of the least polluted cities according to the WHO. The government has focused on cleaning the air and water. Citizen movements and protests are responsible for the legislative changes. The "Pollution Diet" was implemented in 1970. Air pollution proceeded to drop dramatically. Further research will be completed to further examine the way Japan has adapted to climate change. (Faculty Sponsor: Ms. Alana Taylor)

43. THE IMPORTANCE OF SEQUENTIAL CIRCUITS IN COMPUTER SCIENCE, MATHEMATICS, AND OUR LIVES. J. McGill, A. Oquindo, I. Martinez, B. Lovick, C. Wilshire. Department of Mathematics & Computer Science

Circuits serve an important role in electronics where they take a great deal of logical gates and sequencing to accomplish what they can do today. So, how do they work and how do mathematics and computer science apply to circuits? This symposium project will focus on the importance and the application of mathematics and computer science within sequential circuits. A demonstration of a simple sequential circuit will be presented to assist in the conceptualization of a real-world application. This real-world application will then be used to emphasize the importance of sequential circuits in our world today, in computer science, and in mathematics. (Faculty Sponsor: Mr. Paul Ingram)

44. THE OFFICE OF STRATEGIC SERVICES AND AMERICAN PSYCHOLOGICAL. C. English. Department of History & Government

World War II gave rise to a use of psychological warfare that had never been experienced in such a capacity. Following World War I, the American agencies tasked with psychological warfare operations quickly disbanded. This left the United States ill equipped to carry out independent psychological warfare operations following December of 1941, unlike its European allies and enemies. This research aims to discover whether the Office of Strategic Services, through its Morale Operations Branch, served as a useful addition to the advancement of American psychological warfare during World War II. (Faculty Sponsor: Dr. Katherine Landdeck)

45. THE THANG TA SHIFTS. K. Williams, Department of Dance

The Thang Ta is a ritualistic dance that originated in Manipur, India whose country’s independence was challenged by the British in 1891. In order to defend their state, the dance was created from the Anglo-Manipur war which takes the art form of survival mode dance techniques. Unfortunately, the country lost its independence and was temporarily taken under British control, forcing the practice of Thang Ta to go undercover. Consequently, Thang Ta began to be a ritualistic dance for inter-clan disputes, neighbors, and rivalry states which allowed to keep the tradition of this dance alive. As time evolved, the dance has been portrayed as a modernized show act by the younger generation. The research conducted by Khalyn Williams showcases how today’s generation has manipulated Thang Ta into a theatrical dance by highlighting dance elements and mass media not used by the previous generation. (Faculty Sponsor: Dr. Gladys Keeton)

46. THE VALLEY BETWEEN FINE ARTS AND ACADEMICS: USING BLOOM’S TAXONIMY TO BRIDGE THE DIVIDE. R. Shobe. Department of Dance
My research study stems from a class activity I participated in, in regards to Bloom’s Taxonomy. I was quickly reassured of the evident gap between academia and fine arts. Fine arts is often only valued on a creation (synthesis) level even though embodied learning contributes to academic success no matter the content area. I want to bridge the gap between the two worlds by utilizing the steps of Bloom’s Taxonomy in various sequences for application in all learning styles. This study examines the ideas of Bloom’s Taxonomy in relation to producing a divergent thinker by integrating fine arts in an academic setting. (Faculty Sponsor: Dr. Matthew Henley)

47. WARING’S PROBLEM: A SHORT HISTORICAL OUTLINE OF THE QUEST FOR AN ARITHMETIC SOLUTION. S. Castaneda. Department of Mathematics & Computer Science

The purpose of this research is to provide a broad outline of the development and variations of Waring’s problem found in the search for a solution. In around 230 AD Diophantus asked: Can every natural whole number be represented as a sum of four squares greater than or equal to zero? Thus, began a wonderful journey toward finding a solution to one of the classical problems in additive number theory. Bringing to the forefront such mathematical luminaries as Fermat, Euler, Lagrange, Waring, Hardy and Littlewood and spanning a vast timeline. (Faculty Sponsor: Dr. Ellina Grigorieva)

Abstracts – Session I: Tuesday, April 9 (9:00 – 10:20 am)
2. STRENGTHENING FAMILY ENGAGEMENT THROUGH SUMMER PROGRAMMING. K. Papa, N. Gillum. Department of Family Sciences

Family engagement can be an important factor and implementation between children’s learning and their developmental stages throughout the lifespan (Baker, Wise, Kelley and Skiba 2016; Epstein, 1995; Grant and Ray 2013). Parents and other family members may want to be involved in their children’s day-to-day activities; however, it may not be feasible for them to do so. A common reason is due to employment (Patten, 2018). In fact, 39% of full-time employed mothers and 50% full-time employed fathers reported they spend very few moments with their children. A project was created to provide families and their children with a list of activities during the summer to encourage family engagement. This involved multiple easy and affordable activities to take home and a week for Family Summer Celebration activities. This presentation will display the goals and outcomes, timeline, activities, social media platform, and images of the project. (Faculty Sponsor: Dr. Nerissa Gillum)

3. COMMUNISM AND BALLET: HOW SWAN LAKE BECAME THE IDEAL EXAMPLE OF SOVIET PROPAGANDA. L. Spier. Department of Music

Of the many notable works by Pyotr Tchaikovsky, the ballet Swan Lake is one of his most famous and iconic compositions. While the score speaks for itself, the main contributions to the ballet’s cultural success came not from the composer, but the growth and development of the USSR. With a combination of Tchaikovsky’s lack of choreography experience and turbulent Communist politics, Swan Lake became a thriving staple of Soviet culture. This research explores the effects of inexperience, creative licensing, and political influence on past and present performances and the cultural understanding of Swan Lake. This paper studies the Soviet impacts on the culture of the era, and the transformation of Swan Lake into the ideal piece of propaganda. Upon examination, the relationship between culture and politics and its impact on Swan Lake makes this piece a compelling case study in the reception history of Russian ballet in the twentieth century. (Faculty Sponsor: Dr. Cory Gavito)

4. DEVELOPMENT AND APPLICATION OF AN OCCUPATIONAL WELLBEING INVENTORY. R. McClure, C. Evetts. School of Occupational Therapy - Denton

Introduction: The theory of Occupational Wellbeing (OWB; Doble & Santha, 2008) outlines pleasure, renewal, accomplishment, affirmation, coherence, companionship, and agency as needs which contribute to occupational wellbeing. Methods: We designed a three part study to: 1) develop and establish validity for an Occupational Wellbeing Inventory (OWBI), 2) use the OWBI to determine the impact of leisure activity on occupational wellbeing among college students, and 3) determine the impact of craft kits on the occupational wellbeing of service members. Results: Preliminary analysis of surveys in phase two (n = 72) offered promising results. Significant positive correlations existed among all subscale and all loaded on a single factor which we identified as occupational wellbeing. Results are pending regarding phase three data. Conclusions: The OWBI has good construct validity. Data collection for the impact of craft kits on the occupational wellbeing of military service members is underway. (Faculty Sponsor: Dr. Cynthia Evetts)

Supported by Help Heal Veterans.

PLANTFORM SESSION II-C: ACT 601
Faculty Moderator: AnaLouise Keating

1. SPIRITUAL ECOLOGY IN EDUCATION: EXPLORING THE COMPLEMENTARITY OF VIRTUES EDUCATION AND ‘CURRICULA OF PLACE’. D. Davies. Department of Multicultural Women’s and Gender Studies

Can we envision an educational paradigm that honors universal virtues while resisting essentialized narratives? Honoring the incommensurability between groups in unique localities around the planet, Gregory Cajete’s indigenous education centers around “place-oriented environmental relationships” (620). The sense of place he describes is considered living, as beings and their places are co-created, evolving according to the quality of their environmental connections and interactions. Honoring the mutuality between all life, Don Trent Jacobs American Indian approach to education posits the need for character education founded on universal virtues. This paper explores how both virtues education and “curricula of place” are complementary rather than contradictory, specifically how by centering their educational approaches in a relational spiritual ecology, Jacobs and Cajete invalidate various false dichotomies which exist in the modern educational paradigm between the material and spiritual, the universal and local, the seen and unseen. (Faculty Sponsor: Dr. AnaLouise Keating)

2. WE ARE MADE OF THE STARS: ASTROLOGY AS SPIRITUAL ACTIVISM. V. Lambert. Department of Multicultural Women’s and Gender Studies

Indigenous thought categorizes celestial bodies with the Earth, plants, and animals, as “living beings with a creative life force that relates to and affects human beings physically and spiritually” (Cajete 216). Astrology posits, “planets have a fundamental, cosmically based connection to specific archetypal forces or principles which influence human existence, and that the patterns formed by the planets in the heavens bear a meaningful correspondence to the patterns of human affairs on the Earth” (Tarnas 1). Indigenous thought and Astrology offer many possibilities for us to expand our self-care and world-care. One astrological force that provides energies that can be utilized for change is the moon. What can an astrological informed consciousness do for spiritual activism? For our lives and the lives of others? What are the connections between feminism, astrology, and social change? How might we utilize astrology, specifically, full moon rituals, as part of our spiritual activism? (Faculty Sponsor: Dr. AnaLouise Keating)

3. CONTEMPLATING MATERIAL FEMINISMS: CULTIVATING A MINDFULNESS OF THINGS. M. May. Department of Multicultural Women’s and Gender Studies

Geopolitical turmoil, humanitarian crises, and global warming are just a few examples of transnational conflict that vie for our everyday attention. These conflicts have not only captured our attention, but also our imagination, blocking out vital cues and messages that surround us. How can we attune ourselves to these messages? How do they reinforce our interconnectedness? Finally, how can we channel the messages we receive into sustainable personal, social, and environmental change? Drawing upon the work of womanist, feminist, indigenous theorists, this paper explores the interplay of mindfulness and new materialism and how these theories offer us a broader conceptualization of identity and relationality. Ultimately, this paper proposes that we step away from the headlines that inundate and overwhelm us and shift toward forging deeper relationships with our human and
nonhuman counterparts. After all, we are being called: called to re-examine and re-imagine how we can become more responsive rather than reactive to the unsettling times in which we live. (Faculty Sponsor: Dr. AnaLouise Keating)

4. THIS BRIDGE CALLED YERBAS: COMMUNITY WELLNESS AND HEALING THROUGH ANCESTRAL PLANT KNOWLEDGE. G. Sanchez. Department of Multicultural Women's and Gender Studies

Material feminism asks us to acknowledge nature as agentic, alive, and capable of interacting with us as co-inhabitants of the same time and space. As we learn to recognize the benefits of cultivating relationships with nature, we open ourselves to experience the healing power of plants. For this paper, I place material feminism in dialogue with women of color who engage in community wellness and healing through ancestral plant knowledge. Using Instagram as an open, accessible digital forum, @hoodherbalism, @lalobalocashes, and @florymachete share methods rooted in herbalism and generational plant wisdom that has survived despite cultural and spiritual genocide caused by colonization. I posit that by sharing their knowledge with local communities as well as their followers on Instagram, @hoodherbalism, @lalobalocashes, and @florymachete serve a model as to how we can begin to interact with nature. Furthermore, these women disrupt and redefine existing ideas of pedagogy and expand understandings of spiritual activism. (Faculty Sponsor: Dr. AnaLouise Keating)

5. SPIRITUAL MATERIALISMS: HEALING AFFECTS IN INDIGENOUS TRADITIONS. D. Vargas. Department of Multicultural Women’s and Gender Studies

Recent feminist scholarship focuses on mediating the separation between nature and culture, positioning them instead as interactive entities. However, many of these explorations remain rooted in Western frameworks, and do not acknowledge that some cosmologies, namely indigenous ones, have been engaging these questions since before the rise of “new” materialist theorizing (Keating 2012). As a form of intervention, this paper will draw from indigenous cosmologies to explore the relationship between the human and non-human in ritualistic healing practices. Through closely analyzing the role of objects and plants in indigenous healing traditions, I position the spiritual as a theoretical and physical realm where material and nonmaterial forms interconnect and constantly interact. Engaging Jane Bennett’s theory of vital materiality, affect theory, and other Western approaches to new materialisms, this paper contributes to current theorizing on human and non-human interactions by expanding the material to include that which we can only feel. (Faculty Sponsor: Dr. AnaLouise Keating)

6. VIRTUAL WORLDS, REAL XP: EXAMINING THE ACTIVIST POTENTIAL OF THE VIDEO GAME SERIES FALLOUT. S. Webb. Department of Multicultural Women's and Gender Studies

What can an apocalyptic gameverse teach us about the relationships between humans, non-human nature, technology, and objects? Speculative fiction has long been recognized as a genre that pushes the boundaries of imagination and helps readers/gamers envision new worlds. The video game series, Fallout, thrusts a customizable player character into a post-apocalyptic world where humans are near extinct, objects outnumber survivors and—by necessity—humans must form interdependent relationships with animals, landscape, and technology. By examining the interactions between my player-character, robots, ghouls, debris, and a plenitude of other “ordinary objects,” I hope to answer the question: What can “science fictional behavior” (Jane Bennett) teach us about ethics, activism, and the interrelationship between humans and non-humans? This paper examines the activist potential of Fallout and proposes that the video game can be a training ground for an innovative activism that considers feminism, womanism, and environmental justice. (Faculty Sponsor: Dr. AnaLouise Keating)

POSTER SESSION II: ACT 2

1. A CREATIVE HANDS ON APPROACH TO TEACHING NUTRITION CHRONIC DISEASES. S. Lopez-Neyman. Department of Chemistry & Biochemistry

A health disparity population, typically the poor and minority subgroups, experience a significantly higher incidence and prevalence of nutrition chronic diseases. The purpose of my project engages adults to take charge of their health for the prevention of nutrition chronic diseases. I hypothesize that a hands-on curriculum teaches low-literate, low-income adults the underlying mechanism(s) contributing to nutrition chronic diseases. An additional hypothesis is that social cognitive theory using the construct of self-efficacy supports prevention, promotion or treatment of nutrition chronic diseases. My project is deliverable by way of a 9-week curriculum (e.g., Gases to Chronic Disease, Atoms, Carbohydrate, and Obesity) at any physical location. The developed curriculum shows in the short-term nudges towards the prevention of heart disease (e.g., olive oil use instead of lard). My project provides a solution to lessen the gap in health disparities. Elimination of health disparities saves billions on direct health care expenditures. (Faculty Sponsor: Dr. Mary Anderson)

Supported by TWU Experiential Learning.


Multiple sclerosis is a disease that has affected men and women of all ages over the years. Even with there being no cure, ongoing research is bringing us closer and closer to that reality. Medication is still in the advancing stage, but it still comes with a few, potentially dangerous and harmful side effects. Along with medication, it is known that a healthier diet/lifestyle can produce just as positive, if not a more positive outcome regarding this disease. To help with the positivity, many support groups, for all ages and genders, are around to help those diagnosed to get through this hard time and provide as much information as they can. Those who are suffering from this disease, with their best efforts, are working on keeping a positive outlook as research continues to find a cure for multiple sclerosis. (Faculty Sponsor: Ms. Kimberly Mory)

3. AN EXAMINATION OF MINORITIES IN THE EDUCATION FIELD. C. Munyoki. Department of Mathematics & Computer Science

Minority educators are underrepresented in teaching and academia. This is especially true in science, technology, engineering and math. Minority students interested in pursuing education and careers in STEM do not see themselves represented in their teachers. While you do not have to have a teacher that looks like you to be successful, representation matters and is important for students of color. Some researchers have pointed out that students of color often attend underfunded or segregated schools, making it difficult for them to be successful and attend college. Those who do attend college are often not attracted to teaching because of many factors such as low pay and challenging working conditions. They also may not get the same level of respect as their peers. Efforts should be made to recruit and train more minority teachers. This poster will examine minority educators and how to attract and retain them. (Faculty Sponsor: Dr. Ann Wheeler)

Abstracts – Session II: Tuesday, April 9 (2:40 – 4:00 pm) 19
4. BELOW THE ELBOW (TRANSRADIAL AMPUTATION) PROSTHETIC MOVEMENT IN OCCUPATIONAL THERAPY. E. Barnett, B. Rigby. Department of Health Promotion and Kinesiology

This research illustrates the progression of prostheses, and how prosthetics are used in occupational therapy to provide independence to millions of individuals. Examples include providing new opportunities for a young man learning to throw a ball, and little girl being able to write again. The field of prosthetics is an innovative one that has advanced from a prosthetic toe in Ancient Egyptian times to a robotic prosthetic controlled by brain activity, developed by John Hopkins Applied Physic Lab. The early years of prosthetics will be analyzed, and the components and types of prosthetics will be described. The primary focus will be on below-the-elbow amputations, known as transradial amputations. The use of prosthetics by occupational therapists in various assessments will also be discussed. Finally, new technology will be described that is currently being tested to create new pathways that may be used by occupational therapists to help their patients. (Faculty Sponsor: Dr. Brandon Rigby)

5. BENEFITS OF EARLY IDENTIFICATION OF STUDENTS WITH DYSLEXIC CHARACTERISTICS. S. Germany. Department of Teacher Education

The findings of this literature review were conclusive that early identification is beneficial for students. Dyslexia is a neurodevelopmental disorder with a core feature of phonological processing and word decoding deficits, which impacts reading and spelling for students. Early identification will give students, who are at risk for reading difficulties, an advantage in learning specific interventions, such as: explicit instruction, multisensory learning, and assistive technology. Early identification for all disorders and/or disabilities is best practice. Yet it is believed dyslexia shouldn’t be identified until after the age of seven or within the student’s 2nd grade school year. Many educators feel waiting to implement evidence-based interventions until 2nd grade is too late. However, if educators were to screen or informally assess at younger ages we could begin implementing specific interventions earlier therefore students with dyslexia would see progress in reading, writing and spelling sooner. (Faculty Sponsor: Dr. Randa Keeley)

6. CALAMONDIN (CITRUS MICROCARPA) PEEL AND JUICE FLAVOR CHARACTERIZATION USING GAS CHROMATOGRAPHY-MASS SPECTROMETRY/Olfactometry (GC-MS/O) AND DESCRIPTIVE SENSORY ANALYSIS. J. Romero, X. Du. Department of Nutrition & Food Sciences

Calamondin is a hybrid of kumquat (Citrus japonica) and mandarin orange (Citrus reticulate). It is a citrus fruit with a unique flavor making it an ideal flavor building block for citrus flavors. Research on the flavor profiles of calamondin’s peel and juice are lacking. This study included quantitative descriptive analysis using a trained panel to identify and recognize a set of aroma descriptors for calamondin, and flavor component instrumental analysis which incorporates a newly developed volatile isolation method using solid-phase extraction followed by gas chromatography-mass spectrometry (GC-MS) and GC-MS/Olfactometry (GC-MS/O) analysis. A total of 18 aroma descriptors with definition and references were developed. Approximately 150 volatiles were identified with predominant volatile components of limonene and a series of aldehydes and terpenes. The study will add new knowledge for sensory properties and the chemical mechanism of calamondin peel and juice. The findings will contribute to both academia and industry. (Faculty Sponsor: Dr. Xiaofen Du)


Inorganic Chemistry laboratory, Chem 4511, led by Dr. Omary, follows a research discovery-style. The lab involves two components, one based on the literature to reproduce the synthesis and properties of reported inorganic complexes whereas the second component targets the discovery of new material. One of the fall 2018 discovery projects was focused on the use of more environmentally friendly alternatives compared to traditional solute-solvent reactions. The basis of this research led way to the observation of the complex nature of coordination complexes by specifically observing the physical and chemical properties of differing products resulting from three separate reactions consisting of Copper Acetonitrile and 2,9-dimethyl-1,10-phenanthroline (Neocuproine). This presentation showcases the varying properties and conclusions drawn from the reaction of Copper Acetonitrile with Neocuproine in the solvent acetonitrile (CH3CN) medium and the solventless reactions consisting of the addition of heat as well as without any heat applied. Accurate comparisons between the three products derived from the usage of traditional chemical instruments like melting point Infrared Spectroscopy (FTIR), Ultraviolet/Visible absorption (UV-Vis), and Luminescence. (Faculty Sponsor: Dr. Manal Rawashdeh-Omary)

8. DOES TESTOSTERONE REGULATE GERM CELL POPULATION IN TESTES? QPCR ANALYSIS HAS AN ANSWER. J. Ikeler, A. Talapatra, N. Mills. Department of Biology

Testosterone production by Leydig cells is important for the proper development of testes and maintenance of spermatogenesis. Treatment with ethylene dimethane sulfonate (EDS) destroys the Leydig cells and ablates production of testosterone. Genes that are specific to specific cell types in testis are being investigated to determine the impact of testosterone loss on the expression of genes including HSD3b2 (Leydig cells), SHBG and FSH receptor (Sertoli cell), CD9 (spermatogonia), and TNP1 (spermatids). Gel electrophoresis and reverse transcription, polymerase chain reaction were used to analyze the RNA isolated from 7-day or 10-day post-EDS treated rat testes. We anticipate that specific cell markers may be used to assess the effect of presence and absence of testosterone on both the somatic cells and germ cells present in the testes. We are searching for gene markers that could be used to determine germ cell population changes using qPCR. (Faculty Sponsor: Dr. Nathaniel Mills)

Supported by TWU Center for Student Research.


Individuals who are deaf or hard of hearing often encounter communication difficulties, and this can make them particularly vulnerable in the case of a police stop. There are examples of tragic misunderstandings, including fatalities, due largely to a lack of police training. Encountering an officer is often charged with anxiety and uncertainty, and there is potential for an officer to react without understanding. This project examines evolving police policies, reviews existing training for officers on the topic of deafness, and considers strategies to raise awareness and understanding for both the Deaf community and police officers. (Faculty Sponsor: Dr. Sarah Wainscott)
10. ENVIRONMENTAL INFLUENCES ON NUTRITIONAL CHOICES OF AFRICAN AMERICAN WOMEN WHO RESIDE IN AN ECONOMICALLY CHALLENGED COMMUNITY: A PHOTOVOICE STUDY. E. Batten. Department of Health Promotion and Kinesiology

The purpose of this study was to cooperatively explore how the built environment shapes nutritional behaviors of African American women living in an underserved, urban neighborhood, in order to address the health problem of high levels of obesity-related chronic disease among African American women. The study used Photovoice, a participatory action research (PAR) methodology, to incorporate the knowledge and viewpoint of community members. Participants took photographs of their community and then met in a focus group session to discuss the photographs. The researcher analyzed the focus group discussion and the photographic images using the computer-assisted qualitative data analysis system NVivo 11 to discover themes related to the effect of the built environment on nutritional choices in the target community. This study could be used as a point of departure to design small interventions, as well as to promote a future research direction that is relevant to the community. (Faculty Sponsor: Dr. Kristin Wiginton)


In the profession of speech-language pathology (SLP), telepractice is the application of telecommunications technology to the delivery of services at a distance by linking clinician to client (ASHA, 2004). Particularly for low incidence disabilities, it’s difficult to provide accessible, high quality intervention services. This is especially true for the state of Texas, which has the highest rural population in the US. Telepractice is an expanding approach to intervention; however, not reflected in training programs such as the SLP program at TWU. A feasibility study was completed to consider issues including the professional scope of practice, supervision and technology requirements, and unique competencies that may be required for telepractice. Additionally, a pilot project has been initiated using a telepractice case-study for a young child who has Down’s Syndrome and is deaf. Results will be used to develop and propose a new telepractice module to be integrated into the TWU program. (Faculty Sponsor: Dr. Sarah Wainscott)


As immigrants and subsequent generations are exposed to the mainstream U.S. culture, the process of acculturation impacts their lifestyle and consequently, their health. Metabolic syndrome (MetS) is a pressing public health problem, and Hispanics (second largest ethnic group in the US) have the highest prevalence among all ethnic groups. The purpose of the study was to examine the relationship between acculturation and MetS among Hispanic adults living in the DFW metropolitan area. Acculturation and the five MetS markers (blood pressure, waist circumference, high-density lipoprotein, fasting blood glucose, and triglycerides) were assessed among the 128 participants. Increasing duration in the US was associated with an increased likelihood of having MetS. Increasing duration in the US was also associated with increased likelihood of having elevated systolic blood pressure and elevated fasting blood glucose. The results can aid health educators in planning, implementing, and evaluating health education/promotion programs to prevent MetS among Hispanics. (Faculty Sponsor: Dr. Marilyn Massey-Stokes)

13. EXAMINING THE ROLE SOCIAL MEDIA PLAYS IN HIGHER EDUCATION MATHEMATICS’ PROGRAMS IN TEXAS. P. Puente. Department of Mathematics & Computer Science

In society today, social media has become a major source of communication. Universities and colleges use social media in order to engage students in activities whether they are academic or extracurricular. In order for students to get information and engage in these activities, it is vital for organizations to remain active by providing their most recent news and information. This study will focus on the public higher education in Texas and how the relevant university/colleges who offer degrees in mathematics stay active on social media through their major organization(s). (Faculty Sponsor: Dr. Ann Wheeler)


In the past year, Texas Woman’s University has taken the concept of “Experiential Learning Beyond the College Classroom” to new heights as the concept of experiential learning has worked its way into the overarching philosophy at the institution. This study examines several preservice teaching students who participated in an extracurricular experiential learning activity; taking part in a community reading program. This program was developed in conjunction with a community partnership with Barnes and Noble of Denton. Through this activity, these preservice teachers develop thematic lessons to present to children in the community on a monthly basis during the academic year and on a weekly basis during the summer. This study explores the preservice teachers’ perceptions and reflections on their personal growth as a teacher through this experience. Some of the reoccurring themes include increased expertise of instructional practices, greater knowledge of children’s literature, practical classroom management skills, and working with diverse learners. (Faculty Sponsor: Dr. Rebecca Fredrickson)

15. EXPLORING CORE HISTONE ACETYLATION IN MOUSE MAMMARY TUMORS TREATED WITH AMIDOXIMES. K. Underbrink, A. Gekombe, E. Meza, T. Ngo, V. Thayer, M. Bergel, Department of Biology

Post-translational modifications of histones, proteins that organize DNA into nucleosomes, are implicated in control of gene expression. Histone acetyltransferases (HATs) add acetyl groups at specific lysine residues and promote a more “open” chromatin structure; some HATs, such as p300, are transcriptional coactivators. Our laboratory investigates novel amidoxime compounds that inhibit histone acetylation in cell culture and are cytotoxic for several cancer cell lines. We are currently investigating the chemotherapeutic activity of these drugs in a mouse mammary carcinoma model. In this study, mammary tumors were induced in mice followed by intraperitoneal injection with two of these drugs: JJMB7 and JJMB9. Our goal is to determine relative levels of acetylation in tumors from mice in four treatment groups: untreated, vehicle, JJMB7, and JJMB9, and to relate the acetylation levels to tumor volume and level of metastasis. Acetylation status of H3K9 and H3K14 will be determined by Western blotting. (Faculty Sponsor: Dr. Michael Bergel)

Supported by Texas Advanced Research Program (ARP) and TWU Research Enhancement

Glutathione (γ-glutamylcysteinylglycine; [GSH]) is an essential antioxidant. It participates in amino acid transport and DNA biosynthesis and protects against oxidative stress. GSH is biosynthesized in two ATP-dependent reactions: first γ-glutamylcysteine synthetase (γGCS) ligates L-glu and L-cys. Glutathione synthetase (GS) then ligates L-gly and γ-glu-cys to form GSH. Our current focus is γGCS, the most regulated step. It is a heterodimer composed of a large catalytic (γGCSL) and small modifier (γGCSSM) subunit. The structure and catalytic mechanism of γGSC are not understood. Our goal is to express and purify (metal chelate affinity chromatography) sufficient soluble human γGCS to study its enzymatic activity (by coupled assay) with the long-term goal to be the first to obtain its 3D structure (x-ray crystallography). The regulation of the biosynthesis of GSH is important to understand since deficiencies in intracellular GSH are correlated to diseases like Alzheimer’s, type II diabetes, hemolytic anemia, HIV, and others. (Faculty Sponsor: Dr. Mary Anderson)

Supported by Robert A. Welch Foundation and TWU Department of Chemistry and Biochemistry.

17. FALL REDUCTION PROGRAM AMONG ELDERLY RESIDENTS IN SKILLED NURSING FACILITY. L. Jacob. College of Nursing - Dallas

Falls are the leading cause of fatal and non-fatal injuries among the elderly. Falls threaten seniors’ safety and independence & generate enormous economic and personal costs (NCOA, 2018). The specific aim of the project is to provide an intervention that would reduce the incidence of falls among elderly residents in a skilled rehab facility. The QI study will consist of analyzing the application of intervention which mainly includes forming a fall prevention team, fall risk assessment tool, fall leaves signs, yellow skid socks for high-risk patients, hourly rounding and post-fall huddle. The researcher will collect data from EHR of the number of falls before and after interventions and analyzed. Since falls are a leading cause of injuries in the skilled rehab facility, addressing this issue is a priority as it has so many consequences. As staff knowledge and implementation of fall prevention interventions increase, patient fall rate will correspondingly decrease. (Faculty Sponsor: Dr. Charli Oquin)

18. FROM HISTORICAL GOBLINS TO THE BIRTH DEFECT SPINA BIFIDA: IS THERE A LINK? C. Magoha, T. Gumienny. Department of Biology

Ancient folklore is filled with myths of creatures with a fraction of human appearance. Among some of the most popular illustrations are small-bodied humans with larger-than-life heads and an abnormal spine formation. These creatures known as “goblins” are canonized in fairytales and other old fables and were believed to be a sign of calamity as well as retribution on sinners. The main objective of this research is to confute the known documentation of goblin-like childbirths to the common (~1/1000 births) genetic and developmental disorder spina bifida. The mechanisms that result in spina bifida will be analyzed, as well as historic documentation that links “monstrous” goblins to this birth defect. (Faculty Sponsor: Dr. Tina Gumienny)

19. GOING HIGHER: TEACHING THROUGH OF ALL LEVELS OF BLOOM’S TAXONOMY. E. Gordon, A. Levee, M. Gaspar. Department of Teacher Education

This presentation is based from our studies in our education courses here at Texas Women’s University. Bloom’s Taxonomy is the foundation teachers use to scaffold students’ learning beginning with previous knowledge and ending with critical thinking. Through a multimedia platform each step of Bloom’s Taxonomy was explored, shared, and expanded upon for preservice teachers in the university classroom. This presentation will share the research on Bloom’s Taxonomy, and will provide invaluable information to Texas Women's University preservice teachers, education faculty, and staff. (Faculty Sponsor: Dr. Rebecca Fredrickson)


Guillain-Barre Syndrome (GBS) is a rare autoimmune disorder with no cure. Symptoms are presented abruptly and without warning in one in every one-thousand Americans each year with debilitating characteristics such as weakness, numbness, and often paralysis. GBS targets the peripheral nervous system, specifically the neurons, causing a demyelination of the axons. When the myelin sheath starts deteriorating, the neurons cannot send signals efficiently to the brain. This causes tingling, decreased sensation, and shortness of breath. There has been no indication of its favoritism toward populations, although it is understood that experiencing recent illness or infection may increase one’s risk. Currently, there are two common methods of treatment, but they are only effective when administered in a timely manner. The sudden diagnosis of GBS is the beginning of a difficult physical and emotional journey. There is still much to discover about this personal attack on the peripheral nerves. (Faculty Sponsor: Ms. Kimberly Mory)


Glutathione (GSH; L-γ-glutamyl-L-cysteinylglycine), an abundant antioxidant, is synthesized intracellularly in two sequential ATP-dependent steps. Human glutathione synthetase (hGSH), the second step, ligates γ-glutamylcysteine (γ-GC) to glycine forming GSH. hGSH, an obligate homodimer, displays negative cooperativity to the γ-glutamyl-substrate; thus, binding of γ-GC to one subunit decreases its affinity in the second subunit. We have published that hGSH has G-, A-, and S-loops which are involved in hGSH catalysis. The recently found E-loop (A210-Q211-E212- K213-E214-R215-N216) is highly conserved (>66%) in mammals; however, only four residues are conserved in other eukaryotes (>49%). E-loop is near the carboxyl of the γ-GC substrate, therefore we hypothesize it is important for binding and catalysis. Point mutations of these conserved E-loop residues (Q211A, E214S/A, R215A, N216A/V) were prepared (site-directed mutagenesis). After expression, purification and assays, our results show E-loop mutations cause decreases in activity, γ-GC substrate binding, and negative cooperativity. Thus, E-loop is crucial to hGSH function. (Faculty Sponsor: Dr. Mary Anderson)

Supported by Robert A. Welch Foundation and TWU Department of Chemistry and Biochemistry.

22. IMPACT OF SUGAR REDUCTION AND CUCUMBER FLAVOR ON SENSORY PROFILE OF LEMON-FLAVORED WATER. U. An, X. Du. Department of Nutrition & Food Sciences

Sugar reduction in processed foods and beverages is a prominent global trend in recent years. The objective of this study was to investigate the impact of sugar reduction and additional flavor on sensory profiles of lemon flavored waters. Products with five sugar levels including 7% sugar (0 reduction), and sugar reduction levels at 30%, 50%, 80%, and 100%, were formulated. Cucumber flavor was added to the 50% and 80% sugar-reduced lemon flavor waters. Totally eight flavor descriptors and five taste descriptors along with definition and references were developed by a trained panel. Overall, the flavor profiles of the lemon flavored waters changed along with sugar reduction. The lemon flavored water lost the richness and balance as sugar reduced; however, up to 80% sugar reduction, the flavor was still pleasant. Cucumber flavor highly
enhanced refreshing perception. Knowledge gained in this study gave insight to sugar-reduced drinks for the beverage industry. (Faculty Sponsor: Dr. Xiaofen Du)

Supported by Firmenich.

23. IMPROVING NURSING COMPETENCY IN TEACHING SELF-CARE MANAGEMENT TO PATIENTS WITH HEART FAILURE. S. Babu. College of Nursing - Dallas

Heart failure is a key cause of mortality and morbidity in the globe that affect 26 million people in the world. Scientific improvements have provided successful interventions to abate adverse results in heart failure, especially in patients with decreased left ventricular ejection fraction. Regrettably, productive therapies for heart failure are usually not exploited in effective, safe, timely, equitable, patient-centered means. Additionally, the risk of adverse results for heart failure remains prevalent. The past decades have seen increasing efforts to evaluate and enhance the quality of care and outcomes of patients with heart failure. The purpose of this project is to review improving nursing competency in teaching self-care management to patients with heart failure. While attempting to achieve this purpose, this project will apply the Donabedian model to provide the initial framework for performance assessment and improvement in health care. (Faculty Sponsor: Dr. Charli Oquin)

24. INFLUENCE OF WHEY PROTEIN ISOLATE SUPPLEMENTATION ON ALT AND AST IN WOMEN WITH POLYCYSTIC OVARY SYNDROME. S. Balcom-Luker, M. Rao, S. Broughton, M. LeMieux. Department of Nutrition & Food Sciences

The current study examined the short- and long-term effects of whey protein isolate ingestion on plasma alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels in women with polycystic ovary syndrome (PCOS). PCOS, an endocrine abnormality in women of reproductive age, is characterized by menstrual cycle disturbance, hyperandrogenism and obesity. Whey protein isolate (WPI) improves metabolic parameters in patients with type 2 diabetes, but its therapeutic potential in polycystic women has yet to be realized. Eleven premenopausal women with PCOS and ten healthy women consumed 35g protein daily. Plasma levels of ALT and AST were assessed at baseline, day 1 and day 7 to determine short-term effects on liver stress using a Biolis 24i chemistry analyzer. Mixed Model Repeated Measure ANOVA indicates that time and condition (PCOS vs control) did not have a significant effect on ALT or AST levels within and between groups (p >.05). However, preliminary data indicate that condition had a significant impact on ALT (p<.001) and AST (p =.001) concentrations. (Faculty Sponsor: Dr. Monique LeMieux)

Supported by Glanbia Nutritional, Inc. and TWU Human Nutrition Fund.

25. INNOVATIVE CANCER TREATMENTS BASED ON NANOTECHNOLOGY. A. McGhee, A. Patel. Department of Chemistry & Biochemistry

Traditional chemotherapeutics continue to induce toxic effects in healthy, non-cancerous cells. Better targeting of such therapies to only the diseased cells remains an ambitious goal. The use of nanotechnology in designing better treatments holds great promise in lessening the burden of chemotherapy on patients while simultaneously producing an increased therapeutic effect. Researchers at TWU are exploring the use of nanotechnology to target and kill cancer cells. Specifically, protein-drug conjugates and drug-loaded nanoparticles are being explored. The chemistry used relies on the lability of cobalt based on its oxidation state to facilitate release of therapeutic inside cancer cells. The protein albumin is known to accumulate in tumors because of the unique characteristics of the blood vessels surrounding the tumor (a phenomenon known as the enhanced permeability and retention effect). Current efforts at designing a suitable albumin-drug conjugate for delivering doxorubicin to cancer cells will be discussed. (Faculty Sponsor: Dr. Robby Petros)

Supported by Baylor Charles A. Sammons Cancer Center, the Welch Foundation, and TWU.

26. MAKING SENSE OF BLOOM’S TAXONOMY USING SIGN LANGUAGE. S. Jennings, A. Floyd, P. Navarrete. Department of Education

Bloom’s Taxonomy is used in education as a pedagogical tool to help learners reach higher levels of critical thinking. This presentation is an explanation of Bloom’s Taxonomy using the lens of deaf culture. All three authors are studying Deaf education, which allowed them to turn their understanding of higher order thinking skills and sign language into a blended medium. (Faculty Sponsor: Dr. Rebecca Fredrickson)

27. MINORITIES IN THE MEDICAL FIELD. Q. Hubbard, Y. Yang. Department of Mathematics & Computer Science

It is not simply about a lack of minorities in the medical field. Research shows that there is a lack thereof because minorities are discouraged starting from a young age. It is believed that most children have interest in science from a young age, but that interest fades with academic trials and tribulations. This typically stems from school districts with less funding and a higher population of minority students. Poorer school districts usually do not have the resources or finances to continue to nurture the love for science children have. Once that love and desire are no longer nurtured and kept up, they begin to fade along with their hopes and dreams of working in the medical field. In our poster, we plan to implement statistics and charts that reinforce our claims; an example includes data on the minority population of Texas versus the minority population in the medical field. (Faculty Sponsor: Dr. Ann Wheeler)

28. NO TIME TO IDLE (II). S. King, C. Maguire. Department of Chemistry & Biochemistry

No Time to Idle aims to improve air quality by reducing the amount of time vehicles idle in drive-through lanes. According to the U.S. Department of Energy, if you idle your car for more than 10 seconds you would save money and fuel by turning the engine off and restarting (stop/start method) than if you were to leave to leave the car idling. This project’s goal is to implement signage in drive-through lanes to educate and remind drivers to use the stop/start method. Observations will be conducted with/without signage to see if there is a change in behavior among drivers. Air quality monitors will be used to read carbon monoxide and particulate levels. We hypothesize that drivers are more likely to use the stop/start method if they are given the information that it helps save them money and is beneficial to their health and their car. (Faculty Sponsor: Ms. Cynthia Maguire)

Supported by TWU Experiential Learning.

29. PD VOICE DISORDERS: 5-YEAR POST TREATMENT ANALYSES. C. Canaan, J. Levitt. Department of Communication Sciences & Oral Health

Parkinson’s disease (PD) is the second most common neurodegenerative disease in America. As a consequence of limited movement amplitude, the voice and speech of the individuals with PD are commonly affected. This study examined the long-term effects of voice therapy for individuals with Parkinson’s disease on
their voice and their perception of communication-related quality of life. The five phases from the pre-treatment through the 5-year post-treatment of the SPEAKOUT® program were analyzed to understand the long-term effects of the treatment. Six individuals with PD participated in the present investigation. The voice data were acoustically measured in intensity (perceived as “loudness”), fundamental frequency (perceived as “pitch”), formant frequencies, and Cepstral Peak Prominence. Additionally, the Voice-Related Quality of Life index was computed. The acoustic analyses revealed an overall significant improvement in intensity and Cepstral Peak Prominence. (Faculty Sponsor: Dr. June Levitt)

30. PERCEPTIONS OF TYPICALLY DEVELOPING CHILDREN IN PHYSICAL EDUCATION INCLUSIONARY SETTINGS. E. Keener, Q. Yang, A. Young, L. Silliman-French. Department of Health Promotion and Kinesiology

Inclusion is the process where students with disabilities are placed in educational settings with students without disabilities in general education. Presently there is little research on the effectiveness of this process as perceived by typically developing peers. Therefore, the purpose of this investigation was to determine the perceptions of children in physical education inclusionary settings toward peers who have disabilities. Participants were 20 typically developing school-aged children recruited through convenience sampling. Two questionnaires were developed. The first was developed for participants who have physical education classes with peers who have disabilities and consisted of semi-structured interview questions. The second questionnaire was adapted from the Perceptions and Attitudes Toward the Handicapped (Tripp, 1991) and used for participants who did not have physical education with peers with disabilities. Based on the results, participants report mostly positive perceptions of participating in physical education with peers with disabilities as previously reported by Tripp. (Faculty Sponsor: Dr. Lisa Silliman-French)

31. PERSPECTIVES, BELIEFS, AND EDUCATIONAL PREFERENCES OF HISPANIC MALES AT RISK FOR DIABETES – A QUALITATIVE STUDY. A. Miranda, C. Warren. Department of Nutrition & Food Sciences

Hispanics represent the largest minority group in the United States with current growth trends expected to double the Hispanic population by 2060. Comparably, the prevalence of diabetes among Hispanics is higher than that of other ethnicities with the majority of these cases being type two diabetes. The combination of rapid population growth and prevalence disparities stress the need for exploration into determinants of health among Hispanics. Deficiencies in the literature, however, exist in relation to culturally relevant, psychosocial attitudes and beliefs of Hispanics at risk for diabetes. This study explores the health perspectives of underrepresented Hispanic males. More specifically, the study elucidates on barriers, facilitators, and educational preferences related to diabetes prevention. A qualitative methodology, founded in Grounded Theory, will utilize one-on-one, semi-structured interviews to explore the determinants of this at risk population. The findings from this study will provide vital insight for the development of effective diabetes prevention programs. (Faculty Sponsor: Dr. Cynthia Warren)

32. PHYTOCHEMICAL ANALYSIS AND ESTROGENIC ACTIVITY OF LUPINUS TEXENSIS EXTRACTS. N. Ngo, P. Basu, C. Maier. Department of Biology

Dietary supplements containing phytoestrogens have increasingly emerged due to their proposed estrogenic activity and anti-carcinogenic properties. Many members of the legume (Fabaceae) family contain isoflavones that can exert estrogenic activity. Lupinus texensis, Texas bluebonnet, also belongs to the Fabaceae family. Although L. texensis has not been studied for its medicinal properties, anti-tumor properties discovered in the root extract of another lupine, L. angustifolius, has encourages the interest in exploring Texas bluebonnet. The present study investigated the estrogenic activity of L. texensis root and shoot extracts by employing an estrogen-regulated yeast system. The root extract induced significantly higher estrogenic activity (947±94.5 MU) in the yeast system, compared to the shoot extract (57.8±21.5 MU). Mass spectroscopy analyses of both extracts revealed a significantly higher concentration of the isoflavone genistein in the root extract. L. texensis root and stem phytochemicals may lead to drug discovery for treating cancer, osteoporosis and menopausal symptoms. (Faculty Sponsor: Dr. Camelia Maier)

33. PLASTICITY OF SEROTONIN RECEPTOR SUBTYPE 3 (5HT3) EXPRESSION IN HUMAN DENTAL PULP: A POTENTIAL ROLE IN OROFACIAL PAIN. E. Montelongo, S. Sushmitha Ananth, S. Lulla, P. Kramer, D. Averitt. Department of Biology

Temporomandibular joint disorder (TMD) pain is diagnosed more frequently in women than men and worsens during hormonal fluctuations. The neurotransmitter serotonin (5HT) plays a role in TMD and triggers pain by exciting nociceptors (pain-sensing nerves) expressing the ionotropic 5HT3 receptor. 5HT3 receptors are upregulated in women with TMD, making this receptor a potential therapeutic target. Human dental pulp is innervated with nociceptors making it a suitable tissue to study receptor plasticity in human tissue. We hypothesize that 5HT3 receptor expression increases during the late follicular and luteal phases when hormones are fluctuating. Tooth pulp was extracted from teeth collected at Texas A&M Dentistry and processed by western blot methodology. We have identified 5HT3, estrogen receptor alpha, nerve fibers, and beta actin in tooth pulp and are currently quantifying expression levels across the menstrual cycle. This study will provide new insight into the effect of hormones on serotonergic pain in women. (Faculty Sponsor: Dr. Dayna Averitt)

34. PLAY THERAPY AND ACADEMIC ACHIEVEMENT- EVOLUTION AND APPLICATION OF RESEARCHED PRACTICE. N. Carroll, H. Maher, P. Blanco. Department of Family Sciences

The purpose of this research presentation is to present recent research on play therapy and academic achievement in populations of at-risk and normal functioning students. These studies include both long-term and short-term play therapy methods. Using a population of elementary school students, short-term play therapy studies demonstrate the variety of impact that in-school play therapy can have for students. This includes the impact of short-term play therapy on child academic achievement, and self-regulation with academically at-risk students. Studies have shown the impact of bi-weekly short-term play therapy on academic performance in at-risk students, as well as bi-weekly short-term play therapy on academic performance in normal functioning students. Additionally, short-term play therapy with normal functioning students demonstrated improvement in both performance anxiety and academic achievement. Studies which use long-term play therapy methods include improvement in overall academic performance for normal-functioning students and improvement in academic achievement scores for academically at-risk students. (Faculty Sponsor: Dr. Brigitte Vittrup)

35. RESPONSES TO POSITIVE BEHAVIOR AND MISBEHAVIOR: A LINGUISTIC ANALYSIS. A. Woodson, L. Rosen. Department of Psychology & Philosophy

Praise and punishment are useful tools for reinforcing certain
behaviors (Etaugh & Bridges, 2018). Gender specific praise can encourage gender stereotypical behaviors, while punishment can discourage gender atypical behavior from reoccurring (Bussey & Bandura, 1999). The manner in which adults use language with children during the praise or punishment process can have direct impacts on the child’s self-esteem, intrinsic motivation, and personal attitudes (Cimpian, 2010; Henderlong & Lepper, 2002). This study is aimed at better understanding how adults use language to praise and punish children. Participants will be given the opportunity to freely respond to a child displaying a positive behavior or misbehavior. Writing samples will be analyzed for psychological meaning using the Linguistic Inquiry and Word Count software. Researchers hypothesize that gendered language will be predicted by participants’ gender attitudes. (Faculty Sponsor: Dr. Lisa Rosen)

Supported by TWU Experiential Learning.


Phytoestrogens are plant derived polyphenolic compounds which structurally and functionally mimic the mammalian estrogen hormone, 17β-estradiol. Phytoestrogens belong to four major chemical groups: isolavones, lignans, stilbenes and coumestans. A steroid-regulated transcription system in Saccharomyces cerevisiae, containing a human estrogen receptor alpha expression plasmid (YPE10) and a reporter plasmid (YRPE2) expressing the Escherichia coli β-galactosidase (lacZ) gene was employed to screen for estrogenic compounds in the extracts of Croton capitatus, C. monanthogynus, Euphorbia bicolor (Euphorbiaceae) and Morus alba (Moraceae). All extracts possess low to medium estrogen activity. Future studies will focus on identifying the phytoestrogens in the above-mentioned plant species by employing high performance liquid chromatographic-mass spectrometry analyses. The identified phytoestrogens could be useful in preventing or treating estrogen-deficient conditions, such as menopause and osteoporosis. (Faculty Sponsor: Dr. Camelia Maier)

37. SKIN TO SKIN CONTACT AND THERMOREGULATION IN NEWBORNs. A. Savage. College of Nursing - Dallas

Thermoregulation plays a crucial role during an infant’s transition to extra-uterine life. Research shows that hypothermia occurs at an alarming rate globally and can be prevented with appropriate interventions. The practice of placing an undressed infant on mother’s bare chest, after initial drying of infant, is an intervention that aids in thermoregulation. The purpose of this quality improvement project is to assess if skin to skin after birth decreases hypothermia incidences in newborns. The project will be a retrospective chart review comparing hypothermia episodes prior to and after beginning a pilot program initiating skin to skin immediately after low risk cesarean sections. This is a project in progress. The result will be to evaluate and find common risk factors found in hypothermia events. In conclusion the project’s goal is to identify factors linked to hypothermia and assess if skin to skin decreases hypothermia events. (Faculty Sponsor: Dr. Allison Huffman)

38. STRAWBERRY FLAVOR RECONSTITUTION AND THE IMPACT OF METHYL ANTHRANILATE ON STRAWBERRY FLAVOR. C. Becerra, X. Du. Department of Nutrition & Food Sciences

The objective of this study is to investigate the contribution of Methyl Anthranilate (MA) to strawberry flavor using descriptive sensory analysis of reconstituted strawberry flavor and MA spiking study. A 12-member trained panel developed a sensory profile of strawberry flavor using quantitative descriptive analysis (QDA). Secondly, strawberry flavor was created, based on published analytical work and trial and error. Lastly, different levels of MA (0.01, 0.02, 0.04, and 0.08 PPM) spiking in strawberry flavor was blended in a synthetic taste base solution (9% sucrose, 0.54% citric acid, and 0.06% malic acid) and de-odorized strawberry puree was evaluated by the QDA panel. It was observed that MA enhanced strawberry, fresh, fruity, ripe, candy, and soedy notes at a low level. At a relatively high level, the sensory profiles changed to floral (soapy), grape-like notes. This study provided knowledge on strawberry descriptive analysis and clarified the role of MA in strawberry flavor. (Faculty Sponsor: Dr. Xiaofen Du)

Supported by USDA (ARS, SEA, US Horticultural Research Laboratory), TWU Human Nutrition Fund, and the TWU Department of Nutrition and Food Sciences.

39. SURVEY OF TEXAS MEDICAL CENTER ORGANIZATIONS REGARDING SYSTEMS TO OBTAIN AND IMPLEMENT EMPLOYEE IDEAS. E. Lessner, S. Murdock, College of Business

Creative thinking expert, Edward de Bono, once said “an idea that is developed and put into action is more important than an idea that exists only as an idea.” This project examines how comparable healthcare institutions in the Texas Medical Center obtain and effectively implement employee ideas. To conduct this research I developed a standardized questionnaire and surveyed organizations about the methods used to obtain employee ideas, types of recognition given to contributing employees, and implementation of selected ideas. After examining how other institutions successfully identify and implement innovative ideas from employees, I compared and contrasted this to the crowd-sourcing method my institution used, and identify characteristics of an ideal system that can be introduced to improve employee idea solicitation in the future. (Faculty Sponsor: Dr. Sandra Murdock)

40. TEACHING DIVISION OF WHOLE NUMBERS IN A K-4 AFTERSCHOOL PROGRAM. L. Allen. Department of Mathematics & Computer Science

This project is designed to teach K-4 students in an afterschool program how to apply division of whole numbers and to observe student collaboration and response. Supported by Texas Essential Knowledge and Skills, this activity includes a read aloud of the book Bean Thirteen by Matthew McElligott. It involves the CPA model where students used concrete manipulatives, pictorial representations, and abstract applications to learn and apply division. Students were placed into heterogeneous grouping and encouraged to work together and “turn and talk” as they solved problems from the book. This was especially important since this lesson must be appropriate for all students grades K-4. Students were monitored for their grasp of the concept, engagement, group participation, and overall response during and after the lesson. A majority of students reported they had not previously done an activity like this, and claimed they would like to do a similar activity again. (Faculty Sponsor: Dr. Winifred Mallam)

41. THE EFFECT OF UVB ON CHROMATIN CONDENSATION IN DIFFERENT CELL LINES. A. Vo, R. Sinha Roy, M. Bergel. Department of Biology

In eukaryotic cells, the DNA, proteins, and non-coding RNAs are arranged into a structure called chromatin with multiple levels of coiling. The folding and unfolding of chromatin affect the type and kinetics of DNA lesions occurrence and repair. Previous studies in our lab have shown that UVC radiation causes an immediate chromatin compaction that results in protection from further DNA damage. Our study explores whether UVB, similarly to UVC, induces
chromatin condensation in different cell lines, including human cervical carcinoma HeLa S3, and ionizing radiation resistant and sensitive cell lines. Currently, it is unclear why malignant cells in some cancer patients develop resistance to radiation given as therapy. Therefore, we investigate whether a higher level chromatin compaction is the cause for their resistance. Our findings will enhance the understanding of chromatin compaction as a natural DNA-protection response to UVB radiation and further contribute to the prevention and treatment of cancer. (Faculty Sponsor: Dr. Michael Berge)

Supported by TWU Experiential Learning and TWU Center for Student Research.

42. THE GUILLAIN-BARRE SYNDROME, OCCUPATIONAL THERAPY TREATMENT, AND THE BENEFITS. M. Gallardo. Department of Biology

Guillain-Barre Syndrome is a rare disorder known to affect the human nervous system. This disorder does not have a known cure; however, several treatments like occupational therapy have helped ease the duration of the illness through treatment. In this paper we will discuss the research on how the Guillain-Barre Syndrome affects the human nervous system, explore the different types of treatments and the benefits within the occupational therapy field. (Faculty Sponsor: Dr. DiAnna Hynds)

Supported by TWU Touchstone Honors Program.

43. THE SOCIOLOGY OF TEACHING AND LEARNING UNDERGRADUATE SOCIAL STATISTICS: ACCESS, ASSESSMENT, AND ARTS-BASED PEDAGOGY. A. Ray Reagan. Department of Sociology & Social Work

My dissertation followed a three-article format. The unifying thread interwoven within each article was ways in which instructors face the challenges of facilitating access to course knowledge for undergraduate students enrolled in online introductory statistics courses. The first article, a systematic review of literature from 2010 to 2018, explored widening access to statistical education opportunities, teaching and learning challenges, and innovative pedagogy for online intro statistics courses. The second article was a qualitative classroom assessment of epistemically-focused course design and instructional strategies implemented in six sections of online undergraduate introductory social statistics courses (N students=103). The third article introduced the novel quilt/CARTography method I designed to increase access to course knowledge using metaphorical and arts-based experiential instructional interventions. Collectively, my dissertation research resulted in the new Proactive Integrative Democratized Pedagogical Model. (Faculty Sponsor: Dr. Jessica Gullion)

44. USING BLOOM’S TAXONOMY IN THE ELEMENTARY SCHOOL CLASSROOM. M. Ellis, K. Davis, L. Pák, H. Bartlett. Department of Teacher Education

As an elementary school teacher, we recognize the importance of taking our students to higher levels of learning. Through using Bloom’s Taxonomy, teachers have the opportunity to help their students expand and grow in their learning. In this presentation, we will share how our research on Bloom’s Taxonomy can assist teachers in the elementary classroom. This includes each level of Bloom’s Taxonomy, how it functions in the classroom, and examples. This research into Bloom’s Taxonomy not only explains it fully, but also shares ways that it may be incorporated into teaching. (Faculty Sponsor: Dr. Rebecca Fredrickson)

45. USING PEER ASSISTED LEARNING STRATEGY (PALS) TO INCREASE READING COMPREHENSION. P. Flint. Department of Teacher Education

According to a report from 2013-14, English language learners (ELLs) constitute 10.10% of the U.S. student population in public schools (Snyder, de Brey, & Dillow, 2016). Many experience academic difficulties either due to language deficits or poor learning skills, especially in reading (Boon & Barbetta, 2017). However, this is not surprising because most classroom tasks require skilled reading abilities. Practitioners need access to research based reading strategies that are effective, regardless of language and reading ability levels. PALS is one method that practitioners could use to address this need. This review of literature covers school based implementation of PALS for students with and without disabilities illustrates a number of observations. PALS strategies have been demonstrated as effective in increasing reading comprehension across a range of grade and ability levels. (Faculty Sponsor: Dr. Randa Keeley)

46. WEAVING DANCE: ANDEAN TEXTILES AND MOVEMENT. C. Pacheco Orcaitas. Department of Dance

This poster describes a dance research project conducted as part of the Experiential Student Scholars Program. The project looked to Andean textile art for choreographic ideas. I used three research methods: fieldwork, literature review, and studio work. During the fieldwork, I learned about the Nazca textiles’ iconography and the backstrap weaving technique. In the literature review, I surveyed sources related to Andean textiles and dance, finding two movement concepts, symmetry vs. asymmetry and tension vs. release. I explored these concepts using improvisation and imagery while working at the studio. To study tension vs. release, I used a piece of elastic band to sense the tensional forces between two bodies. To explore symmetry vs. asymmetry, I employed an iconographic design on the floor, using white-dough tape. The design provided points of reference in the space, which assisted dancers in the generation of movement. The final product was a 3-minute duet. (Faculty Sponsor: Dr. Rosemary Candelario)

Supported by TWU Experiential Learning.

47. WOMEN IN THE STEM WORKFORCE. B. DuBay, E. Valdez, S. Sato. Department of Mathematics & Computer Science

Women continue to be underrepresented in STEM industries. Women make up roughly half of the nation’s workforce and more than half of college graduates. There are many reasons why women refuse to join STEM industries. In our research, we will share these reasons and implications for the future of women in the STEM workforce. (Faculty Sponsor: Dr. Ann Wheeler)
Session III: Tuesday, April 9 (6:00 – 7:20 pm)

PLATEFORM SESSION III-A: ACT 301
Faculty Moderator: Nathaniel Mills

1. EVALUATING ANTI-VIRAL PROPERTIES AND CELL TOXICITY OF PHOTOCHEMICALLY ACTIVATED SILVER NANOPARTICLES. C. Grizer, D. Hanson. Department of Biology

Sexually transmitted infections (STIs) have become an increasing problem in recent years. Our goal is to discover whether two novel silver nanoparticles (AgNPs) could be effective anti-viral agents. The AgNPs we use are from the Omary lab at the University of North Texas and have varied surface properties, specifically negatively-charged made with poly-acrylic acid (PAA) or positively-charged made with chitosan. We used the herpesvirus mouse cytomegalovirus (MCMV) to examine anti-viral properties of these AgNPs. In toxicity tests, we found the negatively-charged particles kill normal mouse cells at concentrations as low as 0.01mM, but the positively-charged have no apparent toxicity as high as 0.25 mM. Neither PAA nor chitosan were toxic even at 0.25 mM. In our initial findings, the positively-charged AgNPs seem to have no detectable viral inhibition when added to the cells at the same time, while the negatively-charged AgNPs appear to bind to MCMV when incubated together. (Faculty Sponsor: Dr. Laura Hanson)

2. EVALUATING THE ANTIVIRAL PROPERTIES OF SECONDARY COMPOUNDS FOUND IN WHITE MULBERRY (MORUS ALBA). R. Moreno, L. Hanson. Department of Biology

Our studies have found that aqueous extracts have antiviral activity on MCMV (mouse cytomegalovirus), with the most activity occurring if we mix the extract with virus for approximately 1 hour before infection of cells. Literature shows that secondary compounds like curcumin, gallic acid, kaempferol and quercetin that can be found in Mulberry plants, can have antiviral activity on viruses. We propose that these compounds will also exhibit antiviral activity against MCMV in cell types that are natural targets in CMV infection. Our initial tests of the compounds have shown that 1 mM to 5 mM concentrations has little to no cytotoxicity on fibroblasts. These are within ranges which have been used. These concentrations will be used to test for antiviral activity via plaque reduction assays, PCR and gel electrophoresis at different time points using from fibroblasts and macrophages. (Faculty Sponsor: Dr. Laura Hanson)

Supported by TWU Experiential Learning.

3. INVESTIGATION ON MECHANISM OF TEMPERATURE SENSITIVITY IN A MOUSE CYTOMEegalovirus Mutant. S. Pathak, C. Sweet, L. Hanson. Department of Biology

Cytomegalovirus can cause birth defects in the new-born and severe complications in immunocompromised. We infect mouse cells with mouse cytomegalovirus (MCMV) to explore the function of viral pathogenesis proteins. The M139, M140 and M141 genes belong to a viral gene family, most members of which are involved in pathogenesis. The M139 protein (pM139) complexes with M140 and M141 proteins (pM140 and pM141) and all are required for efficient replication of MCMV in macrophages. Dr. Clive Sweet’s lab showed that if pM139 is truncated towards the C-terminus, MCMV is temperature sensitive in fibroblasts but not in macrophages. We aim to understand the temperature sensitive mechanism of this mutant which may clarify the role of pM139 in infection. Our results indicate that the defect in Sweet’s mutant is unrelated to virion stability, pM139-pM140-pM141 complex formation, or DNA replication and support that the defect is most likely in virus assembly or release. (Faculty Sponsor: Dr. Laura Hanson)

Supported by TWU Research Enhancement Program and TWU Center for Student Research.

4. ALTERNATE PATHWAYS OF TESTOSTERONE ACTION IN TESTES. A. Talapatra, D. Dutta, S. Sang, N. Mills. Department of Biology

Male infertility accounts for 40 to 50% of human infertility. Testosterone is required for spermatogenesis but its mode of action on germ cells remains elusive. We injected ethylene dimethane sulfonate in male rats which ablates mature Leydig cells resulting in complete loss of testosterone. Testosterone loss compromises the blood-testis-barrier integrity and decreases anchoring junction proteins. Nuclear androgen receptors are identified in Sertoli & myoid cell nuclei and stripped cytoplasm from spermatids but not other germ cells. Progesterone, a steroid hormone, changes ion influx and intracellular Ca2+ by membrane progesterone receptors (mPRs). We have found 5 mPRs mRNAs expressed in tests and testosterone at 2X+ is known to bind and activate membrane progesterone receptors. Thus, specific germ cells may be dependent upon testosterone for germ cell maintenance through mPRs. Higher levels of testosterone and membrane progesterone receptors rather than nuclear receptors may be linked to testicular meiotic cell survival. (Faculty Sponsor: Dr. Nathaniel Mills)

Supported by TWU Research Enhancement Program.

5. AN ETHNOLOGICAL STUDY OF COLLEGE STUDENTS LIVING ON MINIMUM WAGE. F. Dinsay. Pioneer Center for Student Excellence

According to researchers, 36% of college students experience housing insecurity and about 9% experience homelessness (Goldrick-Rab, et al, 2018). While a post-secondary education has many benefits, the pursuit of the degree can present financial strains and challenges for many students. As part of an Experiential Learning Project, I conducted ethnological research as a means of examining the perspective of a college student who lives on minimum wage. This research documents the experience of living on minimum wage for one month, video and written reflections, and a discussion of the limitations of conducting this type of research. (Faculty Sponsor: Ms. Jessica Camp)

Supported by TWU Experiential Learning.

PLATEFORM SESSION III-B: ACT 501
Faculty Moderator: Don Edwards

1. CODES AND CIPHERS IN DATA SECURITY AND INTEGRITY. K. Edwards. Department of Mathematics & Computer Science

Codes and ciphers are an integral part of modern-day data security and integrity, and have been used throughout history for a similar purpose; ensuring that those who are not meant to have certain information do not get it. For example, Julius Caesar used a number of ciphers in order to ensure that his letters could not be read by his enemies, one of the most well-known being the Caesar cipher. The use of codes and ciphers has continued to increase since then, growing more and more complex as mathematics evolved alongside it. Codes and ciphers are now an irreplaceable part of our data security and data integrity systems. This project provides a historical overview and explores the mathematics associated with data security and integrity, using codes and ciphers. (Faculty Sponsor: Dr. Don Edwards)
2. MAGIC MIRROR. M. Walton. Department of Mathematics & Computer Science

Have you ever been staring at yourself in the mirror while you are getting ready for your day and wish you could check out the weather or see what is going on in the news without having to pick up your phone? Or maybe you just want to watch some videos while you finish getting ready. In either situation you are seeking a way to make your life more efficient in this fast-paced hectic world. This project seeks to harness voice activated digital assistants in conjunction with smart mirror technology to streamline your morning routine. (Faculty Sponsor: Dr. David Gardner)

3. HOW THE BARD SINGETH, SHALT SING I. H. Hancock. Department of Music

Since his time, scholars have worked to reconstruct the sounds of Shakespeare’s language as it sounded in his day. Today, this phonological research has become so advanced that it has repeatedly been put to use by drama companies across the world in the performance of The Bard’s plays, including The Globe Theatre itself. However, until now, not much effort has been made in the matter of applying historical phonology and diction to vocal performances of Elizabethan settings. For hundreds of years, composers have been using Shakespearean texts in vocal music, and though we as performers have worked to replicate as much historical detail and stylization as possible, we have largely neglected the matter of historically-informed pronunciation in our practice. This research aims to present valuable information about Shakespearean OP in an accessible and interesting manner, with step-by-step techniques for vocalists to implement this historical phonology into their own musical performance. (Faculty Sponsor: Ms. Jennifer Youngs)

4. PERSONAL PSYCHOLOGICAL ASPECTS CREATING SOCIAL PROTEST. N. Amaglobeli. Department of Psychology & Philosophy

The purpose of the present literature review is to provide a brief overview of nature of the protest as an individual and social phenomenon. The research will briefly cover the history of human protest and its influence on the development of human identity and creation of social protest movements. The main part will be focused on development of the individual protest as a part of relationships within the social life such as motivation for protest. Individual factors, psychological aspects, and reasons for participation in social protests will be examined. The role of individual protest and participation in social movements will be discussed from the perspective of Civil Rights Movement. (Faculty Sponsor: Dr. William Nation)

POSTER SESSION III: ACT 2


What has led to the ethnic demographic shift in Texas Woman’s University’s student population, and how did this correlate with the overall demographic shifts in the state of Texas? Over the past fifty years, the TWU campus has seen a significant change in the racial and ethnic make-up of its student population as it changed from being solely of white females; today the student population is composed of a much more diverse group of females and males. During this same time, there have also been major population shifts throughout Texas. For this presentation we will explore changes in the state demographics and study how the university’s student population and campus culture have reflected these changes. We will use the Lasso and yearbooks, as well as state and TWU census data, to analyze the causes and effects of these changes on our university. (Faculty Sponsor: Dr. Lybeth Hodges)


Frances Willard’s influence on the WCTU. D. Bonzagni, B. Hitt. History and Government Illinois educator and suffragist, Frances Willard was a prominent leader of the Woman’s Christian Temperance Union (WCTU), an organization that had a variety of goals beyond just temperance. What was Frances Willard’s involvement and impact in the Woman’s Christian Temperance movement? Why is she considered so important to the group’s advocacy of things such as labor reform, ending exploitation of working women, improving public health and, of course, temperance? We are researching how she contributed not only to the movement nationally, but what she did specifically in Texas. The TWU library offers many sources on the WCTU and Willard in their databases and Women’s Collection. We are examining numerous speeches, essays, and pamphlets that help show her and the organization’s work. (Faculty Sponsor: Dr. LyBeth Hodges)


The Fort Worth Stockyards was used as a market along the Chisholm Trail to buy and sell livestock. Along with cattle trading came other thriving businesses such as post offices, saloons, and boutiques, that grew up around the area. By 1890, however, the cattle industry in Fort Worth was in decline. The Stockyards are now a time machine for tourists to step into the past. We will explore what exactly the Fort Worth Stockyards have done to promote and maintain the image of the “Wild West” that draws in millions of visitors each year. We will do this by researching through articles from the Douglas MacArthur articles, the Fort Worth Stockyards website and peer-reviewed journals from our very own TWU library. (Faculty Sponsor: Dr. Lybeth Hodges)

4. A COMPARISON OF THE QUALITY OF HEAD START CLASSROOMS USING FROG STREET FOR PRE-KINDERGARTEN AND SCHOLASTIC BIG DAY FOR PRE-K CURRICULA. J. Bolden. Department of Family Sciences

This study compared the effects of two curriculum approaches, Frog Street for Pre-Kindergarten and Scholastic Big Day for Pre-K, on classroom quality for 119 Head Start classrooms in Dallas County. The study sample consisted of 72 classrooms that utilized the Frog Street curriculum and 47 classrooms that utilized the Scholastic Big Day curriculum. Classroom quality was measured by Classroom Assessment Scoring System (CLASS) data that was provided by the Office of Head Start of Greater Dallas. The findings indicated that Head Start classrooms utilizing the Frog Street for Pre-Kindergarten curriculum demonstrated higher quality in Emotional Support and Classroom Organization. Head Start Classrooms utilizing the Scholastic Big Day for Pre-K curriculum demonstrated higher quality in Instructional Support, as measured by CLASS. (Faculty Sponsor: Dr. Lin Moore)

Supported by TWU Summer Experiential Graduate Student Scholar Program.


Many elements of abstract algebra are incorporated in music set theory to explain and compare ‘sets’ of pitches. Permutations highlight the purpose of patterns found all throughout the musical staff. Three main components of music set theory include
transposition, inversion, and complementation. This research is focused on the complementation that explains how musical notes and algebra notes differentiate with one another, using operations such as ordered and unordered pairs. The permutation best suited for comparison is mod 12 because there are 12 notes in the musical alphabet that correspond with the twelve variables in mod 12, namely: C, C#, D, D#, E, F, F#, G, G#, A, A# and B. (Faculty Sponsor: Mr. Paul Ingram)


After the 14-month process to select HQ2, Amazon announced in November 2018 that it would build new offices in New York City, and Arlington, Virginia. It would split the $5 billion investment and hiring of 50,000 workers in half. While some have been critical of Amazon’s approach in making cities compete with each other by providing much information and incentives, business decisions are often made based upon data, including costs and benefits. Our project will look retrospectively at Amazon’s decision and use matrix algebra methods to determine which factors were most important. Additionally, some cities offered Amazon incentives totaling over $5 billion, yet did not win. This project will attempt to evaluate some of the winning and losing strategies using game theory and propose some recommendations to improve future chances. (Faculty Sponsor: Dr. Shawnda Smith)


Public school is available for all school-aged children residing within the geological boundaries of a district. While public school is intended to prepare students for the workforce and college, there are extenuating factors that can affect a child’s chance for academic success during their time in the public education system. In this study, we will examine the graduation/drop-out rates as categorized by race, economic status, and gender for the 2017 graduating class of Texas Public Schools. Matrices delineating each factor will provide insight while allowing a concise view of the data collected to determine if there are any significant differences in success rates (graduation from high school) due to these factors. The implications of our research will highlight the groups that need more instructional support and resources to successfully graduate from high school, and echo the need for incremental change as part of a strategic educational plan. (Faculty Sponsor: Dr. Shawnda Smith)


Concerns have been raised over the prominence of cerumen impactions for elderly adults and its impact on hearing quality. The objective of this project was to evaluate current research practices and data regarding cerumen impaction and hearing quality for geriatric adults specifically, with systematic review and meta-analyses of research relevancy and accuracy. The results of the meta-analysis provided insight into deficits of current research, particularly regarding the relationship between quality of life and the effect of cerumen impaction on hearing. Based on these noted deficits, cerumen management will later be explored as a possible intervention to promote the relationship between quality of life and improved hearing quality among geriatric adults. (Faculty Sponsor: Dr. Sarah Wainscott)

9. BRIDGING SEQUENCE PRESENTATION. J. Hays, A. Philips. Department of Mathematics & Computer Science

This poster presentation is a focus on fractions. We will demonstrate a lesson targeted to second graders, introducing them to fractions in a way that is fun and hands on. Any learner whether, kinesthetic or visual will be able to grasp the concept. We will incorporate concrete, pictorial and abstract fraction exercises into this lesson in order to reach our teaching goals and meet TEKS for this grade level. By using a variety of research materials, including the “Teaching Children Mathematics” publications, we will provide a lesson backed by research that will help children grasp fractions easily. Our hopes for this lesson is that these ideas can be used by a teacher in a classroom setting to introduce fractions and practice what they’ve learned with the activities in the lesson. (Faculty Sponsor: Dr. Shawnda Smith)


The purpose of the research poster was to investigate the effects of air-polishing with glycine powder in order to evaluate the benefits it has for patients. The need for this research was highlighted by research findings that suggest air-polishing with glycine powder is more beneficial than other treatments for periodontal maintenance and implant care. Air-polishing is a non-surgical periodontal therapy that is performed by dental professionals to remove hard (calculus) and soft (plaque biofilm) deposits from beneath the gingiva. Studies consisted of patients in two test groups, one of which were in the air-polishing with glycine powder group with the other being treated with other powders, hand instruments or ultrasonic scaling. Additional studies may help to determine the statistical significance of these differences between long-term care and short-term care. Overall, the use of glycine powder in air-polishing significantly increased the effectiveness of non-surgical periodontal therapy versus other treatments. (Faculty Sponsor: Ms. Liz Spoonst)

11. CAN YOU REPEAT THAT? A LITERATURE REVIEW ON THE EFFECTS OF ALZHEIMER’S DISEASE ON LANGUAGE. A. Bonnes. Department of Communication Sciences & Oral Health

Alzheimer’s Disease (AD) is an age related degenerative dementia syndrome characterized by cognitive and functional decline. While memory loss is typically the first noticeable symptom of AD, language is also impacted. Language is comprised of five domains: semantics, syntax, morphology, phonology, and pragmatics. Alzheimer’s disease affects each of these domains in a different way throughout disease progression. The semantic domain of language sustains a large deficit, involving vocabulary loss and word finding difficulty. Syntax remains intact until the final stages of AD. Morphology is also retained well by individuals with AD. The effect on phonology is manifested through a deterioration in orthographic knowledge, like spelling and writing. Pragmatically, individuals with AD tend to break social rules during conversations or forget the conversation topic; these pragmatic difficulties often lead AD patients to communicate less. Yet, linguistic intervention is possible and can preserve language throughout the course of the disease. (Faculty Sponsor: Ms. Kimberly Mory)

12. COMPARISON OF Cu(DMP)$_3$ (MeCN)BF$_4$ 1:1 SYNTHESIZED USING GREEN CHEMISTRY AND TRADITIONAL METHODS. A. Christopher, C. Fraire, E. Theard, M. Wilk, R. Alkhazalah. Department of Chemistry & Biochemistry

Inorganic Chemistry laboratory, Chem 4511, led by Dr. Omary follows a research discovery-style. In the course of a semester for our inorganic lab, we synthesized Cu(dmp)$_3$(MeCN)BF$_4$ using 1:1 Cu$_{46}$H$_{122}$N$_2$ and Cu$_{46}$H$_{122}$BCu$_4$N$_4$. For the synthesis, we used water as a solvent and obtained a product. Also, we did a solventless reaction.
twice during the semester and obtained another two products. After synthesizing the compounds, we compared and contrasted the products using IR, Elemental Analysis, Thermogravimetric Analysis (TGA), melting point, luminescence, solubility, and crystallization. The results of our findings will be discussed. (Faculty Sponsor: Dr. Manal Rawashdeh-Omary)

Supported by Robert A. Welch Foundation and TWU Department of Chemistry and Biochemistry.


This review of the literature analyzed the findings of the following cosmetic procedures: lip fillers, lip augmentation, and correction of gummy smile. During our research, we were able to determine the rationale as to why individuals choose to have these procedures. In addition, we were also able to identify the procedure techniques, the outcomes of the selective procedures, and the consequences of these cosmetic procedures. We considered dental implications and the side effects that a dental healthcare professional may encounter with patients who have undergone cosmetic procedures. Recognizing oral orifice and gingival cosmetic procedures is important for dental healthcare professionals because of the risks and oral manifestations that can result from having elective surgery. The three procedures we researched were implemented for aesthetic purposes. Our findings concluded complications that may arise from having these procedures: infection of the area, rejection of the implant, and rejection of the material. (Faculty Sponsor: Ms. Amy Teague)


The United States and Canada are both democratic, federal systems of government. However, Canada is often referred to specifically as a federal parliamentary constitutional monarchy and the United States as a federal republic. As both developed from the British system, the two countries have similarities in their foundations. Both share in the protection of civil liberties and in electing governments. Each has a constitution and a supreme court. However, both have unique differences in their national legislatures, heads of state, and senates. Which form of government appears to be more reactive to its citizens’ wishes? Is one system more efficient than the other in passing legislation in regard to the wants and needs of its citizens? I will use primary and secondary sources to compare and contrast various aspects of both governments to help determine answers to the questions listed above. (Faculty Sponsor: Dr. Lybeth Hodges)

15. ESTIMATING TRANSIT RIDERSHIP WITH REGRESSION ANALYSIS. E. Lewis. Department of Mathematics & Computer Science

Estimating transit ridership is a difficult, yet increasingly important forecasting component for transit agencies, planning agencies, and local governments. These estimations depend on numerous service characteristics and rider demographics. Independent variables include factors such as walking or driving distance, passenger transfers used, the vehicle headway for the route, and census data. The objective of this project is to develop and test a machine learning regression algorithm that helps to estimate transit ridership for any route in a transit system. The project will include; determining market segmentation variables which contribute to estimation accuracy, testing intra-variable correlation, and developing a regression algorithm to estimate ridership for any transit route. Additionally, charts and visualizations will be developed to help illustrate characteristics of key model factors. Algorithms of this type can be used to provide a simple sketch model to test different routing strategies as well as spot checks for validation of comprehensive models. (Faculty Sponsor: Dr. Jian Zhang)

16. FOAM ROLLING AS AN ACUTE RECOVERY INTERVENTION DURING A SUBMAXIMAL QUADRICEPS FATIGUE PROTOCOL. R. Manning, M. Avalos, N. Tuttle. Department of Health Promotion and Kinesiology

Foam rolling is the practice of applying pressure onto a muscle through a dense cylinder. This technique has been gaining popularity among CrossFit and other athletic endeavors, but is still not fully understood. This study will observe the effects of passive rest against foam rolling in an acute situation between bouts of exercise. The participants will perform a strenuous leg extension exercise with both their dominant and non-dominant legs. The peak power and torque will be collected before and after using either passive rest or foam rolling as a recovery method. The purpose of the study is to compare the peak power and torque between bouts of exercise utilizing passive rest or foam rolling as recovery interventions. It will provide information on the optimal use of foam rolling in athletics, and may impact the recovery and maintenance of performance for athletes. (Faculty Sponsor: Dr. Young-Hoo Kwon)

17. FRIEZE GROUPS. C. Rapert, M. Yates, C. Hazlett. Department of Mathematics & Computer Science

In this project, we will expand upon the types of patterns discussed in Abstract Algebra: namely, the subcategory, frieze groups. We will cover what classifies as a frieze group, how frieze groups are different from other types of groups with patterns, the seven different types of frieze groups, and a real-life example of a frieze group. Additionally, we will present the mathematical equations behind frieze groups. (Faculty Sponsor: Mr. Paul Ingram)

18. GENDER AND CAREER CHOICE. H. Nguyen, S. Buendia, H. Kauber. Department of Mathematics & Computer Science

For our research work, we plan to explore the role gender plays with career selection in STEM fields. The majority of females choose fields, such as Medical, Healthcare, and Biology, as opposed to careers, such as Mathematics, Computer Science, Physics, and Engineering. We will investigate these differences and explain the implications for future generations. (Faculty Sponsor: Dr. Ann Wheeler)


In the United States and Canada, sign language is the preferred method of communication for an estimated 500,000 individuals who may have a difficult time completing regular errands, such as going to the grocery store or dining at a local restaurant. A team of undergraduate students in TWU’s Aural Habilitation course examined difficulties that deaf and hard of hearing individuals experience when interacting with businesses and potential accommodations. The investigation included a review of legal guidelines, evaluation of population statistics, gathering testimonials of deaf and hard of hearing individuals, and identification of federal and state resources for employee training. Findings were used to develop supports for local businesses (including TWU campus-based vendors) designed to help business owners remain compliant with the Americans with Disabilities Act
while creating an inclusive environment for the Deaf community. (Faculty Sponsor: Dr. Sarah Wainscott)


Inorganic Chemistry laboratory, Chem 4511, led by Dr. Omary follows a research discovery-style. The lab involves two components: literature to reproduce the synthesis of inorganic complexes and the discovery of new material. In the Fall of 2018, one project focused on the synthesis and characterization of two products that could possess light-emitting or absorbing properties. Any change in the reaction conditions such as: the synthesis technique, the type of metal, the ligand component, and the metal to ligand ratio can result in completely different products. In this research, the data of the two different products of 1:2 tetakis(acetonitrile)copper(I) tetrafluoroborate and 2,9-dimethyl-1,10-phenanthroline was collected. One product was synthesized in toluene using the Schlenk line technique and one was synthesized solventless by the physical grinding of the reactants. Different properties of the products obtained from various characterization techniques including, UV/Vis absorption, infrared spectroscopy, luminescence, elemental analysis, thermogravimetric analysis, solubility, melting point, and crystallization. (Faculty Sponsor: Dr. Manal Rawashdeh-Omary)

Supported by Robert A. Welch Foundation, and TWU Department of Chemistry and Biochemistry.

21. HEART RATE VARIABILITY (HRV) ANALYSIS USING FREQUENCY DOMAIN ANALYSIS, SAMPLE ENTROPY, AND NONLINEAR DYNAMICS ON MATLAB. L. Nguyen. Department of Mathematics & Computer Science

Heart rate variability (HRV), a measure of the variation between beat-to-beat alternation of the heart over time, is a powerful tool needed for research and observation regarding the interrelation between the cardiovascular, respiratory, and nervous systems. This project anticipates gathering and defining the advantageousness of the methods, as well as determining whether, using MATLAB, multiple methods can be coded into one program for more convenience. The heart rates used for testing are directly measured from volunteers using the Heart and Brain Spikerbox, designed by Backyard Brains. The project also helps researchers to explore different methods to analyze biological data, learn about the communication between hardware and software, and practice using computer languages. (Faculty Sponsor: Dr. Don Edwards)

22. HUMAN GLUTATHIONE SYNTHETASE: NEGATIVE COOPERATIVITY AND BINDING STUDIES. A. Stopper, H. Pham, A. Furgang, M. Anderson. Department of Chemistry & Biochemistry

Glutathione (GSH) is a tripeptide important in preventing cellular oxidative damage. Human glutathione synthetase (hGSS) catalyzes the second step of GSH biosynthesis. Homodimeric human glutathione synthetase is negatively cooperative with respect to its L-γ-Glu-Cys substrate. Although allosteric effects of substrates binding to hGSS have been studied, the order of binding has not. GSH in plants and prokaryotes are reported to exhibit opposing random and ordered reaction orders respectively; currently little is known about the reaction order in humans. Knowledge of the reaction order of hGSS is vital to understand how it contributes to the regulation of the levels of cellular GSH. Using ITC binding studies the reaction order of hGSS was evaluated. Our experiments show that GSH in humans exhibits semi-ordered binding in which ATP or L-γ-Glu-Cys bind first and glycine binds last. This elucidates why mutations in the active sites cause varying damage depending upon the residue changed. (Faculty Sponsor: Dr. Mary Anderson)

Supported by Robert A. Welch Foundation and TWU Department of Chemistry and Biochemistry.

23. IS COPA ASSOCIATED WITH AN HDAC8-H1.3 PROTEIN COMPLEX LOCALIZED WITH TRANS-GOLGI VESICLES IN THE BREAST CANCER MCF-7 CELLS? E. Meza, T. Doan, R. Wold Gonzalez, C. Wilks, M. Bergel. Department of Biology

Histone deacetylase 8 (HDAC8) and linker histone subtype H1.3 are two proteins associated with chromatin condensation and transcriptional repression. In a screen for complexes between HDACs and H1 proteins, we found that HDAC8 and H1.3 formed a complex. The HDAC8-H1.3 complex was detected in cycling vesicles in the cytoplasm of MCF7 breast adenocarcinoma cells. Colocalization of the complex with Rab6 and partial colocalization with Rab7 narrowed down the HDAC8-H1.3 complex localization to trans-Golgi vesicles and late endosomes. Mass spectrometry suggested that the HDAC8 and H1.3 complex is associated with the vesicular proteins COPA, Sec23A, Sec23B, Sec22B, and clathrin heavy chain 1. Our initial goal was to determine whether COPA is part of the HDAC8-H1.3 complex using immunoprecipitation followed by western blotting. Our long-term goal is to determine the functional role of this complex in vesicular trafficking, which is an important component of many biological processes, such as endocrine secretion and neurotransmission. (Faculty Sponsor: Dr. Michael Bergel)

Supported by TWU Department of Biology.

24. ITEM WRITING: AN ONLINE FACULTY DEVELOPMENT PROGRAM. E. Giddings. College of Nursing - Dallas

The growing use of high-stakes summative testing in nursing education has increased the responsibility of nurse educators to construct well-developed tests and reliable, discriminating test items. However, many students are tested using flawed test items, with the literature demonstrating that as many as 15% of students may fail exams they would have otherwise passed (Downing, 2005). The purpose of this project is to design an online faculty development program module to train faculty in principles of itemwriting and test-development. Pending submission to and approval by the Institutional Review Board, the module will be completed by a core group of nurse educators for junior-level nursing courses at Texas Woman’s University. Faculty participants will complete a post-survey measuring perceptions of the course, evidence of learning, and intentions to apply knowledge. (Faculty Sponsor: Dr. Cecilia Elaine Wilson)

25. LYNCHING THE YOUNG IN TEXAS: TOWARD A MODIFIED STATUS TRANSGRESSION THEORY. H. Teague. Department of Sociology & Social Work

Over a dozen Black Texans, ages twelve to seventeen, were lynched during early Jim Crow (1882-1922). This research considers why some young African-Americans were targeted by White Supremacists while others were not. A well-known theory in lynching studies posits that when minorities violated social expectations of them by achieving economic, social, or family-based success, they transgressed social boundaries and became targets of lynching mobs. When the Social Transgression Theory is considered alongside Donald Noel’s theories on the origins of ethnic stratification, and layered into Roberta Senechal de La Roche’s marginalization theory, a modified theory emerges which can help explain youth lynching in Texas. In plain language, young African-
Americans were simultaneously vulnerable and perceived as a threat in a culture which privileged both adulthood and Whiteness. In response to the perceived threat, White Supremacists lynched young Black Texans in order to terrorize entire Black communities and maintain their own privileged status. (Faculty Sponsor: Dr. Philip Yang)

26. MODERN CRYPTOGRAPHY IN DATA SECURITY. E. Servin-Perez, S. Starobin, L. Huntsinger, A. Maturino. Department of Mathematics & Computer Science

Cryptography is a method of protecting information and communications through the use of codes. The codes are derived from algorithms that are used to protect data privacy, such as credit card transactions and email. The prefix “crypt” means “hidden” or “vault” and the suffix “graphy” stands for “writing”. Network security uses Cryptography when different networks are interconnected and become vulnerable to attacks and intrusions. Because computers are built from two-state electronic components, it is natural to represent information as strings of 0s and 1s that data security uses to protect those internet attacks. In light of this, the focus of our research will be to show how cryptography plays a role in using mathematical algorithms to enhance data security. (Faculty Sponsor: Mr. Paul Ingram)

27. PLAYING WITH THE WORLD’S MONEY. M. Owens, L. Wells. Department of Mathematics & Computer Science

The foreign exchange market is the place where money is bought and sold between countries. Its job is also to determine the currency exchange rate. Not all currency values are equal. The relative value of any two currencies is expressed as the exchange rate or, to put it simply, how many units of one currency would be required to purchase a unit of the other currency. We will provide a window into this marvelous world of cash transactions. Using a matrix is the easiest way to show the relationships between rates. We will be demonstrating how to use matrices to exchange US dollars to British pounds and European Euros. (Faculty Sponsor: Dr. Shawnda Smith)


The most prevalent type of hearing loss is “presbycusis” which occurs with the process of aging, typically around age sixty and older. Acquired hearing loss is not only a medical problem, but a social problem, significantly impacting quality of life for the senior population. Communication difficulties resulting from hearing loss can result in loneliness, isolation, and dependence. Considering these factors, workshops were developed for the geriatric population. Components include education on presbycusis and its signs and symptoms, effective communication strategies with peers, introduction to assistive hearing technology, and practical tips related to quality of life as individuals adjust to hearing differences. The workshops include feedback from participants and the TWU communication sciences students who developed the program. (Faculty Sponsor: Dr. Sarah Wainscott)

29. PRESCHOOL STUDY: BOOK SELECTIONS. P. Pudasaini, C. Gibson, A. Cherucheril. Department of Psychology & Philosophy

Children from a young age know that bullying is wrong, and yet it continues at high prevalence rates. A great deal of children’s learning occurs through the use of storybooks. As there is increasing interest in the role of bystanders, the current study examined how victims, bullies, active bystanders, and passive bystanders are portrayed in storybooks. Under the analysis of six storybooks, we evaluate the linguistic inquiry and word count to understand the type of language the book conveys. This includes emotional tone and personal pronouns. Additionally, we looked at the physical depiction of bullies, victims, and types of bystanders such as physical attributes and picture devices like size. Implications and future research directions will be discussed. (Faculty Sponsor: Dr. Shannon Scott)

30. RECYCLING ELECTRONIC WASTE; A 21ST CENTURY CHALLENGE. R. Phetsopha, A. Akinniyi, G. Salazar. Department of Chemistry & Biochemistry

The increasing rate in the production of novel and upgraded technologies that include cellphones, computer, tablets, etc., have produced a dramatic rise in a waste stream known as “e-waste.” In general, e-waste constitutes all domestic and business waste containing electronic devices, such as televisions, copiers, fax machines, etc., that are near their end-of-life state. Furthermore, the concomitant complexity of more sophisticated electronic devices combined with the shortening time in their replacement cycle length have made their recycling extremely challenging. Thus, e-waste ends up piling up in municipal landfills causing adverse environmental effects. In this project we give a general description of the main components of e-waste, show the current physical and chemical methodologies for the recycling of e-waste, present our approach in chemical recycling of plastics in e-waste, and overview the current status in environmental policies regarding the proper disposal of e-waste. (Faculty Sponsor: Dr. Gustavo Salazar)

Supported by Robert A. Welch Foundation and TWU Department of Chemistry and Biochemistry.

31. REVIEW OF LITERATURE DIFFERENTIATING SEVEN TYPES OF DYSARTHRIA. M. Malone. Department of Communication Sciences & Oral Health

Dysarthria is a motor speech disorder that is characterized by muscle weakness and incoordination of the speech systems. Dysarthria is caused by an injury to different areas of the brain, resulting in many different characteristics. This paper looks at the seven different types of dysarthria and how they are similar and different. The different types of dysarthria are categorized by their primary characteristics. A patient can be born with dysarthria, or they can acquire it later in life as an adult. There is not a cure for dysarthria, but there are treatments that may help patients overcome the effects of dysarthria and improve the patient’s ability to communicate. (Faculty Sponsor: Ms. Kimberly Mory)

32. RIDING THE WAVE: ADDRESSING THE IMPACT OF SECOND WAVE FEMINISM ON AMERICAN CULTURE. M. Kelley, A. Harrison. Department of History & Government

In 1960s America, tensions between women and their world grew stronger, partly as a result of the civil rights movement. This period of upheaval led to important responses known as second wave feminism. Women challenged limits to their access to birth control, career opportunities, and childcare. They wanted legislative acts protecting women from violence and workplace harassment. These changes that resulted from this movement impacted most women and many are still in place today. Guiding voices such as Betty Friedan and Gloria Steinem influenced rapid feminist growth in the U.S. We will use Friedan’s book “It changed my life: writings on the women’s movement” as well as articles and photographs from the time period, both found in the TWU Library, to help us examine the major strides and cultural changes accomplished in support of women’s liberation. (Faculty Sponsor: Dr. Lybeth Hodges)
33. RING AND CODING THEORY IN COMMUNICATION MEDIA. P. Puente. Department of Mathematics & Computer Science

In society today, communication media plays a huge role on the method of exchanging information and facilitating communication. In the process the use of cyclic linear codes, an important class of error correcting code, are used to encode the information in order to prevent any interference or noise. In this study, coding theory and ring theory will be used to investigate how this is possible. (Faculty Sponsor: Dr. Don Edwards)

34. SIGN TO ME. Z. Gharbieh. Department of Communication Sciences & Oral Health

Effective communication has the potential to help regulate patients’ emotions, comprehension of medical information, and allows for better identification of the patient’s needs and expectations. Hospitals and health care facilities need to ensure better communication access to Deaf and hard of hearing individuals. Although the American Disabilities Act (ADA) requires interpreting services be provided, many providers are unaware of the requirement. It has been reported that majority of the time video interpreting is used instead of an on-site interpreter, which most Deaf and hard of hearing individuals prefer. This project reviews ADA requirements, reviews training policies for hospital personnel specifically related to individuals with hearing loss, and identifies next-steps for providers to facilitate clear communication including tips on interpreter use and technology-based interpreting supports. An outline of training guidelines is provided for this unique population. (Faculty Sponsor: Dr. Sarah Wainscott)

35. STEM EDUCATION IN THE UNITED STATES. Z. Pajela, C. Cronin, E. Palacios, A. Ellis. Department of Mathematics & Computer Science

ACT data shows that there are an insufficient number of U.S. students to fulfill current and future STEM jobs. Data shows that from 2012-2017, an average of 48.33% high school graduates are interested in STEM opportunities. What we are advocating for is incorporating STEM in K-12 settings so the percentage could potentially increase. In the 21st century, technology is becoming more prominent in the everyday lives of children. With that being said, the ideal school should incorporate technology into their classrooms. However, this in not always possible without proper funding. Oftentimes, certain STEM fields are associated with a specific gender or ethnic group. We hope these stereotypes would change, starting in the classroom. Our research will outline the necessity to introduce STEM education to children at an earlier age. (Faculty Sponsor: Dr. Ann Wheeler)

36. STRATEGIES FOR BREAKING THE STEREOTYPE: REINFORCING WOMEN AS SCIENTISTS, ENGINEERS, AND MATHEMATICIANS. S. Martinez. Department of Mathematics & Computer Science

While the numbers of women in STEM have increased over the recent years, there is still a much smaller representation of women in fields such as engineering, chemistry, mathematics, astronomy, technology, and physics. There is a tendency for women that pursue STEM to go into what is referred to as a social science or a “soft science” career. These careers include fields of science more populated with women (that have lower salary wages compared to the “hard sciences”) such as psychology, nursing, sociology, and teaching. A large contributor for this tendency comes from stereotypes that young girls learn (as early as pre-K) by seeing minimal female representation in these fields as well as stereotyping gender roles in the household. This study focuses on the benefits of increasing the numbers of women in the “hard science” workplaces as well as strategies to promote exposure to young girls in STEM. (Faculty Sponsor: Dr. Ann Wheeler)

37. SYNTHESIZING, CHARACTERIZING, & COMPARISON OF 1:2 BIS(PHEN) COPPER(I) TETRAFLUOROBORATE FROM COPPER ACETONITRILE AND 1,10-PHENANTHROLINE IN SOLVENT VS. SOLVENTLESS CONDITIONS. M. Nelson, C. Grizer, H. Pham, M. Wilk, M. Rawashdeh-Omary. Department of Chemistry & Biochemistry

Inorganic Chemistry laboratory, CHEM 4511, led by Dr. Omary, follows a research discovery-style involving two components, one based on the literature to reproduce reported inorganic complexes and the second component targets the potential to make new materials. Our research focuses on developing new metal-ligand complexes derived from the combination of transition metals and organic materials with the potential to provide energy-efficient technological applications. This presentation will discuss the synthesis of novel copper(I) bisphenanthroline-based complexes using the Schlenk technique, solvent synthesis, and solventless transformation using mechanical grinding, or Green Chemistry. The use of the ligand, 1,10 – phenanthroline, and the solvent, acetonitrile, were incorporated. Special analytical techniques used were Infrared Spectroscopy, Melting Point, Thermogravimetric Analysis, UV-Vis Spectrophotometry, Elemental Analysis, Solubility Testing, Recrystallization, and Fluorescence Spectrophotometry (Luminescence) to differentiate between both synthesis methods. The product produced through both synthesis methods was bis(1,10- phenanthroline)copper(I) tetrafluoroborate. (Faculty Sponsor: Dr. Manal Rawashdeh-Omary)

Supported by Robert A. Welch Foundation and TWU Department of Chemistry and Biochemistry.

38. THE EFFECTS OF A STRUCTURED EXERCISE PROGRAM ON QUALITY OF LIFE FOR ADULTS WITH PHYSICAL DISABILITIES. J. Oh, R. Davis, P. Yeatts. Department of Health Promotion and Kinesiology

Participation in structured physical activity sessions, to include structured exercise programs can enhance positive affect and promote an improved quality of life (QOL). The purpose of this study was to demonstrate changes in QOL following a 9-week structured exercise program for wounded, injury, and ill military personnel. Total 7 participants participated in a structured exercise program which was conducted for 90 minutes, 2 times per week and addressed the exercise components of strength, aerobics, and flexibility. The WHOQOL-BREF survey (QOL) was measured before and after a program. The Paired T-test results of this analysis indicate that 3 of the 4 domains (i.e., Physical, Psychological and Social) comprising QOL were significantly changed. The result indicated that participating in physical exercise promote an improvement in QOL for military personnel with disabilities. (Faculty Sponsor: Dr. Ronald Davis)


Background: The prevalence of physical inactivity is high in individuals with spinal cord injury (SCI). Objective: To examine the feasibility and effectiveness of a 16-week internet-based exercise behavior intervention program. Study Design: A RCT with a mixed study design. Methods: A total of 70 subjects enrolled in the study nationwide. The intervention group participated in an online program that focused on promoting exercise behavior modifications. Local participants underwent graded exercise testing with metabolic gas analysis pre- and post- intervention. Results:
Across the 16-week intervention period, 71% attended weekly meetings, and 86% completed weekly online activities. Barriers included time constraints, low energy, motivation, transportation, disability related, environment, and weather. Self-reported exercise goals including minutes/week and days/week increased. A significant difference in VO2peak was found between the pre-intervention and post-intervention for training group (p= 0.042). Conclusion: A 16-week internet-based exercise behavioral intervention program is feasible and seems to be effective for improving fitness in individuals with SCI. (Faculty Sponsor: Dr. Suh-Jen Lin)

Supported by NIDILRR grant #901F0091-01-00 (contract # C2016-172).

40. THE GENDER GAP IN STEM. C. Grizer, R. Valdez. Department of Mathematics & Computer Science

In the science, technology, engineering, and mathematics (STEM) fields, women are greatly underrepresented when compared to their male counterparts. Women make up about half of the total workforce, but in STEM fields they only account for about a quarter of the jobs. Part of this disparity can be accounted to the low number of women holding STEM undergraduate degrees, stereotypes, lack of women role models, as well as other factors. For this work, we will discuss these issues in detail, as well as ways universities and other entities are encouraging women to pursue STEM careers. (Faculty Sponsor: Dr. Ann Wheeler)

41. THE LEARNING MATRIX EXPLORED BY SEAT PLACEMENT. S. Schoolcraft, P. Buhler, J. Odunayo. Department of Mathematics & Computer Science

This study explores the effect of seating arrangements within a classroom on student performance. The data used is organized by three different classroom arrangements that led to varying levels of student work. This data undergoes various matrix transformations to reveal patterns that can be used to arrive at a conclusion. We discovered that there is a positive correlation between teacher-picked student arrangements and student performance on formative assessments. These results can be used to influence teacher decisions concerning the physical mapping of the classroom and placement of the students. (Faculty Sponsor: Dr. Shawnda Smith)

42. THE SILVER BULLET TO CHRONIC CARIES DISEASE (SILVER DIAMINE FLUORIDE). V. Porras, C. Mobbs, K. Kleinder, L. Koberna. Department of Communication Sciences & Oral Health

Silver diamine fluoride (SDF) is a topical agent with the potential to enhance and reshape the restorative dentistry world by effectively arresting decay without the need for invasive dental procedures. SDF can be delivered to all populations in a painless manner that is time efficient and cost-effective. It is especially beneficial within the pediatric, geriatric, and special needs populations. Furthermore, due to the simplicity and low cost, low socioeconomic populations can greatly benefit from SDF for the treatment of caries and from its desensitizing properties. Currently, the main counterpart to the success of SDF is that following application, a black stain becomes evident on the treated surfaces where decay was present. In most cases, the black stain can be covered by glass ionomer. Numerous studies provide the benefits of SDF that far outweigh the side effect of the black stain for all members. (Faculty Sponsor: Dr. Leslie Koberna)


Obesity has been steadily increasing in prevalence in the United States over the last few decades. The side effects of this condition may exacerbate systemic disorders leading to decreased general quality of life of affected individuals. The purpose of this research was to identify the increase in the prevalence of obesity here in the United States and to recognize the systemic and oral manifestations associated with obesity. Our research also indicated the proper treatment and considerations for this population. Through the research conducted, it was found that there is an increase in the prevalence of this condition that is affecting the quality of life of the general public. (Faculty Sponsor: Ms. Schelli Stedke)

44. TRANSGENDER VOICE: SUPRASEGMENTAL AND QUALITY OF LIFE CONSIDERATIONS. A. Whyburn, D. White. Department of Communication Sciences & Oral Health

Voice gives the first impression of people. Transgender individuals often experience difficulties in social acceptance due to the voice that does not represent the newly assigned sexes. The change to female voice requires extensive efforts to establish the newly assigned sex characteristics. The overarching goal of the project is to improve the equality and inclusion of different types of individuals by addressing the communication style. For that purpose, the project focused on transwomen’s social functioning and the communication-related quality of life perception. The development of a transwomen voice change program is underway. The program is designed to address functional communication, including suprasegmental features of speech, feminine mannerisms, breathing, vocal hygiene, and communication-related Quality of Life. The program will include weekly one-on-one sessions to facilitate transwoman’s individualized voice change, and group sessions will be held to provide a comradery environment for the participants to share their progression. (Faculty Sponsor: Dr. June Levitt)

45. UNDERSTANDING MATHEMATICS THROUGH THE USE OF STATISTICS. B. Gutierrez. Department of Mathematics & Computer Science

Introducing statistics to the middle school mathematics classroom can be an engaging experience for students. This QEP funded student project focused on the designing of 4 lesson plans that utilized a creative approach to students becoming engaged in statistics. Sample student work will also be discussed. (Faculty Sponsor: Dr. Ann Wheeler)

46. VACCINATION RIGHT OR FLIGHT. A. Levias, A. Thibodeaux, B. Valdez. Department of Communication Sciences & Oral Health

The purpose of the research titled “Anti-vaccination: Fight or flight” is to discuss the growing movement against vaccination. From the beginning days of early vaccinations, there has been hesitancy or resistance by individuals due to health concerns, beliefs, values, and misinformation. This research attempts to dissect and shed light on the anti-vaccination phenomena from its roots to its current implications in modern society. These implications extend beyond the detriment to health and foray into the ethical dilemma policymakers and healthcare personnel face when deciding to force vaccinations or refuse individuals from receiving healthcare or attending school. In addition, forced vaccination may impinge on religious beliefs further complicating the ethical dilemma debate. Therefore, healthcare personnel must have the knowledge to educate these individuals on the benefits while facing the inevitable questioning that arises from misinformation. (Faculty Sponsor: Ms. Risa Nettles)

47. WHAT LIES BENEATH? N. Nordie, R. Ean, B. Hernandez, L. DeHerrera. Department of Communication Sciences & Oral Health
The purpose of the research is to investigate the efficacy of the periodontal endoscope used in conjunction with nonsurgical periodontal therapy (NSPT) compared to traditional NSPT for the treatment of advanced periodontal disease. The need for this study was highlighted by data indicating 64.7 million Americans age 30 and older have advanced periodontal disease. The periodontal endoscope was created for clinicians to have the ability to view the causative factors within the periodontal pocket while performing NSPT. The review of the literature suggests that the use of the periodontal endoscope compared to NSPT alone has been more beneficial for adequate deposit removal. A limitation to the endoscope would be the two-handed technique that is required for the clinician to feel proficient with this cutting-edge technology. Overall, research indicates that the periodontal endoscope provides minimally invasive therapy, less recession and sensitivity, enhanced visualization, and improved patient outcome compared to traditional therapy. (Faculty Sponsor: Ms. Charlene Dickinson)


As the world evolves into being largely technology and information based, science, technology, engineering, and mathematics (STEM) fields are exploding in growth. Historically, the number of women and minorities participating in STEM programs in schools and entering the STEM workforce has been significantly lower than their male and non-minority counterparts. There has been a push in the United States recently to create interest in STEM fields, specifically amongst women and minorities, as the nation recognizes the need for their unique input to the fields. This project will explore the underrepresentation of women and minorities in STEM fields and discuss efforts to make the STEM fields more diverse and representative of modern society. (Faculty Sponsor: Dr. Ann Wheeler)

Session IV: Wednesday, April 10 (9:00 – 10:20 am)

PLATFORf SESSION IV-A: ACT 301
Faculty Moderator: Pushkala Raman

1. EUPHORBIA BICOLOR LATEX EXTRACT REDUCES OXIDATIVE STRESS BIOMARKERS AND OROFACIAL PAIN. P. Basu, R. Hornung, D. Averitt, C. Maier. Department of Biology

The transient receptor potential V1 ion channel (TRPV1) is a pain generator in peripheral nerves that can be activated by NADPH oxidase (NOX), which plays a key role in the production of tissue-damaging reactive oxygen species (ROS). We previously reported that Euphorbia bicolor latex extract induces TRPV1-mediated long-lasting analgesia in rats. The present study hypothesized that E. bicolor latex extract treatment can reduce oxidative stress biomarkers to contribute to TRPV1-mediated analgesia in a rat model of orofacial pain. Orofacial pain behaviors were measured, and blood and neural tissues were extracted to quantify changes in oxidative stress biomarkers. The antioxidant properties of the latex extract were also tested. We report that E. bicolor latex extract displayed antioxidant activity, significantly reduced pain behaviors, and reduced NOX and ROS levels in extract-treated rats. Our data suggest that E. bicolor phytochemicals may serve as novel therapeutics for treating pain. (Faculty Sponsor: Dr. Camelia Maier)

Supported by TWU Research Enhancement Program.


Sustainable development of non-profit organizations has always been a challenge in developing countries like Nepal. The objective of this study is to compare and contrast the management practices of non-profit organizations functioning in the United States and Nepal in terms of governance, fundraising, and office operation. A qualitative study using depth interviews was designed to gain insights. Interviews with Nepali organizations have been completed and the key findings are: organization management of non-profits in Nepal are reliant on international funds. Management and operations are planned for the short-term and are specific to each project depending on the requirements of donors. They do not have separate long-term plans for the organization and struggle to adopt uniform management practices for all projects. They lack precise attention on raising funds locally and have no systematic plan to mobilize volunteers. Out of six interviews in total, three interviews with US-based organizations are still in progress. (Faculty Sponsor: Dr. Pushkala Raman)

3. MOTIVATIONS AND BARRIERS TO HOSPITAL EMPLOYEE PARTICIPATION IN WORKPLACE WELLNESS PROGRAM [A QUALITY IMPROVEMENT INITIATIVE]. R. Bagh, C. Oquin, C. Bailey. College of Nursing - Dallas

Purposes: To increase physical activity and reduce the incidence of preventable chronic diseases among hospital employees by identifying potential barriers and motivators towards effective participation in wellness programs. Background: On average, Americans working full-time spend more time at the workplace. The workplace is an ideal setting for health promotion activities because of the amount of time people spend at work. A study from Truven Health Analytics reports that hospital employees are less healthy than the general workforce and cost more in healthcare spending. Method: A one-time anonymous REDCap survey questionnaire will be distributed to advanced practice providers and nursing staff who are engaged in clinical services for a voluntary participation. Administrative and non-clinical nursing staffs are excluded from the survey. An easy access to wellness programs and incentives will promote participation is a possible expected outcome. Keywords: Workplace wellness, workplace health promotion, hospital employee participation, barriers, incentives, motivators, chronic diseases (Faculty Sponsor: Dr. Charli Oquin)

4. WHEY PROTEIN ISOLATE INCREASES LIPID ACCUMULATION WHILE VITAMIN D DECREASES HORMONE SENSITIVE LIPOPASE GENE EXPRESSION UNDER PCOS-LIKE CONDITIONS IN 3T3-L1 ADIPOCYTES. D. Patterson, M. LeMieux. Department of Nutrition & Food Sciences

Polycystic ovary syndrome (PCOS) is an endocrine disorder characterized by hyperandrogenism, ovulatory dysfunction, and polycystic ovaries. PCOS is also associated with low vitamin D (VD) levels, obesity and Type 2 Diabetes (T2D). Nutritional treatments are limited for PCOS; however, VD supplementation has shown to help with glycemic control. Whey protein isolate (WPI) supplementation lowers glucose levels in people with T2D, but has

Abstracts – Session III: Tuesday, April 9 (6:00 – 7:20 pm)
unknown effects in women with PCOS. This study examined how WPI andVD supplementation affect adipocyte VD metabolism under PCOS-like conditions. Differentiated 3T3-L1 mouse adipocytes treated with a combination of WPI, VD, and/or LPS were used to measure changes in lipid accumulation and gene expression. Preliminary data show greater average lipid accumulation with WPI treatment compared to controls. Gene expression analysis indicated decreased hormone-sensitive lipid levels with VD treatment in PCOS samples. Overall, this study helps establish WPI and VD supplementation as nutritional treatments for PCOS. (Faculty Sponsor: Dr. Monique LeMieux)

Supported by Glanbia Nutritional, Inc., TWU Research Enhancement Program, and TWU Experiential Learning.

5. INTIMATE PARTNER VIOLENCE. S. Brown, S. McClellan. Pioneer Center for Student Excellence

Intimate Partner Violence (IPV) is “physical violence, sexual violence, stalking, and psychological aggression by a current or former intimate partner” (Breiding, et al., 2015). One in five women and one in seven men have been victim of physical violence in their lifetime (Breiding, et al., 2015). IPV is a social problem in which it transcends class, religion, race, culture, sex, gender, and sexual orientation. The Genesis Women’s Shelter in Dallas, Texas main goal is to “provide safety, shelter, and support for women who have experienced domestic violence, while raising awareness regarding its causes, prevalence, and impact” (Genesis, 2016). This platform presentation will provide an opportunity to all in attendance, to learn about Intimate Partner Violence, its current trends, and my personal experience supporting The Genesis Women’s Shelter, in efforts to spread awareness and support to those within your community, who may have experienced being in abusive relationship. (Faculty Sponsor: Ms. Shaunon McClellan)

POSTER SESSION IV: ACT 2

1. A DESCRIPTIVE STUDY OF PARTICIPATION IN DISABILITY SPORT(S) IN NORTH TEXAS. N. Elliott. Department of Health Promotion and Kinesiology

The purpose of this qualitative descriptive design study was to explore the meaning of disability sport(s) from the participant's view. The secondary purpose was to document the experiences of disability sport(s) participants in North Texas. This study utilized a descriptive design to collect qualitative data on 15 disability sport(s) participants in North Texas. The data was collected from semi-structured interviews and structured observational field notes by graduate students from Texas Woman's University. The interviews were transcribed, field notes were organized per question, analyzed through descriptive statistics, Word Count, and Simple Thematic Coding. (Faculty Sponsor: Dr. Leslie Graham)

2. A FAMILY-BASED INTERVENTION TARGETING CHILDHOOD OBESITY AMONG GHANAIAN IMMIGRANTS: QUALITY IMPROVEMENT PROJECT. G. Asoman, A. Abraham, S. Haley. College of Nursing - Dallas

Childhood obesity and overweight are said to have a significant effect on physical health, social, and psychological consequences. Most parents do not identify their children as obese or overweight due to their understanding of childhood obesity. Obesity in the Ghanaian culture is viewed as a positive implication in life; therefore the, QI project is centered on providing knowledge to impact behavioral change regarding obesity. This QI project of a family-based intervention targeting childhood obesity among Ghanaian immigrants using diet and physical activity approach will help to bring awareness and a behavioral change. The specific target population for this project will be Ghanaian mothers who reside in the United States ages 21 to 43 years. The instrument to be used in this project is the Family Eating, and Activity Habits Questionnaire (FEAHQ) categorized into four phenomena including activity level, eating style, Eating-related to hunger and stimulus exposure. (Faculty Sponsor: Dr. Annie Abraham)

3. A GLOBAL COMPARISON OF THE INCARCERATION OF WOMEN AND SOCIETAL PUNITIVENESS. M. Plummer. Department of Sociology & Social Work

This research examines cross-national literature on the relationship between gender and punitiveness towards female offenders on a global scale. These studies examined: women, crime, and their relationship to punitiveness. For the purpose of this research, the term “punitiveness” refers to the likelihood of punishment or the infliction of a punishment. This research examines comparative studies from: England, Wales, Finland, Georgia, Australia, Turkey, and America. Using these comparative studies I attempt to examine similarities and differences in patterns of punitiveness towards female offenders, address the cross national differences in punitiveness and gender, and discuss some of the reasoning behind different types of sentencing given to women versus men. (Faculty Sponsor: Dr. James Williams)


ATP synthase catalyzes ATP synthesis by oxidative phosphorylation. With the unique mechanism and structure of ATP synthase, the energy transmission between the rotor and stator complex plays a vital role to maintain its proper function. Our previous study has discussed that upon yC87K mutation, a stronger interaction with βE381 could refrain the rotor complex from smooth spin, leading to insufficient energy coupling. In this study, we engineered alanine mutations to these residues to mimic a weaker rotor/stator interaction, and we found that multiple alanine mutation also impairs the enzyme performance. This research will add more pieces to understand the energy flow in ATP synthase. (Faculty Sponsor: Dr. Yunxiang Li)

5. A STUDY OF POTENTIAL PATHWAYS FOR PROGESTERONE’S ATTENUATION OF PAIN BEHAVIORS. H. Boddu, R. Hornung, D. Averitt. Department of Biology

Estrogen and progesterone have a role in influencing pain behaviors. These hormones have greater effects in women than men, especially with recurring temporomandibular joint disorder (TMD) pain following postmenopausal estrogen replacement therapy. We have previously reported that rats with TMD inflammation treated with estrogen had pain behaviors return and these behaviors were attenuated within one hour following the addition of progesterone. These findings suggest that progesterone’s rapid attenuation of pain behaviors may involve its metabolite, allopregnanolone, which binds to GABAA receptors to reduce pain. To determine which pathway progesterone attenuates estrogen-exacerbated pain, immunohistochemical studies were conducted on 4 different proteins: progesterone receptors (regulate gene expression), Sigma1 receptors (known to mediate pain), and SRD5A1 and AKR1C1 enzymes which metabolize progesterone to 5aDHP and allopregnanolone, respectively. Here we report detectable levels of each of these proteins. Our data suggest these proteins are potential pathways for progesterone to rapidly attenuate orofacial pain behaviors. (Faculty Sponsor: Dr. Dayna Averitt)
Supported by National Institutes of Health grant R15DE025970 and TWU Research Enhancement Program.


Dependent Probability is a form of probability where events in the past affect the probability of events in the future. It is different from independent probability in which events do not affect one another. We will discuss the basic differences between independent and dependent probability, using playing cards as a more in-depth example of dependent probability. Can people who play cards make use of dependent probability to predict the value of the cards yet to be played? The goal of this project is to describe the mathematics behind the process of a card player using probability to win at card games, such as blackjack. (Faculty Sponsor: Mr. Paul Ingram)

7. ADOLESCENT PERFECTION DRIVEN DISTRESS: CULTIVATING EMOTIONAL HEALTH & WELL-BEING. T. Peterson, C. Dutton. Department of Family Sciences

As rates of loneliness, anxiety, and depression continue to rise, it is imperative that family advocates, educators, and professionals are familiar with the breadth of perfectionism and the impact this has on emotional, mental, and physical well-being in the family. With a primary focus on the growing and urgent need for awareness of adolescent perfection driven distress, this poster will discuss perfectionistic traits and the critical role that adolescent distress has on the social and emotional competencies and outcomes in families, schools, and communities. In addition, this poster will address the import of the identity gap and the role of perceived ought and ideal selves on perfection driven distress in the identity seeking adolescent. Additional conversation will address wellness and connection promoting strategies that foster hope by way of healthy striving, goals, pathways, and individual agency. (Faculty Sponsor: Dr. Catherine Dutton)


Thyroid hormone (TH) regulates skeletal muscle (SKM) metabolism and myogenesis through stimulation of genetic targets. Purpose: This study examined the effects of Formoterol (FORM) on the expression of TH-related genes during myogenesis in vitro. Methods: Human SKM myoblasts (n = 4) were cultured, differentiated and treated with FORM or DMSO. Total RNA was extracted on 1, 4, and 6 days post differentiation and analyzed by qPCR. Results: For both treatments, deiodinase 2 expression decreased at both D4 and D6 and deiodinase 3 expression decreased at D6. For both treatments, TH receptor α expression decreased at D4 and TH receptor β expression decreased at D6. SERCA1 expression decreased at D4 for DMSO only. Conclusions: TH conversion is a key regulator of the myogenic process. In vitro culture models mimic sedentary behavior decreasing TH-related gene expression while exercise may stimulate the expression of genes associated with TH signaling and metabolism during myogenesis. (Faculty Sponsor: Dr. Anthony Duplanty)

9. BARBER SHOP BLOOD PRESSURE PROGRAM: A QUALITY IMPROVEMENT PROJECT. W. Kirkpatrick, C. Oquin, A. Abraham. College of Nursing - Dallas

For decades hypertension has disproportionately affected the black community, in particular black males. Efforts to reach this population have yet to render any substantial improvements. To make matters worse, black males are the least likely to seek medical care for routine screenings and preventative measures such as blood pressure checks. Research suggests that tailoring healthcare services to the target population will result in more desirable outcomes. The project capitalizes on the pre-existing, longstanding reverence of the barbershop in the black community. On average, African American males visit the barbershop twice a month for services. Also, black men tend to have a deep-rooted, trusting relationship with their barber which counters the general distrust towards healthcare providers. The project aims to determine if barbers performing blood pressure screenings will identify undiagnosed cases of hypertension and result in overall better management of hypertension amongst black men. (Faculty Sponsor: Dr. Charli Oquin)

10. CAMPER’S FEELINGS TOWARD PARTICIPATING IN CAMP ABILITIES. A. Gomes, L. Silliman-French, M. Mann. Department of Health Promotion and Kinesiology

Camp ABILITIES is an adapted sport camp designed to involve and empower individuals with a visual impairment and deafblindness (Lieberman, Lepore, & Haegel, 2014). The purpose of this study was to investigate the feelings of 18 campers with visual impairment toward their participation in the Denton Camp ABILITIES that occurred in the summer of 2018 on the campus of Texas Woman’s University. The investigation was conducted through a 5-item questionnaire used as the pretest and posttest. Based on the results, all campers had a significant positive feeling about their participation in sport activities and the opportunity for making new relationships among their peers. In addition, anecdotal data were collected by administering a questionnaire to the parents’ of the campers about their beliefs toward their child’s physical activity. (Faculty Sponsor: Dr. Lisa Silliman-French)

11. CAYLEY-SUDOKU TABLES. M. Williamson, M. Mata, G. Salas. Department of Mathematics & Computer Science

Cayley tables describe the structure of a finite group by arranging all the possible products of the group’s elements in a square table, not unlike an addition or multiplication table. On the surface, Cayley tables appear to be reminiscent of Sudoku puzzles, however, each Cayley table has only two of the three properties of a Sudoku puzzle. Each block in a Sudoku puzzle must contain each element only once, while this rule does not apply to Cayley tables. We will demonstrate that by using the left cosets of a finite group to generate the column and row headings, we can arrange a Cayley table such that it satisfies the rules of Sudoku puzzles. We will also provide visitors with an opportunity to complete a Cayley-Sudoku table. (Faculty Sponsor: Mr. Paul Ingram)

12. CHILDREN’S PERCEPTIONS OF FAMILIES AND INTRARRACIAL FRIENDSHIPS. R. Herrera, B. Vittrup. Department of Family Sciences

The purpose of this study is to investigate the perceptions children have on the racial and ethnic makeup of families, how race affects friend choice, and how race affects their perceptions on human character. Children aged 5-7 participated in in-person interviews. Children were recruited through personal recruitment and after-school care programs in the DFW metroplex. During interviews, children were given dolls of White, Black, and mixed Black and White races to construct a set of ideal families, which they would later describe. A social choice survey and Black and White evaluative scale questionnaire followed. Preliminary findings will be presented. (Faculty Sponsor: Dr. Brigitte Vittrup)

Supported by TWU Experiential Learning.
13. COGNITIVE-PHYSICAL-FUNCTIONAL CORRELATES IN ADULTS WITH CHRONIC BRAIN INJURY. B. Furlong, A. Vas, S. Spees. School of Occupational Therapy - Dallas

In the initial stages of rehabilitation after a brain injury, a person may make significant gains in many domains of function. However, there are often little gains in the chronic stages of recovery for these individuals. The residual impairments that remain after brain injury can have cause serious functional impairments for the individual. Practitioners are beginning to recognize the benefits of integrative approaches to mitigate chronic long-term functional outcomes. That is, physical exercises programs such as aerobics and other fitness regimens are integrated into cognitive training programs. The purpose of the current pilot is to examine the correlation between cognitive (thinking), physical (body movements, walking, strength), and daily functionality (ability to do household chores, grocery shopping, work) in adults with chronic brain injury. This study will use assessments in three domains to test participant’s cognition, physical performance, and daily functionality. This research study is currently awaiting IRB approval. (Faculty Sponsor: Dr. Asha Vas)

Supported by TWU Experiential Learning and the Woodcock-Johnson Institute.


Poker is a game of chance that has a limited amount of potential combinations of cards. Combinatorics is a branch of mathematics dealing with combinations of objects belonging to a finite set. By utilizing combinatorics, the player can make an assessment regarding the relative strength of their hand against their opponent’s hand. This information combined with traditional poker techniques such as betting strategies and reading your opponent can create an advantage in a game of chance. We will analyze the potential combinations of poker hands and generate systems to calculate the odds of an opponent having a specific hand such as a pair, flush, or straight. This will allow a player to narrow down the opponent’s hand from the 2,598,960 possible five card combinations to a more reasonable range and thus make an assessment about their position in the game. (Faculty Sponsor: Mr. Paul Ingram)


The use of statistical and computational methods are necessary for the examination of many biological processes. Compartmental modeling is a technique to simplify the mathematical modeling of infectious disease. Said modeling lies in the understanding and application of functions. We will demonstrate that with these functions epidemiologist can accurately research and enact preventative measures in the interest of public health. (Faculty Sponsor: Mr. Paul Ingram)

16. CONSUMER ACCEPTANCE OF MUSHROOM-EGG WHITE BLENDS. A. Muniz, J. Sissons, X. Du. Department of Nutrition & Food Sciences

Mushroom has been consumed for thousands of years. It has high nutrition values, low energy density, and distinctive sensory qualities. Egg white is a widely consumed animal protein with well-balanced amino acid composition. The objective of this study was to develop mushroom-egg white blends and investigate their consumer acceptance. Sets of mushroom-white egg blends, including white button and cremini mushrooms with mushroom contents at 0, 10%, 20%, and 30% and either oven roasted or steamed, were developed. Consumer tests were conducted to investigate the acceptance of the blends. The cooking methods have a significantly higher impact on the flavor and texture of the final blends compared to mushroom varieties (p<0.05). The highest acceptance level of white button and cremini mushroom blends was 30% mushroom in steam, while it was 20% mushroom for both oven roasted methods. These results increased knowledge of sensory organoleptic properties of mushroom-egg white blends. (Faculty Sponsor: Dr. Xiaofen Du)

Supported by USDA grant 2018-67018-27627.

17. DEVELOPING A SCREEN TO IDENTIFY MODULATORS OF THE N-END RULE PATHWAY. N. Loew, Y. Kasu, C. Brower. Department of Biology

Arginyl-transferase 1 (ATE1) is an enzyme catalyzing post-translational arginylation of proteins resulting in their degradation by the ubiquitin proteasome system through the N-end rule pathway. Mice lacking the ATE1 gene undergo a dramatic loss of fat tissue, and suffer from neurological perturbations indicating that ATE1 plays an important role in fat metabolism and brain function. We found that ATE1 is also required for the degradation of a fragment of the TAR DNA binding protein 43 (TDP43), TDP43247, associated with neurodegeneration (Brower, et al. 2013, Kasu, et al. 2018). Here, we identified a polypeptide capable of functioning as an ATE1-dependent N-terminal degradation signal (Ndeg) and designed an Ndeg-bearing fluorescent reporter to measure ATE1 activity. This reporter can be used in screens to identify genetic determinants or small molecules capable of modifying ATE1 activity in cells. Ultimately, these efforts may lead to therapies useful in the treatment of neurodegeneration or obesity. (Faculty Sponsor: Dr. Christopher Brower)

18. DEVELOPING MASTERY: BUILDING A TOOL FOR TRACKING PROGRESS ON PROFESSIONAL COMPETENCIES IN THE MLS PROGRAM. A. O’Neill, C. Perryman. School of Library & Information Studies

Over the course of their enrollment in a new grant-funded scholarship program (Transforming Libraries into Community Anchors in Rural Texas, or TLCART), 20 carefully selected students in small, rural Texas communities will earn library degrees at the TWU School of Library and Information Studies (TWU SLIS) while learning to become facilitators and partners of community change. To support their self-assessment through the program, and encourage individual ownership of career growth, we created a professional competencies tracker based on the American Library Association Competencies. Students are asked to self-evaluate, identifying areas of desired development, at the conclusion of each semester in the two-year program. In the process, each will take responsibility for their future as lifelong learners, identifying specific needs and methods for development. This pilot effort is being tested with the TLCART cohort to assess its usability for the overall Master’s program in Library Science. (Faculty Sponsor: Dr. Carol Perryman)

Supported by Institute of Museum and Library Sciences (IMLS).

19. EARLY RECOGNITION OF POSTPARTUM DEPRESSION THROUGH EDUCATION: A QUALITY IMPROVEMENT INITIATIVE. L. Ekeocha. College of Nursing - Dallas

Many women are not willing to admit symptoms of postpartum depression (PPD), but if properly educated, her support systems may recognize early signs and encourage her to seek medical
attention. Studies have shown the support system of the woman plays a crucial role in the prevention, diagnosis and effective treatment of PPD. The quality improvement (QI) initiative utilized existing literature to formulate an educational pamphlet geared towards the support system. The initiative was implemented over four weeks in a women’s health clinic. A sample size of 183 participants partook in a pre and post-test in order to measure the knowledge gained. Categorical variables were evaluated using the Chi-square test between the pre and post questions. Continuous variables were evaluated using t-test between the percentage of pre and post proportion correct. The findings of the study suggest that support system education increases PPD awareness and knowledge (Faculty Sponsor: Dr. Charli Oquin)

20. EDWARDS-TRINITY AQUIFER REFILL. S. Moffitt, L. Brown, D. De Santiago, L. Gillander. Department of Mathematics & Computer Science

Partial derivatives are useful in the process of finding the rate at which aquifers fill and deplete during all seasons. With the help of the groundwater flow equation we can be more aware of the risks of floods as well as droughts. With this it is possible to forecast highs and lows in the main and minor aquifers beneath us. Through different forms of the hydraulic equation we can foresee issues that we may not be able to see visually. Effectively this will assist us in having safe drinking water without worry of running out of water. (Faculty Sponsor: Mr. Paul Ingram)


Background and Purpose: Epilepsy is a chronic neurological disorder marked by recurrent seizures. It affects approximately 60 million people worldwide and is the most prevalent chronic neurological condition globally. The purpose of this study was to assess what people with epilepsy knew about epilepsy and how their level of knowledge correlated with their self-management practices.

Method: A descriptive cross-sectional survey is being conducted from January 2019 to February 2019. Two standardized questionnaires were emailed using a psych data link to patients with epilepsy at a neurology clinic in Dallas TX. Results: The results of this study are pending. So far 31 participants have answered the questionnaires. The target is 40-50 participants. Discussion: The hypothesis for this study assumes a strong correlation exists between epilepsy knowledge and epilepsy self-management. It is hoped that the results will affirm this. Future education programs at the clinic will target both knowledge and self-management practices. (Faculty Sponsor: Dr. Sheila Haley)


ATP is the direct source of energy in all living organisms. Through oxidative phosphorylation, ATP synthase is able to synthesize ATP in large amount. By its distinctive rotary mechanism, ATP synthase converts the proton gradient to chemical energy in the form of ATP. In this study, we aim to introduce two pairs of cysteine mutations at the rotor/stator interface. Under oxidation, a disulfide bond could form to fix the rotation of ATP synthase into a specific frame. One of our preliminary work is to evaluate how these mutations would affect the performance of ATP synthase. This research is promising to further illustrate the nucleotide binding profile in ATP synthase. (Faculty Sponsor: Dr. Yunxiang Li)

23. EXPERIENTIAL LEARNING OUTSIDE THE COLLEGE CLASSROOM. V. Walker. Department of Teacher Education

In teacher preparation programs it is important to not only have knowledge of theory, but have opportunities to apply pedagogical practices in authentic learning environments. A key component of Experiential Learning is that knowledge in learning is acquired as a result of being involved in the experience (Association for Experiential Education). Experiential learning activities such as participating as a student observer and assistant at the TWU New Teacher Academy, propelled my knowledge and application of effective pedagogical practices. The purpose of the self-study was to examine and partake in additional learning experiences that further enhanced my knowledge of teaching and learning. Specifically, this study examined how I was further able to apply the concepts of effective practice learned in coursework through participating as a preservice teacher in the TWU New Teacher Academy. (Faculty Sponsor: Dr. Sarah McMahen)

24. EXPLO OF JESUS FREAKS: THE IMPACT OF CHRISTIAN EVANGELICISM ON AMERICAN SOCIETY. A. Burrow, J. Aquino. Department of History & Government

The Jesus movement of the 1960s and 1970s in the United States was primarily an effort to bring back the original lifestyle of the early Christians. The movement grew tremendously with media exposure in the early 70s, drawing thousands of youth to events, such as Explo ‘72, a Campus Crusade for Christ conference in Dallas. Many of those who attended advocated a return to what they saw as Biblical values. While the Jesus movement lasted less than a decade, did it have any impact on Christian Evangelicism’s growth on American culture? We will be examining articles, newspapers, and journals dated within a decade of the movement and since, to discover the answer to this question. (Faculty Sponsor: Dr. Lybeth Hodges)

25. FINDING THE JUST-RIGHT CHALLENGE: OT KNOWLEDGE OF TOP-DOWN VERSUS BOTTOM-UP APPROACHES TO TBI COGNITIVE REHABILITATION. A. Benscoter, B. Furlong, A. Vas. School of Occupational Therapy - Dallas

The ongoing study aims to strengthen the practice of occupational therapy in cognitive rehabilitation of adults with mild-traumatic brain injury (TBI). Traditional approaches for TBI model bottom-up tasks (procedural and repetitive), which are helpful in the initial stages of recovery. However, to improve functional cognition for generalized long-term benefits, top-down approaches (effortful and innovative) are more effective. A questionnaire was developed and sent to occupational therapists (OTs). Participants identified treatment strategies as top-down or bottom up. Participants identified 77% of the top-down strategies correctly, compared to only 53% of the bottom-up strategies. This shows that OTs are misattributing bottom-up strategies as top-down. Based on prior research, top-down strategies are the most effective at providing the just-right challenge for long-term cognitive improvements. This is the first step in discovering how to further educate OTs on effectively utilizing and discerning between top-down and bottom-up strategies to establish long-term benefits in functional cognition. (Faculty Sponsor: Dr. Asha Vas)

Supported by TWU Graduate Research Associate Award.


A survey of parents of infants was conducted regarding parents’
perceptions of sample text messages (loss-framed versus gain-framed) promoting healthy feeding practices. The survey asked about preferred frequency, timing, and time of day for receiving text messages. Using a five-point Likert scale, parents rated how positively they viewed the texts and if the messages would affect their likelihood of adopting the behavior. An analysis of 34 surveys revealed that framing of the messages did not impact their perceived likelihood of adopting the desired behavior. However, gain framed messages relating to benefits and self-efficacy for breastfeeding were viewed more positively (mean = 2.32; P = .034; mean = 1.79; P = .041, respectively). Thirty-eight percent preferred receiving messages once per week, and 50% preferred morning messages. Parents seemed receptive to receiving messages from their child’s care provider related to feeding. This suggests text messaging is a promising practice in primary care. (Faculty Sponsor: Dr. Kathleen Davis)

Supported by TWU Research Enhancement Program.

27. GENDER DIFFERENCES IN THE ANTIBACTERIAL ACTIVITIES OF MULBERRY AQUEOUS EXTRACTS. R. Valdez, R. Moreno, L. Hanson, C. Maier. Department of Biology

Mulberry species have been used in homeopathic Chinese medicine for their healing properties. Some research has been done on the antibacterial properties of mulberry species but no studies were performed on the native red mulberry, Morus rubra, and how gender differences of mulberry species influence their antibacterial properties. We examine gender differences in antibacterial properties of M. alba (white mulberry) and M. rubra extracts of leaves, roots and fruit on E. coli, a Gram-negative bacterium and Bacillus megatarium, a Gram-positive bacterium. Preliminary results indicate similar antibacterial activities induced by M. Rubra and M. alba extracts. Leaf extracts are more active than root extracts. Although less effective overall, the female root extract was more effective than male. This study is significant because those who use mulberry extract medicinally need to take note of the effectiveness between genders. (Faculty Sponsor: Dr. Laura Hanson)


Outside the mathematics classroom, graph theory has numerous real-world applications across a variety of fields, including computer science, social science, business, chemistry, biology, and other sciences. This project will briefly define graph theory and present research to further explore a specific application in ecological science: using graph theory to aid in habitat conservation. Ecologists use graph theory to assess landscape connectivity, or how the landscape helps or hinders movement across habitat patches. This process helps them pinpoint specific needs and concerns to be addressed in habitat conservation planning. (Faculty Sponsor: Mr. Paul Ingram)

29. IDENTIFYING PREECLAMPSIA THROUGH PATIENT EDUCATION: A QUALITY IMPROVEMENT INITIATIVE. K. Silas. College of Nursing - Dallas

Preeclampsia is a major problem in the United States that increased risk of neonatal and maternal morbidity and mortality. Will educating patient and support persons that accompany patients to clinic visits increase awareness of early signs and symptoms of preeclampsia? This quality improvement initiative will consist of a pretest on preeclampsia, followed by an educational sheet on preeclampsia, and then a posttest to confirm successful education. This confirmation should result in a sample size of 80 with an 80% power to detect a mean of paired differences of 0.2 with an estimated standard deviation of differences of 0.6 and with a significance level of 0.05 using a two-sided paired t-test. Validation of success is measured by an increase of 20% on the posttest. The findings will suggest that educating patients and support persons should result in seeking early medical attention when signs and symptoms of preeclampsia arise. (Faculty Sponsor: Dr. Margarita Bobseine-Menendez)

30. IDENTIFYING UNIQUE CHALLENGES AMONGST ARAB-AMERICAN FAMILIES’ VIEWS AND ACCEPTANCE OF DISABILITIES. N. Elramly. Department of Teacher Education

Addressing the needs of Arab-American students with disabilities begins by understanding the cultural views and perceptions of disabilities amongst the Arab-American community. This presentation provides professional educators better insight into Arab-Americans’ unique diversity and relationship between culture and acceptance of special education and disability. Research into working with culturally diverse students has limited identification of differences amongst minority groups. Identifying how best to meet Arab-American students with disabilities needs begins by gaining a deeper understanding into the community’s cultural and ethnic background. Arab and Middle Eastern countries struggle with appropriately educating and serving individuals with disabilities. These challenges include limited funding for specialized facilities, stigma associated with disabilities, and cultural misunderstandings related to causes of disabilities. Taking a student’s country of origin into consideration and understanding societal norms in that country can help facilitate a better understanding between public schools and Arab-American communities. (Faculty Sponsor: Dr. Randa Keeley)


Formoterol, a beta-adrenergic receptor agonist, has been shown to stimulate genes involved in skeletal muscle (SKM) mitochondrial function and biogenesis. One of these genes, PGC-1α, is a master regulator of mitochondrial biogenesis, and its isoform, PGC-1αx, has been identified as a potential regulator of SKM hypertrophy. We hypothesized In Vitro Formoterol treatment of SKM cells would increase the expression of PGC-1α and influence myogenic regulatory factors during myogenesis. Primary human SKM myoblasts were cultured and differentiated for three days before initiation of daily Formoterol (30nM) or vehicle (DMSO) treatment. Total RNA was extracted at day 1 of differentiation, 24 hours post-treatment, and 72 hours post-treatment. As expected, myogenic transcription factors Myf5 and MyoD were elevated during differentiation; however, Formoterol did not appear to have an effect on PGC-1αx, Myf5, or MyoD. Our future work will explore additional time points for investigating Formoterol effects during myogenesis. (Faculty Sponsor: Dr. Anthony Duplanty)

Supported by TWU Center for Student Research.

32. INCREASING AWARENESS OF SEXUALLY TRANSMITTED INFECTION THROUGH EDUCATION: A QUALITY IMPROVEMENT INITIATIVE. D. Thompson. College of Nursing - Dallas

Sexually transmitted infections are disproportionately affecting young men and women in underserved communities worldwide. Research suggests that on average there are roughly around 20 million new cases of sexually transmitted infections reported yearly in the United States and costing the U.S billions of dollars in treatment-related cost (Centers for Disease Control and Prevention)
33. INDICATORS OF SUCCESS IN PROVIDING WHOLE GRAINS IN SCHOOL MEALS: THE HEALTHIERUS SCHOOL CHALLENGE IN 2018. S. Aldouri, C. Warren. Department of Nutrition & Food Sciences

The goal of the HealthierUS School Challenge is to promote healthier school environments in order to improve the health of American children. Regular consumption of whole grains may prevent chronic disease. The purpose of this study was to determine the indicators of success for the incorporation of whole grain foods into school meals from the current HealthierUS School Challenge (HUSSC) Gold or Gold of Distinction schools through an online survey. This survey was originally administered in August 2008 and funded by USDA-FNS. Results indicate similar issues in 2018 with providing whole grains in these schools as in 2008, except in how whole grains are incorporated into school meals and more availability of whole grain food items to purchase. While product acceptability among the students was still a major challenge food service directors faced, directors found it easier to meet the HUSSC criteria in 2018 than in 2008. (Faculty Sponsor: Dr. Cynthia Warren)

34. INVESTIGATING PARENTAL THOUGHTS ON INFANT FEEDING PRACTICES, CAUSES OF EARLY PEDIATRIC OBESITY, AND COMMUNICATION WITH HEALTHCARE PROVIDERS ABOUT FEEDING. A. Mitchell, K. Davis, M. Massey-Stokes, C. Warren. Department of Nutrition & Food Sciences

Infancy is an impressionable stage to promote healthful eating habits and decrease obesity risk, but few early pediatric obesity prevention studies exist that specifically target the views of parents toward feeding. This study used a general qualitative approach to explore parents’ perceptions regarding the causes of early pediatric obesity, various ways of feeding infants, and communication preferences with their infant’s healthcare provider to guide development of an early obesity prevention intervention. Focus groups and structured interviews were conducted with fifteen parents of healthy, term infants. Five themes and two primary themes were identified: “Parental Attitudes about Feeding or Parenting” and “Parental Preferences about Feeding Information.” Parents of infants are aware of the benefits of breastfeeding and delaying introduction of solids and sweets. However, individual barriers to adopting healthy practices exist and provider help is needed. Understanding parental opinions surrounding feeding can help guide the development of theoretically driven interventions. (Faculty Sponsor: Dr. Kathleen Davis)

35. OBSTETRIC PROCEDURES AND CHILDBIRTH: EDUCATED WOMEN’S PERCEPTIONS OF PATIENT AUTONOMY. T. Faglie. Department of Sociology & Social Work

Research suggests that women who are subjected to an increased use of obstetric interventions and standard procedures may have a diminished perception of their decision-making ability during childbirth. To identify the extent to which women believed they maintained their decision-making power in childbirth, female students at Texas Woman’s University, who have given birth, were surveyed through an online questionnaire containing closed-ended and open-ended questions, designed to measure perceptions of autonomy, and were analyzed for themes pertaining to autonomy and consent. The main finding of this study is that there is a discrepancy between what women report (diminished autonomy) and what they assert (a perception of satisfaction with their medical care). The results of this study point to the existence of an “ideology” of expert authority that is operative in the obstetric practice in the United States. These results are analyzed through theories of hegemony, hygienic regime, embodiment, and metaphorical violence. (Faculty Sponsor: Dr. Mahmoud Sadri)

36. ORIGINS OF GRAPHS AND THEIR MODERN DAY APPLICATIONS. N. Samararatne, J. Torres, V. Samararatne, A. Lamsal, N. Chau. Department of Mathematics & Computer Science

In the 1700’s the people of Konigsberg, Prussia asked whether it was possible to walk over the seven bridges that intersected the city by crossing each one no more than once. They turned to Leonard Euler to help solve their dilemma. Euler published a proof of his solution and its applications to more general problems in 1735. The math he used in his proof led to the beginning of graph theory which deals with points, called vertices, and lines between these points, called edges. Finding the fastest, most efficient way to get to a certain vertex from another vertex is a fundamental part of graph theory. In this project, we will explore graph theory and its applications like how graphs are used in Google Maps. We will also give special emphasis to the math behind how Euler devised his solution. (Faculty Sponsor: Mr. Paul Ingram)

37. PARENTAL AWARENESS OF CHILDHOOD OBESITY: A QUALITY IMPROVEMENT INITIATIVE. L. Cole, L. Roussel. College of Nursing - Dallas

The incidence of childhood obesity continues to rise placing an increased risk of morbidity and mortality in adulthood. Over the years, the perceived “normal” weight increased causing a shift in parental misperceptions of their child’s actual weight (Hansen et al., 2014). Parental misperception of their child’s weight status is likely to lead to decreased motivation to address and change childhood obesity (Lundahl, Kidwell, & Nelson, 2014). Examination of parental perceptions can generate instructive information for addressing parental perceptions, increasing readiness to change, and managing the overweight and obese child. (Hansen et al., 2014). The goal of this quality improvement project is to assess parental perceptions of the overweight child and readiness to change behaviors. The results are intended to provide information to assist in increasing awareness of parents’ perceptions of their overweight child’s weight status as a starting point to next steps towards implementing an obesity prevention and management plan. (Faculty Sponsor: Dr. Linda Roussel)


The purpose of this study was to re-examine the previous work on fit theory described as how individuals fit into their work environment while identifying distinct types of fit and specific predictors and outcomes. The study focuses of the influence of gender within the NCAA head coaches and administrators within fit theory parameters. The initial study included participants (N=788) employed in the positions of head coaches, senior woman’s administrators, assistant/associate athletic director, and athletic director within all levels of NCAA divisions, including all championship sports coaches. In the initial study, the perceived PJ for overall participants most positively attributed to work fit theory.
and was considered the best indicator within the NCAA for administrators and head coaches. The previous study determined job performance was an important factor for all participants. This study indicates an overwhelming importance of personal and organizational values for women in professional roles in the NCAA. (Faculty Sponsor: Dr. Gwendolyn Weatherford)


Introduction: Collaboration in physical education involves teachers working “collectively to solve problems, [while] valuing expertise and input of all members of the team” (Lytle, 1999). The purpose of this study was to (a) conduct a systematic review literature to evaluate empirical studies on physical educators’ perceptions of collaboration; and (2) evaluate the quality of that research using the Adapted Physical Activity Taxonomy (APAT; Carano, Silliman-French, French, & Nichols, 2014). Methods: A systematic review of literature, published between 1998-2018, was conducted using a three-phase process with specific inclusion criteria. Phase I produced results from an initial literature search. Phase II identified research articles that met the inclusion criteria. Phase III involved evaluating the identified articles using the APAT. Results: A total of 46 research articles were identified. Of the 46 articles only 3 studies appear to be published with strong evidence for collaboration in physical education. (Faculty Sponsor: Dr. Suzanna Dillon)


In this project, we will be discussing how the Pigeonhole Principle can be applied to, solve, and explain several different issues. The Pigeonhole Principle states that if n pigeons fly into m pigeon holes, and m is less than n, then some pigeonhole contains at least two pigeons. A real-life example of this concept would be the relationship between students and grades. In a math class, there are forty-five students in the class and on the latest test, there are five possible grades. Using the pigeonhole principle, we can determine that at least nine people made the same grade. (Faculty Sponsor: Mr. Paul Ingram)

41. RESEARCHING PARTICIPATION IN DISABILITY SPORTS IN NORTH TEXAS: A DESCRIPTIVE STUDY. B. Davis, L. Graham. Department of Health Promotion and Kinesiology

Purpose: It is not known what the experiences of graduate Kinesiology student, who observed and interviewed individuals participating in disability sport(s). Method: This study utilized a qualitative descriptive design to gather data from 15 graduate Kinesiology students in North Texas, who observed and interviewed individuals who participated in disability sport(s). The data was collected from observational guided field note questions and a focus group. The data was analyzed through descriptive statistics, Word Count, and Simple Thematic Coding. Conclusion: In conclusion, more opportunities to practice researching for graduate Kinesiology students is needed and individuals, who participate in disability sports, could continue to benefit from more research. (Faculty Sponsor: Dr. Leslie Graham)

42. SIMPLE CANCER MODELS. T. Solomon, K. Edwards, A. Ellis, E. Grigorieva. Department of Mathematics & Computer Science

Metabolism in a cell is the sum of physical and chemical processes by which material substances are produced, maintained or destroyed and by which energy is made available. Enzymes are proteins that act as catalysts in speeding up chemical reactions within a cell. An enzyme E can take a molecule S and convert it to a molecule P in one millionth of a second! The original molecule is referred as substrate (S) and P is called a product. In this study we model a process by which effector cells of the immune system kill tumor cells (T) as they come into contact with them: E + T → C → E+P. Such a reaction if Michaelis-Menten type. In our model C represents the population of tumor cells that are being killed and P is the population of dead tumor cells. In the absence of effector cells, the tumor cells will grow at some rate, lambda, but constrained by space and resources their proliferation is modeled by the logistic growth. (Faculty Sponsor: Dr. Ellina Grigorieva)

43. SYNTHESIS AND PHOTOPHYSICAL PROPERTIES OF COPPER (I) WITH SUBSTITUTED AND UNSUBSTITUTED PYRAZOLE. A. Diaby, R. Jawaid. Department of Chemistry & Biochemistry

The copper halide Cu(I) complexes have been reported to exhibit fascinating photophysical properties that can be utilized in various potential technological applications. Its photophysical properties allow for an in-depth study of luminescence which will give a new insight into how to fine or coarse tune luminescence properties. This presentation will overview the synthesis and characterization of new copper(I) 3,5-diisopropyl pyrazole[Cu(3,5(CH)2(CH3)2]2]n complexes using different molar ratio and synthetic routes (solvent-mediated and solventless reactions). Solventless reactions occurred by mechanical grinding at ambient laboratory conditions, and heat was further applied. Most products were colored and luminescent. Remarkably, upon heating both transformation products showed a strong green luminescence. The spectrophotometric properties, including the emission, lifetimes, absorption, and excitation spectra are presented in addition to instrumental analysis. Information was gathered and evaluated for solvent-mediated and solventless transformations for their effectiveness in terms of stability as this is a new area of focus in this research. (Faculty Sponsor: Dr. Manal Rawashdeh-Omary)

Supported by Robert A. Welch Foundation, TWU Department of Chemistry and Biochemistry, and TWU Research Enhancement Program.

44. THE EFFECTS OF INTERMITTENT FASTING ON GLUCOSE TOLERANCE: A PILOT STUDY. K. Duong, E. Zumbo, R. Gordon. Department of Health Promotion and Kinesiology

Intermittent fasting is a form of dietary regimen that revolves around cycles of feeding and fasting. Purpose: The purpose of this study is to see how the effects of intermittent fasting (8 hours eating/16 hours fasting) for three consecutive days, will influence glucose tolerance. Methods: Participants (N = 3) eat regularly for the first week of the study and come into lab fasted for 10 hours before partaking in oral glucose tolerance test (OGTT). The second week, the participants will intermittent fast for 3 consecutive days before the OGTT. The participants will eat the same food for each week of the study. We hypothesize that intermittent fasting will improve glucose tolerance and may be a dietary option for people who have poor glucose tolerance. (Faculty Sponsor: Dr. Vic Ben-Ezra)

45. THE ROAD TO INTERNMENT FOLLOWING PEARL HARBOR. H. Vermeer. Department of History & Government

My poster is a historical presentation of public opinion concerning Japanese American citizens following the bombing of Pearl Harbor 12/7/1941. Rather than focusing on internment itself, my poster seeks to examine and evaluate how public opinion shifted against Japanese American citizens. By examining both government officials, as well as popular opinion represented within newspapers,
there is a dramatic change in the first few months of 1942. While initially many supported internal Japanese citizens, a shocking string of conquests by the Empire of Japan, as well as longstanding racism, created a panic that resulted in the forced relocation and imprisonment of many United States citizens. By understanding this chain of events, present day viewers can understand how public opinion is formed and how it can dramatically impact society. (Faculty Sponsor: Dr. Katherine Landeck)

46. THE USE OF MATHEMATICS APPLICATIONS TO ENRICH LEARNING. A. Arana, S. Quintero, R. Umanzor, E. Vargas. Department of Mathematics & Computer Science

In early elementary education years, most remember their mathematics lessons filled with manipulatives, such as base ten blocks, color tiles, fractions strips, and plastic money. As you peek inside an elementary mathematics lesson, you will notice a room full of curiosity taking place. Students are exploring the mathematics content through these manipulatives. However, this exploration often vanishes by the time the student reaches middle school. Mathematics is no longer a content of curiosity, but instead a content filled with worksheets and abstract work. With technology being such a prevalent factor in everyday life, it seems imperative to incorporate it into mathematics lessons. In this presentation, we will investigate how mathematics applications can be used in the classroom, specifically targeting middle school TEKS. We hope that the incorporation of mathematics applications will spark student interest, teach more tech-based skills, and bring back the thrill of exploration in mathematics lessons. (Faculty Sponsor: Dr. Ann Wheeler)

47. THE USES OF PATTERN BLOCKS TO TEACH MIDDLE SCHOOL MATHEMATICS. J. Torres, R. Rinaldi. Department of Mathematics & Computer Science

Pattern blocks are one of many manipulatives that have been used in mathematics since the 1960’s. They were created as a manipulative to teach various mathematics topics, such as counting, geometry, and fractions. For this project, we will discuss how Pattern Blocks can be used to teach middle school children and how their learning compares to early elementary grades. Sample lessons tasks will be also be provided. (Faculty Sponsor: Dr. Ann Wheeler)

48. TRAINING NURSES NOW FOR WHAT THEY WILL NEED LATER: A STUDY CONSIDERING COST AND TIME EFFICIENCY. J. Sourber. College of Nursing - Dallas

Title: Training Nurses Now for What They Will Need Later: A Study Considering Cost and Time Efficiency Purpose: to compare cost and time to implement traditional simulations versus microsimulations. Background: Traditional simulations range from one to eight hours, removing nurses from patient care if implemented during scheduled shifts, or require hospitals to pay nurses for training outside of scheduled work time. Microsimulations can be implemented in five minutes, focusing on targeted critical information. This study explored actual cost savings in one ICU. Methodology: This observational study measured cost and time to conduct thirteen microsimulations versus traditional simulation. Findings: A traditional one-hour simulation costs approximately $3,173. The cost of implementing microsimulations was $22. Average time to complete a microsimulation was 3 minutes, 28 seconds, compared to 1 hour, 24 minutes for traditional simulation. Total cost savings was $3,151. The study findings support microsimulation as an efficient and cost-effective educational tool. (Faculty Sponsor: Dr. Jennifer Wilson)

49. TRANSITION PLANNING FOR COLLEGE AND CAREER READINESS IN STUDENTS WITH SEVERE DISABILITIES. S. Mellerson. Department of Teacher Education

This poster reviewed literature examining transition programming for students with severe disabilities, specifically, for students with autism, emotional disturbances (ED), and intellectual disabilities (ID). The research emphasized practical strategies for improving transition plans for such as expanding transition assessment domains, incorporating technology, establishing interagency connections, and providing inclusive experiences. (Faculty Sponsor: Dr. Randa Keeley)

Session V: Wednesday, April 10 (2:40 – 4:00 pm)

PLATFORM SESSION V-A: ACT 301
Faculty Moderator: Christopher Brower

1. LET’S PUT THIS NEURODEGENERATION BUSINESS IN THE BAG. Y. Kasu, C. Brower. Department of Biology

Neurodegeneration is associated with the accumulation and aggregation of proteins bearing solvent-exposed hydrophobic regions. This results either from protein cleavage and/or misfolding, or from defects in protein quality control pathways within neurons. To explore the molecular pathways protecting cells from aggregation, we compared two specific fragments of human TDP43 that were previously identified as major components of cytoplasmic aggregates in motor neurons from patients with ALS. These fragments are ~85% similar and differ by a hydrophobic N-terminus of 28 amino acids. We found that these fragments differ both in metabolism and in aggregation dynamics (Kasu et al., 2018). Recently, we found that these fragments are also bound by BAG6, a molecular chaperone whose clients include proteins with exposed hydrophobic regions. Interestingly, BAG6 prevented fragment aggregation by increasing their solubility and appeared to enhance their degradation. These studies establish BAG6 as a new player in cellular protection against neurodegeneration. (Faculty Sponsor: Dr. Christopher Brower)

Supported by National Institutes of Health grant R15NS095317 and TWU Research Enhancement Program.

2. ROLES OF THE DBL-1/TGF-B SIGNALING PATHWAY IN PROTECTIVE RESPONSES AGAINST DIFFERENT BACTERIAL CHALLENGES IN THE ROUNDWORM MODEL SYSTEM C. ELEGANS. B. Madhu, L. Hanson, T. Gumieny. Department of Biology

The innate immune response coordinates several molecular activities, including a conserved cell-cell signaling pathway called TGF-β (Transforming Growth Factor-β). In the roundworm model system C. elegans, the DBL-1/TGF-β pathway is required for an innate immune response to fight some pathogenic bacteria. C. elegans exhibit different levels of immune responses: i) avoidance of pathogens, ii) physical and mechanical protection, and iii) induction of antimicrobial genes. To determine if TGF-β is specifically required to mount an innate immune response to a range of potential pathogenic bacteria, we challenged normal and...
TGF-β mutant nematodes with Gram- positive and -negative bacteria. First, we compared avoidance behavior. Then we quantitated their physiological responses to these bacteria, including pharyngeal pumping and survival. Finally, we assessed the expression levels of innate immune genes upon exposure to bacterial challenges. This work will expand our knowledge about how the DBL-1/TGF-β pathway protects animals from a variety of immune challenges. (Faculty Sponsor: Dr. Tina Gumienny)

Supported by USDA AFRI and the TWU Department of Biology.

3. LIVING WELL IN MY FOOD ENVIRONMENT. S. Lopez-Neyman. Department of Chemistry & Biochemistry

The South Dallas community experiences the highest mortality rates for leading causes of death (e.g., heart disease) and it is among the poorest of 13 communities within Dallas County. My “Living Well in My Food Environment” project addresses the effect of the community food environment on dietary intake; it encourages low-income adults (n=20) to adopt a healthier lifestyle and prevent nutritional diseases. Project goals consist of participants improving their dietary behaviors within their food environment and applying nutrition knowledge for the prevention of nutritional diseases. The delivery of project content (i.e., nutrition messages) accomplishes goals. The Food Behavior Checklist and Fruit and Vegetable Inventory evaluate participants’ behavior changes. Preliminary anecdotal indicate that participants purchase low-sodium canned vegetables (n=6), choose healthier fats (n=4), and read the Nutrition Facts Label (n=10). This project is sustainable with a developed instructor curriculum which contributes to health disparities reduction. (Faculty Sponsor: Dr. Mary Anderson)

Supported by Dallas-Fort Worth Chapter - Albert Schweitzer Fellowship, CitySquare - Destination Home Program.

PLATFORM SESSION V-B: ACT 601

Faculty Moderator: Nerissa Gillum


My paper will argue that in her short story, “Sweat,” Zora Neale Hurston’s main character Delia embodies godly and Christ-like characteristics and has the conviction that Eve wished she had, because of the restricting role women had in the early twentieth century, the only thing Delia could do in her abusive marriage is to endure. Women during the twentieth century did not enjoy the same freedoms that men enjoyed and were viewed as insignificant to society, and black women were especially discriminated against not only because of their gender but because of the color of their skin. Delia has the most to lose if she tries to rebel against the society she was born into because like God, she has created her entire world. With no identity outside of her husband, she can only endure or risk losing all that she has built. (Faculty Sponsor: Dr. Stephen Souris)


According to data collected during the January 2017 Point-in-Time Count, in the United States, an estimated 17 of every 10,000 persons experienced homelessness (Henry, Watt, Rosenthal, Shiviij, & Abt Associates, 2017). In Texas, 9 of every 10,000 persons experienced homelessness. The purpose of this presentation is to report about the experiences of homeless persons, strategies used to help them, and implications for next steps. (Faculty Sponsor: Dr. Nerissa Gillum)

3. VILLETTE AND WOMANISM. V. Popp. Department of Multicultural Women’s and Gender Studies

Lucy Snowe is a woman who needs no introduction. Charlotte Bronte’s Jane Eyre astonished the world by being "poor, plain, obscure and little" and finding love with her passionate soul. Lucy Snowe hides all of her passion beneath a steely exterior. Bronte’s original last name for Lucy was Frost, showcasing the stiff English temperament. Lucy Snow is the anti-Jane Eyre and is a heroine of Victorian literature, because she is the narrator of her own story: the story of a working single woman. Snow embraces the “star stuff” of her calling. I define “star stuff” via Layli Maparyan’s definition from The Womanist Idea. If humans are part of “star stuff,” then, we are all magical and should share our divinity within our chosen professions as service to our ethics (Maparyan 37). The magic of Lucy Snow is the joy of pursuing one’s intuition by following the star guided by hope. (Faculty Sponsor: Dr. Danielle Phillips-Cunningham)

4. BLACK WOMEN AND HIV/AIDS. M. Abadom. Pioneer Center for Student Excellence

In 2016, black Americans accounted for 44% of all HIV diagnoses although this group only account for 12% of the US population (CDC 2016). Of that 44%, 4,189 black women were diagnosed with HIV in comparison to 1,032 white women. As a student of African descent, I will address the prevailing intersectionalities and biases that arise in society that attribute to black women having the highest contraction rate of HIV. To share this important information with students, I organized and hosted a student health fair and panel discussion in which individuals from varying disciplines discussed their perspectives on why the issue of is so prevalent in society. Students who attended the panel were educated about the varying experiences of black women, how to engage with their communities in order to alleviate risks associated with HIV, and how to support women in their community currently living with this virus. (Faculty Sponsor: Ms. Jessica Camp)

Supported by TWU Experiential Learning.

POSTER SESSION V: ACT 2

1. A HOLISTIC FOCUS IMPROVES PEAK TORQUE PRODUCTION. P. Thomas, K. Becker, M. Avalos. Department of Health Promotion and Kinesiology

Substantial evidence suggests focusing attention externally (i.e., away from the body) improves motor performance relative to focusing internally (i.e., on body movements). Recent research suggests that a holistic focus (i.e., focus on general feeling) provides a similar benefit to an external focus. The purpose of this study was to determine how an internal, external, and holistic focus impacted peak torque production in an isokinetic arm curl. Fifteen participants performed isokinetic arm curls on a Biodex machine in a control condition and while using an external, internal, and holistic focus. A holistic focus led to significantly higher peak torque than an internal focus (p = .04), but an external focus did not differ from either an internal or holistic focus (p’s > .05). This study provides initial evidence that a holistic focus may be an effective focus strategy when maximum torque/force is a desired outcome. (Faculty Sponsor: Dr. Kevin Becker)

2. AN ANALYSIS OF POST-OPERATIVE INTRA-ARTERIAL AND INTRAVENOUS FLUID MANAGEMENT ON COST AND TIME IN THE NEUROCRITICAL CARE UNIT. A. Perera, J. Wilson. College of Nursing - Dallas

Purpose: To examine cost/nursing time for an ICU’s existing
intravenous (IV) and intra-arterial (IA) fluid practice, enabling an undergraduate student to impact a hospital-wide practice. Background. The current practice requires nurses to change IV/IA fluids on admission to the ICU, which unnecessarily wastes both time and fluids. This practice originates from inconsistencies and physician preferences, despite supporting evidence. Methodology: 15 eligible patients were observed to determine average fluid discarded and time to change the fluid. Inferential statistics were employed to determine an annual estimate for this population. Conclusion/Results: The average observed time to change fluids was 33 minutes. The average remaining IV fluid was 507/1,000 ml. The average remaining IA fluid was 450/500 ml. In each instance, the IV tubing was discarded and replaced. The population estimate is M = 1924 95%CI [1614, 2234]. The annual cost of changing IV fluid ranges from $45,983–63,649. The total fluid discarded ranges from 1,570–2,137 Liters/year. (Faculty Sponsor: Dr. Jennifer Wilson)

3. ANALYSIS OF TWO-DIMENSIONAL SYSTEMS OF DIFFERENTIAL EQUATIONS APPLIED TO EPIDEMICS. G. Justice, T. Kyrk, J. Marcelino. Department of Mathematics & Computer Science

This research will look at how two-dimensional systems of differential equations can be used to model epidemics. This method utilizes two nonlinear differential equations, one of which describes the dynamics of the infected population and the other - the population of the noninfected (susceptible). The equations are coupled; knowledge of one population is required to find the other. These equations are solved simultaneously to determine the population of infected and noninfected people. This information is useful because it allows disease control agencies to track the estimated progression of a disease outbreak. With this knowledge professionals are able to determine how severe of action is required to neutralize an epidemic. (Faculty Sponsor: Dr. Ellina Grigorieva)


Most people attribute space travel to the men of the Apollo missions, yet women have broken barriers in Astronautics since its beginning. They have aided in developing moon landings, spacewalks, and have even commanded the International Space Station. These women who became the firsts in their missions have set high standards for the other women and men at NASA. Texas Woman's University has a strong connection with some of these pioneering women. One astronaut is a TWU alumna and TWU students have engineered designs for the devices to aid astronauts in space. We will investigate the women who have set their eyes on the heavens and examine their contributions to the U.S. space program. We will use primary sources from the International Women Air and Space Museum journals, as well as secondary sources located throughout the TWU archives and vault. (Faculty Sponsor: Dr. LyBeth Hodges)


New Orleans is a city located in southern Louisiana along the Mississippi River. The city is home to nearly 400,000 people and is known internationally for its distinct food and music culture (U.S. Census Bureau 2018). One of the most used ports in the world is the Mississippi River, which runs through the city. Over the last decade, The Port of New Orleans is greatly responsible for reducing pollution along the Mississippi and around the city (Herbert 2017). New Orleans and other cities along the Mississippi are facing a reality that climate change is causing sea levels to rise and coastal wetlands to wash away, along with other devastating effects on the environment. New Orleans and the state are attempting to implement a Master Plan to reduce climate change and to prevent the Mississippi from consuming southern Louisiana. (Louisiana 2017). (Faculty Sponsor: Ms. Alana Taylor)

6. CREATING AN ESCAPE ROOM TO DEVELOP CLINICAL REASONING IN UNDERGRADUATE NURSING STUDENTS. L. Gonzalez, J. Gerald. College of Nursing - Dallas

Simulation in nursing education has been proven to effectively replace traditional learning, and has since been increasingly used in combination with traditional clinical placements to assist in meeting the goals of safe and effective patient care. Simulation through an escape room scenario creates a new, exciting, and engaging way for nursing students to apply their knowledge and develop clinical reasoning skills in a safe learning environment. This project will provide students a unique experiential learning experience in which they will develop and refine their assessment, clinical reasoning, communication, and critical thinking skills while progressing through a high fidelity patient scenario. The students apply theoretical and practical knowledge as they progress through the simulation of a pediatric patient with complications related to type 1 diabetes mellitus (T1DM). Data will be collected during debriefing sessions after each simulation is completed, and will be reviewed by graduate students and their faculty mentors. (Faculty Sponsor: Ms. Michele Trinka)

7. DEFINING A PROJECTILE OF A TREBUCHET. N. Quinn, A. Rabourn, C. Cleary. Department of Mathematics & Computer Science

Projectile motion is a fundamental application of Newtonian physics. Newtonian physics provides the basics of complex motion in 2- and 3-space. The purpose of this project is to reiterate and demonstrate the principle and application of projectile calculations using a classic example, the trebuchet. The trebuchet gives us an historical example of how projectile motion was applied in 2-space and we will calculate its motion along the horizontal and vertical axes. Calculus will help us represent its movement along a curve and provide formulas to calculate its position with respect to time from launch. (Faculty Sponsor: Mr. Paul Ingram)

8. DOLLARS AND CENTS: HOW MUCH? A. Juarez Flores, N. Bond. Department of Mathematics & Computer Science

This poster presentation will focus on a second-grade lesson demonstrating how to teach students the importance of using money in various ways; for example, what money looks like and its value, using it in everyday life, and how to make change. In order to achieve this, we will be using concrete, pictorial, and abstract methods. The activity will include a store-like scenario, where the students will start off with an amount of $50. They will then choose items with a given price and check-out those items. By doing this entire activity will help the students understand the value of money. TEKS covered include 2.5.A: determine the value of a collection of coins up to one dollar, and 2.11.A: calculate how money saved can accumulate into a larger amount over time. (Faculty Sponsor: Dr. Shawnda Smith)


Ghrelin, a gut hormone plays a pivotal role in physiologic processes like energy balance, appetite control, glucose homeostasis, and adipogenesis. It may influence metabolic functions associated with
polycystic ovary syndrome (PCOS). This study aimed at evaluating the influence of dietary whey protein supplementation on biochemical indices of insulin resistance and postprandial circulating ghrelin in women with PCOS and healthy controls. Participants in both groups underwent oral glucose tolerance tests with 35 g protein preload on the first and last days of a 7-day supplementation period. Preliminary results indicate that a one-time, acute whey protein preload elicits a significant postprandial insulogenic response in both groups. Data collection and analyses in progress. (Faculty Sponsor: Dr. Kenneth "Shane" Broughton)

Supported by Glanbia Nutritional, Inc. and TWU Research Enhancement Program.

10. EFFECTS OF MINDFULNESS AND EXPERIENTIAL AVOIDANCE ON STROOP TASK RESPONSE TIME. J. Burditt, A. Guillen-Espinosa, H. Pham, D. Phipps. Department of Psychology & Philosophy

This study aims to examine the potential effects of mindfulness and experiential avoidance on stroop tasks. Mindfulness is the conscious awareness of nonjudgmental processing of the internal and external stimuli while experiential avoidance is the attempt to ignore negative processing of internal stimuli (e.g., contradicting sentences, trauma, procrastination, etc.). The stroop effect, as defined in the literature, is the idea of task-irrelevant automatic processing, which takes place before task-relevant processing (e.g., reading words before its color). Participants in this study include 82 students from a cognitive psychology course at a public university in the south. All participants completed demographic questionnaires and several other measures online pertaining to the aforementioned focus. Data on levels of mindfulness and experiential avoidance were first collected, after which participants were then asked to complete the stroop effect tasks. Data analysis will be conducted in SPSS, and results, discussion, and conclusion will follow. (Faculty Sponsor: Dr. Danica Harris)

11. EFFECTS OF MINDFULNESS AND EXPERIENTIAL AVOIDANCE ON STROOP TASKS. H. Pham, J. Burditt, A. Guillen-Espinosa, D. Phipps. Department of Psychology & Philosophy

This study aims to examine the potential effects of mindfulness and experiential avoidance on stroop tasks. Mindfulness is the conscious awareness of nonjudgmental processing of the internal and external stimuli while experiential avoidance is the attempt to ignore negative processing of internal stimuli (e.g., contradicting sentences, trauma, procrastination, etc.). The stroop effect, as defined in the literature, is the idea of task-irrelevant automatic processing, which takes place before task-relevant processing (e.g., reading words before its color). Participants in this study include 82 students from a cognitive psychology course at a public university in the south. All participants completed demographic questionnaires and several other measures online pertaining to the aforementioned focus. Data on levels of mindfulness and experiential avoidance were first collected, after which participants were then asked to complete the stroop effect tasks. Data analysis will be conducted in SPSS, and results, discussion, and conclusion will follow. (Faculty Sponsor: Dr. Danica Harris)


Inhibition of return is defined as the ability to detect new stimuli at a faster rate than previously detected stimuli. Mindfulness is an alert state of being, which encompasses all mental contents, such as perceptions, emotions, sensations, and cognitions (Walach, et al., 2006). Psychological well-being is a multidimensional construct assessing individually defined success regarding self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth (Ryff, 1989). Participants included 82 undergraduate students, enrolled in a cognitive psychology course at a public university in the south. Participants completed a series of labs, such as inhibition of return, as well as a PsychData survey which consisted of demographic questions followed by measures related to mindfulness and psychological well-being. Researchers predict that as mindfulness and psychological well-being increase, functioning on an inhibition of return task will improve. Results will be analyzed through SPSS and the discussion and conclusion will follow. (Faculty Sponsor: Dr. Danica Harris)


The Freiburg Mindfulness Inventory (FMI) and the Mindful Attention Awareness Scale (MAAS) pertain to mental consciousness such as cognitions, perceptions, and sensations (Walach, Buchheld, Buttenmüller, Kleinknecht, & Schmidt, 2006; Brown & Ryan, 2003). This study aims to analyze participant’s accuracy when presented with different conditions, on a false memory task. Participants included 82 undergraduate students, enrolled in a cognitive psychology course at a public university in the south. Students completed a survey on PsychData, which consisted of a demographic questionnaire and measures related to mindfulness and emotion. Researchers predict that participants who score higher on the FMI and the MAAS will demonstrate greater accuracy when recalling words, from the original list, on a false memory task. Researchers also predict lower scores on the FMI and MAAS will demonstrate less accuracy when recalling words from the original list. Results will be analyzed using SPSS; discussion and conclusions to follow. (Faculty Sponsor: Dr. Danica Harris)

14. EXECUTIVE FUNCTION INTERVENTIONS FOR STUDENTS WITH AUTISM SPECTRUM DISORDERS. L. McDaniel. Department of Teacher Education

Students with Autism Spectrum Disorder (ASD) may also have deficits in their Executive Function (EF) abilities. EF is a set of cognitive skills including inhibition, shifting, and emotional control (Kirk, Gray, Ellis, Taffe, & Cornish, 2017). Students who lack the ability to regulate their emotions or inhibit problematic behavior present challenges in classrooms. EF deficiency is associated with increased playground isolation and less engagement with peers (Freeman, Locke, Rotherman– Fuller, & Mandell, 2017). Researchers have considered deficits in EF as one explanation for symptoms of ASD (Otsuka, Uono, Yoshimura, Zhao, & Toichi, 2017). These deficits can manifest in problem behaviors that can disrupt learning. Teachers may need interventions to address these concerns in their classroom. The purpose of this integrated review of literature is to explore existing research for interventions that may facilitate EF of students with ASD. This poster will include considerations for teachers when addressing concerns with classroom behaviors. (Faculty Sponsor: Dr. Randa Keeley)


Researchers believe mindfulness is a process of regulating attention to bring a quality of non-elaborative awareness, to one’s experience (Walach, Buchheld, Buttenmüller, Kleinknecht, & Schmidt, 2006). Meta-emotions support or reject one’s personal feelings based on their experiences (Mitmansgruber, Beck, Höfer, & Schüßler, 2009). The goal of this study is to analyze false memory
measured across the Meta-Emotion Scale and Freiburg Mindful Inventory. Participants in this study consisted of 82 undergraduate students enrolled in a cognitive psychology course at a public university in the south, during the Spring 2019 semester. Students completed an online survey through PsychData consisting of demographic questions, and measures related to mindfulness and meta-emotion. Students were also asked to complete a series of labs, including a false memory task. Researchers predict that high meta-emotion and mindfulness scores will impact memory accuracy. SPSS will be used to analyze the results; discussion and conclusions to follow. (Faculty Sponsor: Dr. Danica Harris)

16. FLOWER FRACTIONS. V. Bozarth. Department of Mathematics & Computer Science

This poster will outline a lesson where second graders will be creating flowers with a different set of fractions through the use of class discussion, visual representation. Students will be expected to show their work throughout the lesson in order to show their thinking process. Students will first meet in a class discussion about. Students will discuss the different types of fractions that they could create such as halves, fourths, and eighths. In the discussion students will talk about the ideas of these fractions and what it would look like. Then, students would break off and go draw a picture representation of what that would look like. For example, a student trying to create a flower using fourths would draw out what that would look like. Students then would cut paper plates into the appropriate sizes needed for their flowers. Through the work of discussion and visual representation, students should be able to effectively recognize and represent fractions. (Faculty Sponsor: Dr. Shawnda Smith)


We are researching the Indigenous People of the Amazon in Brazil. We will be looking at how these people live their everyday life. We know that they have territories and that the Government is trying to encroach on their rights. Some tribes are in the business of conserving the Amazon Rainforest by entering politics to fight for their rights to their lands. We will also be looking at some of their physical steps to keep the environment untouched and healthy. We believe with our current knowledge that the indigenous people will be more prepared for future climate change if we don’t take over first. (Faculty Sponsor: Ms. Alana Taylor)

18. IMPACT OF ATTENTION AND EMOTIONAL LANGUAGE ON WORD SUPERIORITY. M. Lenington, A. Wicker, S. Barnett, M. Sourial. Department of Psychology & Philosophy

Mindfulness is the state of being attentive to and aware of what is currently taking place (Brown & Ryan, 2003). Individuals experiencing negative emotions have diminished cognitive resources for attention (Yiend, 2010). The Word Superiority Effect (WSE) describes processing advantages of words compared to non-words. Eighty-two undergraduate students enrolled in a Cognitive Psychology course at a southern university completed a series of questionnaires including demographic questions, Mindful Attention Awareness Scale (MAAS) and a 10 minute writing exercise to be analyzed by the Linguistic Inquiry and Word Count (LIWC). Researchers hypothesize: higher scoring on the MAAS will yield greater accuracy and quicker response times in the words condition in a Word Superiority task, lower scores on the MAAS will yield greater accuracy and quicker response times in the non-words condition, positive and negative emotions will inversely affect word condition accuracy. Results will be analyzed through SPSS; discussion and conclusion to follow. (Faculty Sponsor: Dr. Danica Harris)


Mindfulness and meta-emotion are both distinct but related: meta-emotion is the regulation of emotions, while mindfulness is a state of mental consciousness and awareness. Change detection is the ability to notice changes in one's environment and is assumed to be affected by mindfulness and meta-emotion. Participants included 82 undergraduate students enrolled in a cognitive psychology course at a southern university. Students completed an online survey from PsychData consisting of demographic questions, the Mindful Attention Scale (MAAS) and the Meta-Emotion Scale (MES). Students completed a series of labs, including a change detection task. Researchers predict increased levels of mindful attention and meta-emotion will improve accuracy and speed in detecting changes in the flicker condition. Researchers also predict that increased levels of mindful attention and meta-emotion will decrease accuracy and speed in detecting changes in the no flicker condition. Results will be calculated in SPSS and the discussion and conclusion will follow. (Faculty Sponsor: Dr. Danica Harris)

20. IMPACT OF MINDFULNESS ON SIGNAL DETECTION. V. Brown, C. Evans, M. Enters, V. Stevens. Department of Psychology & Philosophy

Enhanced attention and awareness are central components of mindfulness theories (Brown & Ryan, 2003). This study investigates the impact of mindfulness on rates of correct rejections, in signal detection testing. Eighty-two undergraduate students, enrolled in a cognitive psychology course, at a southern public university, completed a survey which included the Mindful Attention Awareness Scale (MAAS). Students also completed a series of labs, including a signal detection task, which required students to correctly identify whether or not the given signal was present among three levels of noise. Researchers believe that individuals who score higher on the MAAS, will have greater accuracy for correct rejections during the signal detection task; and will have higher rates of accurate hits. Those who score lower on the MAAS are expected to have more false alarms and a higher rate of misses during this task. Results will be analyzed through SPSS; discussion and conclusion will follow. (Faculty Sponsor: Dr. Danica Harris)

21. IMPACTS OF MINDFULNESS AND PSYCHOLOGICAL WELL-BEING ON THE SERIAL POSITION TASK. M. Campos, M. MacApagal, D. Osifo, A. Sanchez. Department of Psychology & Philosophy

Serial position is a memory recall task wherein it is the tendency of a person to recall the first and last items with greater accuracy. Mindfulness promotes psychological well-being and consists of consciousness, awareness and attention to thoughts, feelings, and emotions (Brown & Ryan, 2003). This study investigates the impact of mindfulness and psychological well-being on a serial position task. Participants included 82 undergraduate students enrolled in a cognitive psychology class, at a southern public university. Students completed a survey via PsychData that included demographic questions, the Mindful Attention Awareness Scale (MAAS), and the Scale of Psychological Well-Being (SPWB). Students also completed a serial position task via CogLab. Researchers predict higher Mindful Attention Awareness Scale and Scale of Psychological Well-Being scores will impact accuracy in primacy and recency effects. Data will be analyzed through SPSS Statistics. Results will be discussed later in our study. (Faculty Sponsor: Dr. Danica Harris)

22. IMPORTANCE OF WORD SUPERIORITY ON COGNITION AND LANGUAGE. B. Annuuske, M. Calloway, S. Del Angel, L. Kropik. Department of Psychology & Philosophy
Participants consisted of 82 undergraduate students enrolled in a cognitive psychology course at a University in the South. This study involved a 92 question survey consisting of demographic questions, and The Mindfulness Attention Awareness Scale (MAAS). Participants were required to write for ten minutes, and the Linguistic Inquiry and Word Count will be used to measure use of emotional words. The primary objective of this research study was to examine mindfulness and use of emotional words, and their effects, on the Word Superiority Effect. Researchers hypothesized that individuals who have higher scores on the Mindfulness Attention Awareness Scale (MAAS) will show quicker response times, and greater accuracy in the non-words condition of the word superiority task. Researchers also hypothesized that those who use more emotional words will have greater accuracy and quicker response times in the words condition. Results will be analyzed using SPSS; discussion and conclusion will follow. (Faculty Sponsor: Dr. Danica Harris)

23. INTERCOLLEGIATE MEDIA COVERAGE AND EQUALITY IN SPORTS: A CASE STUDY ON NCAA DIVISION 1 WOMEN’S BASKETBALL. S. Felmet, M. Picariello. Department of Health Promotion and Kinesiology

In the sporting arena, media coverage is essential to promoting and creating awareness of any team. Studies related to the coverage of women’s sports in the media revealed a significant difference between the exposure of men’s and women’s teams regardless of the genre of sport. (Cunningham, 2003). As we envision increasing the focus of women’s sports, emphasis on balanced media coverage is critical to ensuring equality. This case study using a survey method will focus on television and live streaming media coverage of NCAA Division 1 women’s basketball. The University of Texas at Arlington, Southern Methodist University and Texas Christian University, universities from different conferences, will be used to conduct this study. It will examine already existing literature and seek to provide additional insight into current media coverage on both intercollegiate men’s and women’s basketball programs. The hypothesized outcome is that women’s basketball receives less coverage than their male counterparts. References: Cunningham, G. (2003). Media coverage of Women’s Sport: A new look at an old problem. Physical Educator, 60(2), 43-50. (Faculty Sponsor: Dr. Manuela Picariello)

24. KINETIC CONVERSATIONS: UTILIZING DANCE TO ENHANCE COMMUNICATION IN CHILDREN WITH AUTISM. A. Clark. Department of Communication Sciences & Oral Health

Children diagnosed with autism spectrum disorder (ASD) exhibit atypical social behaviors, including deficits in verbal and nonverbal communication skills. These deficits are addressed in therapy settings through various modalities to increase the child’s social skills and communicative behaviors. Dance/Movement Therapy (DMT) has demonstrated effectiveness in improving the social and communication skills of children diagnosed with ASD through the implementation of mirroring techniques. The use of mirroring movements to model behavior has been utilized to stimulate the mirror neuron system (MNS) to promote typical social learning and behavioral imitation. Potentially integrating mirroring techniques into speech therapy could increase the child’s opportunities for learning and practicing social skills to improve the child’s verbal and nonverbal communication. This poster presentation will demonstrate how the mirroring techniques used in DMT can be integrated within speech therapy to address the communicative challenges experienced within this population. (Faculty Sponsor: Ms. Kimberly Mory)

25. LEARNING THROUGH PLAY - A CENTER BASED APPROACH. N. Burney. Department of Teacher Education

Young children are intrinsically active learners who learn through touch, feel, experimentation, and unbarred creativity. Early childhood education enforces these traits through the implementation of centers. Children are very much interested in the world they live in; centers are a symbolic representation of their world. In this “world” children can safely try many ideas that fit their level of understanding. They gain confidence and start to believe that they are capable learners. Unfortunately, in many day care settings, teachers are not always required to have Early Childhood certification, which can limit their knowledge on the benefits of learning through play. The purpose of this project is to educate teachers on the impact center learning has on the development of the whole child through targeted observations, redesigning of centers, collaborations with teachers, unpacking informal survey data, and professional development sessions in an early childhood day care center. (Faculty Sponsor: Dr. Amanda Huribut)


This study seeks to inform about how meta-emotions affect one’s ability to accurately detect the presence or absence of a target during a signal detection task. Eighty-two students enrolled in an undergraduate cognitive psychology course at a public university completed a study that included the Meta-Emotions Scale, which measures participants’ cognition and awareness about emotions, and a signal detection task, which measures their ability to detect a target visual stimulus, in a field of additional stimuli. Further demographic information and measures related to mindfulness, emotion, and mood were collected from a PsychData survey. Researchers hypothesize that individuals with higher scores on the Meta-Emotion Scale will demonstrate an increased accuracy of correct detection of the stimulus; individuals with lower scores on the Meta-Emotion Scales will demonstrate a decreased accuracy, measured as ‘misses’, or inability to detect the stimulus. Data will be analyzed utilizing SPSS; results, discussion, and conclusion to follow. (Faculty Sponsor: Dr. Danica Harris)

27. MINDFULNESS AND EXPERIENTIAL AVOIDANCE ON RISKY DECISIONS. B. Claiborne, L. Underwood, E. Villeda, T. Zulfiqar, J. Crawford. Department of Psychology & Philosophy

Experiential avoidance is the tendency to avoid negative internal experiences (Gamez, 2011). Mindfulness refers to an alert state wherein an individual perceives mental contents, including perceptions, sensations, cognitions, and affect. (Walach, 2006). Decision making processes involve a certain level of risk assessment. This study investigates the effects of mindfulness and experiential avoidance on risk-taking tendencies. Participants included 82 students enrolled in a cognitive psychology course at a southern university. Each participant completed a survey on PsychData which included demographic questions, the Multidimensional Experiential Avoidance Scale (MEAS), the Mindful Attention Awareness Scale (MAAS), and a risky decision making lab. Researchers hypothesized that individuals who scored higher in mindfulness would take less risks than those who scored lower in mindfulness, and individuals who scored higher in experiential avoidance would make riskier decisions than those who scored lower in avoidance. Results will be analyzed using SPSS; results and discussion will follow. (Faculty Sponsor: Dr. Danica Harris)

Mindfulness and meta-emotions influence awareness, and how attentive someone is in the present moment. Both can contribute to someone’s performance on a position error task, which consists of remembering a list of items in a specific order. In the present study, participants included 82 college students enrolled in an undergraduate cognitive psychology course at a public university in the south. Participants were instructed to complete a PsychData survey which contained demographic questions and the following scales: Meta-Emotion Scale (MES) and Mindful Attention Awareness Scale (MAAS). Researchers predict that higher scores on the MES, will impact accuracy on recency recall, and primacy recall, on a position of error task. Additionally, it is predicted that participants who score lower on the (MAAS) will demonstrate less accuracy on recency and primacy recall, on a position of error tasks. The data will be analyzed using SPSS; discussion and conclusions will follow. (Faculty Sponsor: Dr. Danica Harris)

29. MODELING IMMUNE THERAPY USING DIFFERENTIAL EQUATIONS. J. Odunayo. Department of Mathematics & Computer Science

Immunotherapy is a biological therapy that consistently resists the disease. It generates antibodies in the blood that help us fight infections in lymph or blood. It also provides prolonged resistance to fight future infections. Differential equations and their important role in the study of immunotherapy is impossible to overestimate. Differential equations help us interpret the actions of monoclonal antibodies and cytokine therapy. T-helpers have both advantages and disadvantages (during their excessive or insufficient activity in the body). There are good reasons for the importance of using differential equations to study the body’s immune system, especially B-cells. The production of T-helper (TH1 or TH2) by cytokine and feedback can be redirected by their specialization of naïve Th0 cells and with the help of the IL-4 citrate for Th2. T cells or antigen, which is not a helper regulator, affect immunity depending on which cells (Th1 or Th2) are more active. Many times, the disease, sometimes related to overactivity of either Th1 or Th2, does not correspond to the supplied experiment. Th1 is sometimes changed (transformed) into Th2 through glutathione. The use of differential equations in the simulation of the immune system will help those who work in the clinical department to study the feedback Th1 and Th2 and observe the qualitative shift of the immune disease by type Th1 in Th2 and vice versa. Moreover, minimizing the dose of corticosteroid in the treatment of immune diseases can also be achieved by differentiating Th1 and Th2. (Faculty Sponsor: Dr. Ellina Grigorieva)


Emergency responders depend on clear communication under challenging circumstances, yet 40% of firefighters have a documented hearing loss due to noise exposure on the job. The Texas Woman’s University Communication Sciences & Oral Health department is working directly with members of the Denton Fire Department to perform audiologic occupational monitoring and developing a hearing conservation program to address the unique needs of firefighters. Current practices in place within the Denton Fire Department regarding hearing protection and risk awareness are being evaluated using the guidelines of the Occupational Safety and Health Administration. Baseline hearing measures are being documented for the 180 firefighters within the department, with each member surveyed on exposure, use of hearing protection, and attitudes about hearing health. Findings from the workplace assessment, hearing evaluations, and survey responses are being used by students to develop a targeted hearing conservation program to address hearing health in firefighters, in collaboration with the faculty audiologist. (Faculty Sponsor: Dr. Sarah Wainscott)

31. PREDICTING EMPLOYEE CHURN USING MACHINE LEARNING TECHNIQUES. D. Morris. Department of Mathematics & Computer Science

Employee churn is the departure of employees at business and governmental levels outside the control of the entity. Due to its severity and resulting losses for organizations, it is a key problem for all Human Resource departments particularly in highly competitive service markets. Reliable predictive models for employee churn will be useful in devising employee retention plans and reducing future loss risks. In this project, we discover critical factors related to employee departure and build predictive employee churn models using major machine learning techniques. Two types of machine learning techniques: supervised algorithms (Support Vector Machine and Random Forest) and unsupervised algorithms (kMeans and Agglomerative) are applied and comparatively measured. Cross validation, scaling, and feature expansion are used to reduce over-fitting, minimize outliers, and optimize feature dimensionality for model tuning. These experimental results show that SVM method is the best predictor (97%) in predicting employee churn. (Faculty Sponsor: Dr. Wen Xu)

32. RISKY DECISIONS: HOW MINDFULNESS AND EXPERIENTIAL AVOIDANCE IMPACTS DECISION MAKING. S. Bishop, N. Moua, J. Martinez, L. Mendez, P. Singh. Department of Psychology & Philosophy

Mindfulness has been defined as being attentive to, and consciously aware of, what is taking place in a present moment (Brown, & Ryan, 2003). Experiential Avoidance is defined as having the tendency to actively avoid negative internal experiences (Gámez, Chmielewski, Ruggero, Kotov, & Watson, 2011). Decision making is a process that may have risks involved. This study investigates the impact of mindfulness and experiential avoidance on decision making. Eighty-two undergraduate students enrolled in a cognitive psychology course at a southern public university participated in an online survey via PsychData which included demographic questions, and scales such as the Mindful Attention Awareness Scale (MAAS), and the Multidimensional Experiential Avoidance Questionnaire (MEAQ). Researchers hypothesized that higher scores on both the MAAS and MEAQ will impact decision making across various different conditions. Results will be analyzed using SPSS. Discussion and conclusions will follow (Faculty Sponsor: Dr. Danica Harris)

33. SENSORY PROPERTIES OF RAW AND ROASTED WHITE BUTTON, CRIMINI, AND PORTOBELLO MUSHROOMS. J. Sissons, M. Shanks, X. Du. Department of Nutrition & Food Sciences

This study compared the sensory profiles of white button, crimini, and portobello mushrooms in both raw and cooked forms to gain an understanding of what aroma-active compounds are important for each type of mushroom and how the cooking method impacts the overall flavor profile of each. Ten participants were trained to recognize eleven of the primary flavor descriptors for mushrooms and the intensity of each descriptor for a quantitative descriptive analysis panel. References were made from chemical standards for each descriptor. The roasted, dark meat, and fried sensory attributes increased for all mushrooms when cooked compared to raw. Conversely, the hay, woody, and earthy sensory attributes
decreased for all samples when cooked. The portabella mushroom sample showed the highest intensity of dark meat flavor when cooked. These results contributed to the growing body of research into how mushroom aroma compounds can be utilized for flavor formulation. (Faculty Sponsor: Dr. Xiaofen Du)

Supported by USDA grant 2018-67018-27627 and TWU Research Enhancement Program.

34. STRANGULATION AND SUFOCATION OF PREGNANT WOMEN CAUSED BY INTIMATE PARTNER VIOLENCE. K. Bezner, P. Hamilton, E. Restrepo, F. Liu, P. Mancuso. College of Nursing - Denton

Purpose: The study’s purpose is to determine the rates of maternal death caused by strangulation and suffocation and the risk to pregnant women. Study Design: This is a descriptive cohort, epidemiological study. Sample: We use mortality data from the National Vital Statistics System. Analysis: The analyses include calculations of frequencies, analysis of variance, and chi square. Results: Between 2013-2015, I found that the same number of women died from assault by strangulation, hanging or suffocation as from gestational diabetes. In this study I compare rates for 2016 with those between 2013-2015. Implications: Analyzing risks for maternal mortality beyond comorbid conditions brings attention to the role intimate partner violence plays in deaths of women who are pregnant or died within one year after pregnancy. (Faculty Sponsor: Dr. Patti Hamilton)


The “Swim with Me” project is a collaboration between the Adaptive PE program serving the Denton Regional Day School Program for the Deaf and students in communication sciences at TWU. Through four swimming sessions students work with preschoolers who are deaf to build confidence in the water and develop skills in movement and independence, at the same time capitalizing on opportunities to build visual and spoken language vocabulary with follow-up in the classroom. This model of interprofessional practice will be reviewed considering benefits to the children, interdisciplinary training for the TWU students, the significance and effects on the families of the students as well as the broader view and the impact on future collaborations. Documentation of the children’s performance and developed skills are conducted by TWU students at each session distributing a shared responsibility in the experience-based learning opportunity. (Faculty Sponsor: Dr. Sarah Wainscott)


This research will look at how the Global Positioning System works by using calculus. GPS, Global Positioning System, is a helpful tool that is used by the military and for common use. The Global Positioning System operates by using a network of satellites. The method to calculate any position on Earth is called trilateration. GPS computers calculate the position vector of a receiver using the changes in the trilateration results. It calculates changes in time and distance to determine the receiver’s velocity vector. These positioning vectors are also used to obtain useful information for optimal direction-giving. The Global Positioning System is used for navigation as well as weather forecasting and global climate studies. (Faculty Sponsor: Mr. Paul Ingram)


Recollection rejection is vital in eliminating false memories (Lampinen & Arnal, 2009). When filler words are presented in synonymous pairs, recollection rejection decreases, affecting accuracy in memory retrieval (Lampinen & Arnal, 2009). Mindfulness is characterized by awareness of thoughts, feelings, and sensations related to one’s present experience (Brown & Ryan, 2009). This study will examine the effect of mindfulness and filler words on memory span. Participants included 82 students, enrolled in a cognitive psychology course at a public southern university. Participants completed a PsychData survey consisting of demographic questions and a free write sample detailing their typical day. Students then completed a series of labs, including a memory span task. Researchers hypothesize that individuals who use more filler words, and have lower levels of mindfulness will demonstrate lower accuracy during the word and digit conditions, on a memory span task. Results will be analyzed using SPSS; discussion and conclusion to follow. (Faculty Sponsor: Dr. Danica Harris)

38. THE EFFECTS OF ATTENTION AND EMOTION ON RECALL IN A SERIAL POSITION TASK. J. McGuire, S. Nickerson, M. Thomas, K. Wells. Department of Psychology & Philosophy

Recall is a critical part of cognition. Serial position refers to order of stimuli in a list. Recall of the first position stimulus indicates a primacy effect, and recall of the last position stimulus indicates a recency effect. Meta emotions are reactions to one’s own emotions (Mitmansgruber, Beck, Höfer, and Schübler, 2009). This study will examine whether Meta-Emotion Scale (MES) and Mindful Attention Awareness Scale (MAAS) scores lead to accuracy or deficiencies in recall of the primary and recent stimuli, in a serial position task. A PsychData survey was conducted to first obtain basic demographic information from 82 undergraduate participants from a public university in the south. Once demographics were obtained, the MES and the MAAS were completed. Upon completion of the initial survey, a cognition lab was administered to obtain data on serial position task accuracy. The data collected will be analyzed using SPSS; discussion and conclusion to follow. (Faculty Sponsor: Dr. Danica Harris)

39. THE EFFECTS OF DAILY WHEY PROTEIN SUPPLEMENTATION ON INSULIN ACTIVITY IN WOMEN WITH POLYCYSTIC OVARIAN SYNDROME. L. Sebastian, S. Broughton. Department of Nutrition & Food Sciences

This study examines the acute effects of daily whey protein (WP) supplementation on insulin sensitivity in women with and without polycystic ovarian syndrome (PCOS) after 7 days. One of the leading causes of infertility in reproductive-aged women worldwide, PCOS is commonly linked with insulin resistance. Women were administered an oral glucose tolerance test (OGTT) on days 0, 1 and 7 of WP supplementation, and the resulting plasma samples collected were measured for insulin and glucose. Differentiated 3T3-L1 mouse adipocytes were also treated with the OGTT plasma samples to evaluate possible alterations in insulin signaling pathways as result of PCOS and WP supplementation. Preliminary results indicate that WP had significant impact on insulin concentration but not glucose levels during the 7-day period. Continued analysis of the samples is upcoming. Overall, acute WP treatment can potentially reduce glucose responses through the enhancement of insulin release following glucose load in both groups. (Faculty Sponsor: Dr. Monique LeMieux)

Supported by TWU Experiential Learning.
Abstracts – Session V: Wednesday, April 10 (2:40 - 4:00 pm)
mindfulness measures. They were then asked to complete a memory span task through Cengage online, wherein participants were shown a series of random digits, letters, and words and asked to recall them in the given order. Researchers hypothesized that participants who scored higher on the Mindfulness Attention Awareness Scale (MAAS) and the Freiburg Mindfulness Inventory (FMI) will demonstrate longer digit, letter, and word memory span, during a memory span task. Results will be analyzed through SPSS, and discussion and conclusion will follow. (Faculty Sponsor: Dr. Danica Harris)

VIRTUAL PRESENTATION


Background: Healthcare spending is increasing exponentially and secondary to unstable and ineffective chronic disease management. Remote patient monitoring (RPM) is of key interest to address related health disparities. Purpose: The purpose of this project is to explore the educational needs of clinicians and suggest how to build RPM curriculum that supports clinicians. Project Description Utilizing a popular nursing education model where data management, technology, patient safety/quality and nurses’ roles intersect, this project will identify tailored solutions that are essential to providing this quality service. The project will also explore reduction of the associated per capita cost. Methodology: Proposed RPM curricula will be created by student and faculty, then validated by subject-matter experts and other evaluations. Clinical expertise, data analytics, industry characteristics, and roles development will represent the concepts-based curriculum components. Results Clinician effectiveness using RPM, patient satisfaction with RPM, and reduction in costs will be targets for successful implementation (Faculty Sponsor: Dr. Mari Tietze)

1. IMMERSE COMFORT. D. Hugley, K. Smith, L. Anaya. Department of Mathematics & Computer Science

This project seeks to draw in audience interaction via tactile input. Consisting mainly of a fabric screen, the digitally driven art piece is designed to display images when touched. As the viewer manipulates the screen, the images are changed, as are sounds that work in tandem with the piece. This combination of the elements will produce an environment of immersive comfort that will reward the viewer throughout and sound. (Faculty Sponsor: Dr. David Gardner)

2. STORIES IN A NEW LIGHT. A. Lyne, I. Martinez, K. Kiespert. Department of Mathematics & Computer Science

In this project, we will be portraying children's stories through an interactive shadow puppet theater installation. Within this installation, observers will get to experience a re-imagining of different scenes from the stories told with intervention from technological components which enhance and bring the stories to life. We plan on using a RaspberryPi or other micro-controller to influence the various elements of this piece to make it a more impactful experience for the participant. Our goal in this piece is to grant the audience a short reprieve from the monotony of daily life and re-experience the joy of stories. (Faculty Sponsor: Dr. David Gardner)

3. WHITE NOISE. R. Mason, K. Kocis, K. Cox. Department of Mathematics & Computer Science

Mental illness is an often-overlooked epidemic in America. This in part is because it is essentially hidden within a person’s mind. The goal of this project is to reframe aspects of mental illness in an externally experienceable manner. Sound, images, and other sensory focused I/O devices will be programmatically controlled to respond to audience member interaction and provide them with an opportunity to consider mental illness in a deeper way. (Faculty Sponsor: Dr. David Gardner)

4. RECONTEXTUALIZING THE CYCLE OF POVERTY. E. McWhorter, R. Mohammed, B. Beer. Department of Mathematics & Computer Science

This project seeks to demonstrate the cycle of poverty in a capitalist system through a digitally driven interactive art installation. We will attempt to represent the difficult nature of changing one’s own position in a system with the tools that system provides, and in doing so draw parallels between the installation and the world at large. Our goal is to portray these themes through use of such equipment IOT devices, microcontrollers, and different types of input/output hardware. (Faculty Sponsor: Dr. David Gardner)

5. THE IMPORTANCE OF LOVING ONE’S SELF AND LIVING IN THE MOMENT. A. Oquindo, A. Wear, B. Lovick. Department of Mathematics & Computer Science

We live in a noisy and distraction filled world. It is hard to allow yourself to experience peace and to truly focus on yourself in the society we have set before us. Through the use of sensors, visual and auditory stimuli, in conjunction with the use of programmable microcontrollers and small form factor commuting, we hope to allow people to reconnect with the beauty of existing. (Faculty Sponsor: Dr. David Gardner)
Session VI: Wednesday, April 10 (6:00 – 7:20 pm)

POSTER SESSION VI: ACT 2


In recent years school shootings have become more common in the United States. Many questions follow each of these tragedies. How and why did each take place? What is the mentality behind these school shootings? Do the killers, usually young people themselves, share any experiences or conflicts that led to the terrible actions they took? Should their earlier behaviors have warned those around them? Using experts' articles, contemporary news sources, personal accounts, and political rally stories, we will be detectives investigating answers to these questions. (Faculty Sponsor: Dr. Lybeth Hodges)

2. "MAMAS DON'T LET YOUR BABIES GROW UP TO BE COWBOYS"...THE MYTH AND REALITY OF COWBOYS. A. Martinez, M. Ollive. Department of History & Government

When we hear the word “cowboy,” most of us conjure up an image of a man in chaps, wearing a western-style shirt, cowboy boots and hat, and a revolver on his hip. It’s even the image most of the world still identifies with their idea of Texans. Yet, while this is the image we think and often promote about cowboys, and the way in which most of them are usually portrayed in literature and media, how does this image match the reality of the late 19th century cowboy life? Through the use of both primary and secondary sources, we will discover which parts of our belief about those men are accurate and which parts are just popular myths. (Faculty Sponsor: Dr. Lybeth Hodges)

3. APPLICATIONS AND CHARACTERISTICS OF VELOCITY, SPEED, AND CURVATURE: FERRIS WHEEL. A. Christopher, M. Mata, V. Scott, P. Ingram. Department of Mathematics & Computer Science

In the real world, our minds problem solve in a way in which it is hard to explain to others. We tend to describe how to approach a problem with hand gestures and as many words as possible. In calculus III, we were introduced to vector-valued functions in terms of arc length and curvature in 3-D space. This could be related to real life applications such as the way a satellite orbits the earth or the parabolic curve of a basketball as it scores a goal. For our poster, we wanted to solve and observe the arc length and curvature of two rates of motion, a person on a Ferris wheel and an object being thrown at a certain point of time from ground level. To solve for these scenarios, the formulas for arc length and curvature is needed to define the curve based on parameters for a continuous path. (Faculty Sponsor: Mr. Paul Ingram)

Supported by TWU Department of Mathematics and Computer Science.

4. ARE NORMAL WEIGHT KIDS DIFFERENT THAN OBESE KIDS IN RESPECT TO FIBER INTAKE, VITAMIN C, VITAMIN B12, AND URIC ACID? B. Emerson, K. Lopez Licea. College of Business

This project analyzed secondary data to discover whether normal weight kids differ from obese kids in respect to their fiber, vitamin C, vitamin B12, and uric acid intake. A total of 120 boys and girls between the ages of 6 and 9 participated in this secondary study. The pertinent information collected that we used in our analysis to test our four hypotheses includes each child's gender, age, BMI, BMI classification, waist circumference, as well as each individual's supplement intake. We used the data analysis tool t-test and multiple regression chart to analyze consumptions of both normal weight and obese individuals. (Faculty Sponsor: Dr. Kittipong Boonme)

5. ARGUMENTS AND RULES OF INFERENCE. M. Fontenot, B. Greer, E. Dickson, J. Walling, E. Mundt. Department of Mathematics & Computer Science

A brief synopsis will be given on how arguments and rules of inference work and how invalidity substantially affects testing experiments. Both conditional and biconditional propositions will be tested amongst examples of real-life applications involving rules of inference. For example, if a student focuses more time studying, then they will spend less time working (i.e. have a job). If the student decides to spend more time working, then they will have less time to study. Variables, such as interview skills, GPA, amount of hours a student is currently taking, and many similar observations, will be taken into account. By applying collegiate attributes to rules of inference, there is an opportunity for other students to determine if the above hypotheses can lead towards a valid conclusion or an invalid conclusion. (Faculty Sponsor: Mr. Paul Ingram)

6. ARTIFICIAL SWEETENERS AND THEIR EFFECTS ON THE HUMAN BODY. J. De La Rosa, K. Dam, D. Velasquez. Department of Chemistry & Biochemistry

The increase of diabetes and obesity over the past decades have led to sugar and calorie restricted diets making individuals dependent on artificial sweeteners as an alternative to sugar. Commonly synthesized sweeteners used as ingredients are aspartame, saccharin, neotame, acesulfame-K, and sucralose. These alternatives are used in small quantities since they are a hundred time sweeter than sugar meaning less caloric intake, thus they bear a good reputation. Although redeemed safe by the FDA, they become harmful after long-term consumption in that cause metabolic syndrome which disrupts the function of gut bacteria in humans. This later develops to type 2 diabetes, hypoglycemia, cardiovascular disease, and obesity due to alterations in metabolic pathways. (Faculty Sponsor: Dr. Richard Sheardy)


The point of this project is to find the max height needed to serve a volleyball into the court. We are using an initial serving velocity of 38 mph, an angle of 12° with respect to the ground, and Courtney's height and vertical which is 7.7 feet, to calculate the maximum height the serve will be. We will also be using the distances of half court or 30 feet and the desired length of 45 feet. Using the formula \[ r(t)=\left[ v_0 \cos\theta \right] t + \left[ h + \left( v_0 \sin\theta \right) - \frac{1}{2} gt^2 \right] \] and that gravity is 32 ft/s², we will determine these heights. (Faculty Sponsor: Mr. Paul Ingram)

8. CARDIORSPIRATORY RESPONSES DURING EXERCISE ON A TREADMILL WITH BODY WEIGHT SUPPORT IN OBESE INDIVIDUALS. C. Sun, S. John, A. Mathis, K. Biggerstaff. Department of Health Promotion and Kinesiology

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The purpose of the study was to compare the cardio-respiratory response on a standard treadmill (ST) and a body-weight supported treadmill (BWST) in overweight and obese individuals. Seven participants performed a ST and BWST trial. Identical exercise sessions were performed on each treadmill except 25% of body weight was supported during the BWST trial. After a 2 minute warm up, the participants completed 3 stages at 2.8 mph while the grade increased to 2%, 5%, and 8%. A 2 minute cool down followed the exercise. During the study, blood pressure, heart rate, and respiratory gasses were measured during the last minute of each stage. VO2 and VCO2 were significantly lower (p<0.05) at 8% grade on the BWST trial compared to the ST trial. Data suggests that the ST elicits greater work intensity at the same speed and grade as a BWST with 25% weight reduction. (Faculty Sponsor: Dr. Kyle Biggerstaff)


Children’s books have had a tremendous impact from the start of the post-Civil War Reconstruction era to today. Children’s books have changed drastically over time. Those written before the modern era usually taught morality or religious values; they rarely told fun stories or even had pictures. But as the United States developed, so did the scope and content in these books. They became more popular and present. The Poky Little Puppy and Green Eggs and Ham are still best sellers and sales of children’s books are profitable, as over 183 million juvenile fiction books were sold in the United States just last year. This research will examine the change in purpose and type of children’s books today. We will gather evidence from journal articles and works of and on children’s literature. Overall, children’s books have changed drastically over time, and they will only keep developing as society changes. Why and how did these changes occur? (Faculty Sponsor: Dr. Lybeth Hodges)

10. CHROMATIN COMPACTION AND NUCLEAR CALCICUM INFLUX IN RESPONSE TO UVB RADIATION. R. Sinha Roy, M. Abbas, A. Vo, M. Bergel. Department of Biology

Chromatin, the complex of DNA, associated proteins and RNA, has several levels of folding. Gene expression, DNA replication, and DNA repair are cellular functions dependent on the compaction of chromatin. Previous studies in our lab demonstrated that UVC irradiation induces immediate and global chromatin compaction that protects the DNA from further damage. This study aims to understand the relationship between UVB irradiation and the compaction of chromatin. Here we show that human cervical cancer cells irradiated with UVB demonstrate an increased chromatin compaction level as quantified by Nuclear-ID green fluorescence dye. We currently study the influx of calcium ions into the nucleus as a possible mechanism for this compaction. By using the physiological relevant UVB wavelength we will broaden our understanding of an innate cellular mechanism that protects the DNA from damage due to exposure to solar radiation and deciphers the signaling pathway that regulates this response. (Faculty Sponsor: Dr. Michael Bergel)

Supported by TWU Experiential Learning and TWU Center for Student Research.

11. CLONING THE GENE FOR A VIRAL PORTAL PROTEIN TO STUDY ITS INTERACTIONS. D. Diaz, L. Hanson. Department of Biology

Human cytomegalovirus (HCMV) is a herpesvirus that can infect people of all ages. HCMV does not cause major problems in healthy individuals so it goes unnoticed; however, HCMV can be highly dangerous if contracted by an individual whose immune system is not fully working, such as babies and people with AIDS. HCMV can only infect people; thus, mouse cytomegalovirus (MCMV) is used as a model since it has similar pathology and genetic composition as HCMV. Previous studies have found that deletion of the M140 protein is important for viral particle assembly in macrophages. When M140 was isolated from infected cells, an interesting viral protein appears to bind to it, the M104 protein. M104 is a portal protein required for the viral DNA to enter the protein shell. By cloning M104, it will be possible to study its interaction with M140 and investigate how it affects viral particle assembly. (Faculty Sponsor: Dr. Laura Hanson)

12. CONTINUING THE PIPELINE TO BECOMING A TEACHER: REFLECTIONS FROM THE TEACHDENTON EXPERIENCES. D. Edwards. Department of Teacher Education

Sparking a love of learning in young children is what has propelled me to enter the teaching profession. During my high school experience, I participated in a TeachDenton program that allowed me opportunities to learn more about the teaching profession. I have been able to strengthen my pedagogical knowledge and skills not only through the educational coursework, but through experiential learning opportunities outside of my required coursework. This presentation details the impact of the TeachDenton initiative on my growth and development as a preservice teacher. The TeachDenton partnership has allowed me to network with various educators at campuses in Denton ISD which have led to substitute opportunities in the district. I have been able to draw from these experiences and make stronger connections to my educational coursework. This experience has improved my confidence and ability to work with students in K-12 settings. (Faculty Sponsor: Dr. Sarah McMahan)

13. CULTURE IN CHOREOGRAPHY: HOW CHINA USES DANCE TO PROMOTE ITS HERITAGE. M. Curless. Department of History & Government

Rooted in tradition yet motivated by modern advances, China is an ever-evolving nation that has fascinated people for centuries. The country’s history is steeped in colorful folklore and festivities that remind citizens of their heritage and introduce the country’s customs to the outside world. Specifically, dance is an art form that’s highly revered not only as entertainment but also as a means to preserving the past. I will research how China promotes its culture and provides historical narratives through traditional dance. The resources I’m using include books about Chinese dance; articles from the TWU JSTOR; a video of Chinese dance, costumes and choreography; and interviews with Chinese students who attend TWU. This will provide me with a well-rounded perspective of the country and allow me to see how historical events have affected China’s performing arts. In addition, I will create a dance that shares the story of my adoption. (Faculty Sponsor: Dr. LyBeth Hodges)

14. DEVELOPING A SCREEN FOR PROTEIN DEGRADATION. C. Sajan, M. Alkhatatbeh, Y. Kasu, C. Brower. Department of Biology

Fragments of the human TDP43 protein are major components of intracellular aggregates associated with ALS and other forms of neurodegeneration. Previously, we showed that ATE1 is required for the degradation of TDP43 fragments (Brower et al., 2013). In a recent study, we compared two specific neurodegeneration-associated TDP43 fragments, TDP43219 and TDP43247, which are ~85% identical and differ by a hydrophobic N-terminus of 28 amino acids. Interestingly, we found that TDP43247 is degraded in an ATE1-dependent manner, whereas TDP43219 is still degraded in the absence of ATE1, suggesting that an additional pathway participates in its degradation (Kasu et al., 2018). Here, we are
exploiting the 28-amino acids specific to TDP43219 to develop a screen in the baker’s yeast, Saccharomyces cerevisiae, to identify additional participants in the degradation of aggregation-prone fragments associated with neurodegeneration. (Faculty Sponsor: Dr. Christopher Brower)

Supported by National Institutes of Health grant R15NS095317 and TWU Research Enhancement Program.

15. EVALUATING PROVIDING FEEDING ADVICE VIA TEXT MESSAGING IN PRIMARY CARE TO PREVENT ONSET OF EARLY PEDIATRIC OBESITY. K. Lee, M. Mannix, K. Davis, M. Massey-Stokes, N. Habiba, C. Warren. Department of Nutrition & Food Sciences

According to the CDC, childhood obesity affects one in every five children age 6-19 years and has tripled since the 1970s. Childhood obesity causes immediate and long-term consequences for health and well-being. Obesity is resistant to treatment, suggesting prevention should be the priority. However, prevention efforts have not reduced obesity rates. Obesity often starts before age two. Currently, most doctors’ offices give parents of infants general pamphlets describing recommended feeding guidelines; however, these pamphlets are often overwhelming and overlooked. The purpose of this study is to determine whether texting new parents is more effective in promoting healthy feeding practices and preventing childhood obesity compared to usual care. Forty parents are being recruited to participate in a year-long pilot. Feeding data and the infants’ weight for length are being collected and will be compared between infants receiving feeding text messages and those receiving usual care. (Faculty Sponsor: Dr. Kathleen Davis)

16. EXPLORING THE CHALLENGES MINORITIES FACE IN STEM FIELDS. I. Hernandez. Department of Mathematics & Computer Science

STEM fields are slowly gaining more minorities, but there still seems to be a significant shortage. There are many obstacles that are interfering with the number of minorities in the STEM fields. In this research, I examined what is preventing many minority groups from being successful in these fields. An analysis of the access and affordability for these minority groups, as well as the social challenges they face in today’s society will also be discussed. (Faculty Sponsor: Dr. Ann Wheeler)

17. FACILITATING THE IMPROVEMENT OF ENGLISH SKILLS AND WORKPLACE LITERACY FOR TWU’S ENGLISH LEARNING EMPLOYEES. B. Gutierrez, L. Lopez Villanueva. Department of Teacher Education

The purpose of this QEP funded student project is to support the English and workplace literacy development of TWU employees whose first language is other than English. The importance of this project lies in its multiplying effect: by improving employees’ English skills and workplace literacy, these emergent bilinguals will be more empowered to navigate the work environment effectively (e.g. evaluations) and, hopefully, increase their participation in other aspects of their lives, such as their children’s and their own education. (Faculty Sponsor: Ms. Liliana Grosso-Richins)

18. GONADAL HORMONES MODULATE SEROTONIN-EVOKED OROFACIAL PAIN AND A POTENTIAL NEUROIMMUNE INTERACTION. H. McDonald, S. Kaur, A. Barton, L. Hanson, D. Averitt. Department of Biology

It is unknown why orofacial pain disproportionately affects women. Serotonin (5HT) elicits pain in tissues where it is released by immune cells such as macrophages, which can be hormone-regulated. 5HT activates pain-sensing nerves expressing transient receptor potential vanilloid 1 (TRPV1) ion channels. TRPV1 is a pain generator activated by heat and capsaicin. We hypothesized that 5HT enhances orofacial pain behaviors during hormone fluctuation and that we could detect 5HT release from macrophages. Rats received one injection of 5HT+capsaicinor vehicle+capsaicin into the cheek and swipes at the injection site were scored as nociceptive behavior over the hormone cycle. 5HT content of macrophage supernatant was quantified via enzyme-linked immunoassay. When estrogen peaked, rats exhibited significant nociceptive behaviors following injection of 5HT+capsaicin. Higher doses of 5HT were required to activate pain in male or females with low hormone levels. Our data implicate that estrogen modulates the neuroimmune activity of 5HT on pain. (Faculty Sponsor: Dr. Dayna Averitt)

Supported by National Institutes of Health grant R15DE025970 and TWU Research Enhancement Program.


How Gas Cars Impact our Lives Gas cars dominate transportation today, but are they as bad for the environment as we think? We researched materials and literature, and prepared a cost benefit analysis, showing the materials, the various fluids used, the energy cost to make and operate, and the environmental impact. We also prepared a separate list of the varying health concerns including the effects of lithium and gas on the human body, and the pollution from the production and use of gas cars. We found there are differences that normal gas cars have, including the different variations of the gasoline depending on if it’s a summer or winter blend gas, and the type of gas vehicle. Using the information provided we are able to prove that when compared to hybrid cars, gas cars are the better choice. (Faculty Sponsor: Dr. Mary Anderson)

20. I WISH I HAD. M. Moncus, A. Biles. Department of Mathematics & Computer Science

Idea: The Math lesson that we are going to present in this poster includes two sections. The first section will be using the concrete method with a teacher lead lesson using addition and subtraction problems with counters. The teacher demonstrates with five counters on the whiteboard/smartboard and says “I wish I had eight” and the students will pull out three counters on their table, this will continue demonstrating subtraction. The second section of the lesson will include a worksheet that will demonstrate addition and subtraction using the pictorial and abstract methods of learning. Students will have a work sheet, on one side will be addition and subtraction, problems like 2+5 = 7. The other side of the worksheet the student will draw out the counters to complete the addition and subtraction problem in order to demonstrate their understanding of each concept. (Faculty Sponsor: Dr. Shawnda Smith)

21. IDENTIFYING NOVEL TGF-β PATHWAY INTERACTORS IN THE ROUNDWORM MODEL SYSTEM CAENORHABDITIS ELEGANS. F. Lakdawala, L. Faure, T. Gumienny. Department of Biology

One mechanism that animals use for cell-to-cell communication is the transforming growth factor beta (TGF-β) family. It is required for homeostasis, development, and its misregulation leads to various developmental diseases, including cancer. To understand the regulation of TGF-β pathway signaling, we use the roundworm C. elegans, in which TGF-β is highly conserved and non-redundant. One TGF-β pathway in C. elegans, the DBL-1 pathway, is required for body size regulation. We are using genetic and molecular approaches to understand the regulation of the DBL-1 pathway and
the complex nature of body size control in C. elegans. We have identified different genes that regulate body size using a genetic screen and proteins that interact with DBL-1 pathway components using co-immuno-precipitation and mass spectrometry. Our findings reveal novel molecular interactions with this signaling pathway. (Faculty Sponsor: Dr. Tina Gumienny)

Supported by National Institutes of Health grant RO1GM097591, TWU Department of Biology, and TWU Experiential Learning.

22. INVESTIGATING THE USE OF COOKING TO TEACH MATHEMATICS. K. Hogan. Department of Mathematics & Computer Science

Dr. Ann Wheeler and Ms. Katelynn Hogan were interested in examining how the learning outcomes of students are affected when students engage in mathematics through the use of cooking-inspired techniques in a mathematics classroom, as well as the reactions future/current teachers who may teach mathematics respond to the lessons. Thus, Ms. Hogan developed four different cooking inspired lesson plans which incorporated either food and/or food-like elements, such as slime. Ms. Hogan co-taught one of the lessons with Dr. Wheeler in a first-grade classroom in May. Dr. Wheeler also taught an additional lesson in her summer geometry class for future and current teachers. (Faculty Sponsor: Dr. Ann Wheeler)

Supported by TWU Experiential Learning.

23. LET’S TALK ABOUT SEX, MAYBE: SEX EDUCATION FOR PEOPLE WITH INTELLECTUAL DISABILITIES. C. Fitzhugh. Department of Teacher Education

This integrated review of literature explored existing research in sex education programs that facilitate effective teacher and caregiver training of people who have an intellectual disability (ID). This poster will provide common themes in sex education programs which have been developed for people with ID. (Faculty Sponsor: Dr. Randa Keeley)

24. LOOSE CURRICULUMS SINK SHIPS: WORLD WAR II’S IMPACT ON UNIVERSITY STUDENT LIFE IN TEXAS. S. Reynoso, R. Stubblefield. Department of History & Government

The United States formally entered World War II in 1941, eventually enlisting and drafting American men aged 18 to 64 into the military. However, those left behind were not removed from the action. The war could only be won with the support and actions of citizens at home. This included young people, mostly women, in colleges across America. So how did World War II impact the student life in university campuses here in Texas? How did modifications to campus classes, clubs, activities, and volunteer work contribute to the U.S. efforts in winning the war? We hope to discover answers to these questions by exploring primary sources from Texas State College for Women, such as the Lasso and yearbooks, as well as wartime articles from Texas newspapers and students’ personal accounts. (Faculty Sponsor: Dr. LyBeth Hodges)

25. NANO BASED DRUG DELIVERY SYSTEM - SURFACE FUNCTIONALIZED NANOPARTICLES TARGETING CST NEURONS THROUGH THE HIGH AFFINITY CELL SURFACE RECEPTOR. M. Cao, R. Veetill, S. Ghosh, T. McAllister, D. Hynds. Department of Biology

Spinal cord injured (SCI) individuals endure life-long paralysis and other significant losses to the quality of life. However, the use of therapeutics to treat SCI is complicated by factors that limit the delivery of therapeutics and targeting particular types of cells among the many cell types present in the CNS. Nano-carriers that are capable of crossing the blood brain barrier can be used to target therapeutics to particular subsets of neurons. In our work, Ferromagnetic nanoparticles encapsulated in tunable PEG biopolymer were synthesized and surface functionalized with -COOH and -NH2 groups. They were fluorescently tagged to study the mechanism of cellular uptake and targeted drug delivery to neurons. Targeting of surface functionalized nanospheres through the high affinity cell surface receptor (TrkA, TrkB, TrkC) was analyzed. The use of targeting molecules specifically for the neurons would allow us to direct the nanospheres to the target neurons. We suggest that our nanoparticle drug delivery systems are able to target specific neurons and provide on-demand release of a specific drug. (Faculty Sponsor: Dr. DiAnna Hynds)

Supported by TWU Department of Biology and TWU Research Enhancement Program.

26. NEUTROPHIL KINETICS OF BALB/C MICE TREATED WITH TWO NOVEL ANTI-CANCER AMIDOXIMES, JJMB7 AND JJMB9. V. Thayer, A. Gekombe, K. Underbrink, E. Meza, T. Ngo, M. Bergel. Department of Biology

Breast cancer is the most common cancer in women after skin cancer. In our lab, we have been assessing the effect of novel amidoximes, JJMB7 and JJMB9, on breast cancer tumor volume and lung metastases formation in BALB/c mice (IACUC approved protocol 2018-04). The breast tumors were induced in the mice via the 4T1 mammary carcinoma cell line, followed by treatment with the amidoximes, vehicle, or PBS (untreated). We also assessed the numbers of neutrophils versus lymphocytes through blood smears by cheek bleeding the mice. Cheek bleeding was performed on day 2 and every 5 days thereafter, for a total of 24 day experiment. On day 12 of the experiment the neutrophil count increased, supporting the role of neutrophils in formation of metastases as previously published. The neutrophil levels and their impact on the formation of lung metastases are currently being studied in our lab. (Faculty Sponsor: Dr. Michael Bergel)

Supported by National Cancer Institute R15, CPRIT (Texas), and TWU Research Enhancement

27. PLANTING THE SEED OF PARENT INVOLVEMENT TO HARVEST THE FRUITS OF STUDENT SUCCESS. E. Gutierrez. Department of Teacher Education

Active parental involvement is an important hallmark of effective schools (Sadker & Zittleman, 2012). The purpose of this project is to promote positive partnerships between schools and homes by increasing parent involvement through a campus Parent Teacher Organization (PTO) sponsorship and facilitating student engagement in extracurricular campus offerings. Specifically, this project analyzed results from a parent survey sent in December 2018 and the author worked in conjunction with campus administration and teachers to design appropriate recommendations for implementation. Recommendations included appointing a classroom PTO representative, creating student incentives such as weekly recognitions and monthly award assemblies that parents would be invited to attend to celebrate student achievement, using Facebook and other social media to communicate with parents, and hosting a cultural Cinco de Mayo celebration. This project details the process to enhance parental involvement and student engagement, including specific successes and challenges along the way. (Faculty Sponsor: Dr. Amanda Hurlbut)

28. RESISTANCE TRAINING AND ANTERIOR CRUCIATE LIGAMENT INJURY PREVENTION AND REHABILITATION. L. D’Abrosca, N. Tuttle. Department of Health Promotion and Kinesiology
The anterior cruciate ligament (ACL) is one of the key ligaments that assist in stabilization of the knee and connect the femur to the tibia. A large number of athletes, especially female soccer players, suffer from ACL injuries that can lead to months of rehabilitation. In extreme cases, injury to the ACL can end athletic careers. A thorough review of published literature will be used to compile all available data regarding ACL injury rate, prevention, and recovery among female soccer players. This review will include a search for ACL injury statistics, stretches and exercises that can help with prevention of ACL injuries, and exercises that will help rebuild muscle strength and joint stability following an ACL injury in female soccer players. The purpose of this project is to inform the public of injury statistics and the current recommendations regarding prevention and rehabilitation of ACL injuries among female soccer players. (Faculty Sponsor: Dr. Anthony Duplanty)

29. RESISTANCE TRAINING FOR PREVENTION AND REHABILITATION OF THE ULNAR COLLATERAL LIGAMENT INJURY. M. Meek, N. Tuttle. Department of Health Promotion and Kinesiology

The ulnar collateral ligament (UCL) helps to stabilize the elbow joint by attaching the humerus to the ulna. This medial elbow ligament is often injured in sports, for example baseball pitching that involves overhand throwing. A plethora of Major League Baseball (MLB) pitchers have suffered from torn UCLs and have required surgery, also known as Tommy John surgery. A complete review of the published literature will be performed to compile all available data on UCL injury rate, stretches and exercises for UCL injury prevention, and exercises that will help recover strength and range of motion following UCL surgery among MLB pitchers. This review will provide the current exercise and stretching recommendations for UCL prevention and rehabilitation for MLB pitchers. The purpose of this review is to highlight resistance training as a key component for UCL injury prevention and provide MLB pitchers’ UCL injury statistics and rehabilitation processes. (Faculty Sponsor: Dr. Anthony Duplanty)

30. SEX DIFFERENCES IN THE AMYGDALOID PROJECTIONS TO THE PERIAQUEDUCTAL GRAY DURING INFLAMMATORY PAIN IN THE RAT. D. Cantu, S. Lulla, A. Murphy, D. Averitt. Department of Biology

The midbrain periaqueductal gray (PAG) is a primary center for opioid-based analgesia. The PAG projects to the rostral ventromedial medulla (RVM), which projects to the spinal cord to inhibit pain. The amygdala projects to and engages the PAG-RVM circuit, however these studies were conducted in males. Our objective was to delineate amygdala-PAG projections in the female rat and determine if they are estrogen-sensitive and activated by inflammatory pain. Rats received an injection of retrograde tracer fluorogold into the PAG and 10 days later the hindpaw was injected with Complete Freund’s Adjuvant to induce inflammatory pain. After 24hrs, brains were extracted, sectioned, and processed by immunohistochemistry. Analysis indicate that pain induced greater Fos expression in male central (CeA) and medial (MeA) amygdala. Interestingly, females showed increased CeA-PAG activity, while males showed more activity in MeA-PAG. Altogether, amygdala projections to the PAG are sexually dimorphic, implicating a novel nociceptive pathway in females. (Faculty Sponsor: Dr. Dayna Averitt)

Supported by National Institutes of Health grants DA16272 and AR49555, National Science Foundation grant IBN-9876754, TWU QEP, and TWU Center for Student Research.


In this project we will explain the applicability of a Cayley table and group theory to nature, describing the symmetric group of the flower petals on a petunia, a wallflower, and an iris. Using the symmetric groups D5, D4, and D3 respectively for each flower according to their lines of radial symmetry, we will construct the Cayley tables of the flowers. (Faculty Sponsor: Mr. Paul Ingram)


Inorganic Chemistry laboratory, Chem 4511, led by Dr. Omary follows a research discovery-style. The lab involves two components, one based on the literature to reproduce the synthesis and properties of reported inorganic complexes whereas the second component targets the development of coordination compounds that have many applications for improving energy efficiency in technology. The metal-ligand pair results in different complexes depending on the starting materials used, which leads to many possibilities and applications. Proper characterization is used to determine the properties of these coordination complexes. This presentation will discuss the synthesis of [Cu(phen)2]+BF4- from [Cu(CH3CN)4]BF4- and 1,10-phenanthroline in a 1:2 ratio with the use of water for the solvent reaction. Different characterization techniques were performed to determine the structure and possible applications of the complexes, which include infrared spectroscopy (FT-IR), elemental analysis, thermogravimetric analysis (TGA), UV/Vis absorption and luminescence of the products in comparison to their starting materials. (Faculty Sponsor: Dr. Manal Rawashdeh-Omyary)

33. TECHNOLOGY IN THE MATHEMATICS CLASSROOM. V. Drew, A. Head. Department of Mathematics & Computer Science

In today’s classrooms, technology is becoming more prevalent in the way students learn. As far as grades 6-8 mathematics, there are a variety of applications available at our fingertips that can be very helpful in learning concepts such as fractions, measurements, formulas, and angles. Certain math applications which we discuss in our work can be used in place of various manipulatives, to access guided questions, and even student based applications where peers collaborate together. Implications for future classroom use including sample class activities will also be detailed. (Faculty Sponsor: Dr. Ann Wheeler)

34. THE EFFECT OF SIMULATION ON THE SELF-CONFIDENCE OF NEWLY LICENSED GRADUATE NURSES. R. Mante. College of Nursing - Denton

Newly licensed graduate nurses (NLGNs) enter practice with basic critical thinking skills and minimal experience to support transitioning their learned concepts into practical clinical practice. The transition period from nursing student to independently practicing nurse causes stress when they endeavor to consolidate and apply all their learned skills to clinical practice. Nurse turnover is costly and has a negative impact on hospital budgets, staff, and patient outcomes. New graduate nurse’s career needs a significant amount of training during the first year. One possible solution is the use of simulation to supplement traditional undergraduate clinical experience. This study intends to explore NLGNs perception of their simulation experiences and determine if simulation activity increases self-confidence and decreases anxiety when making clinical decisions. The results may demonstrate the value of using simulation as a supplement to traditional standard clinical experiences and identify ways to enhance newly licensed graduate nurses’ self-confidence. (Faculty Sponsor: Dr. Melanie Smith)

The sun produces UV radiation, which damages our DNA upon exposure to it. The length of exposure to the sun is proportional to the rate of damaged DNA and mutations which accumulate, and result in cancer. The literature has shown an increased core histone acetylation after UV irradiation in S. cerevisiae, and that acetylation of the histones leads to nucleotide excision repair. However, the exact kinetics of this posttranslational modifications has not been shown. Using a wild type budding yeast, S. cerevisiae strain BY4743p+, core histone acetylation was analyzed before UV irradiation, immediately after irradiation, at 5 minutes, 30 minutes, 60 minutes, 120 minutes, and 240 minutes after UVC irradiation. These studies utilized Western blotting to investigate H3K9ac, H3K14ac, and H4K5ac modifications. The overall acetylation of these sites increased but with a similar sinusoidal pattern. Understanding when histones are acetylated can aid in preventing skin cancer by promoting repair. (Faculty Sponsor: Dr. Michael Bergel)

36. THE PHYSICS INVOLVED IN OBSTETRIC/GYNECOLOGICAL DIAGNOSTIC MEASURES. L. Sebastian. Department of Chemistry & Biochemistry

Examining how physics is involved in the various diagnostic measures used by obstetricians/gynecologists, this research aims to provide a deeper understanding of the role of physics in modern medicine. Through careful research into the inner workings of x-ray machines, ultrasound machines, and mammograms, this research paper is able to simplify and demystify these machines that are so commonly found in doctors’ offices today. In a modern culture of simply accepting the way things work without understanding the “how,” this research helps to bridge the gap of understanding. And this understanding allows people to take their health into their own hands and as a result, make decisions that are both beneficial and safe for themselves. (Faculty Sponsor: Dr. Nasrin Mirsaleh-Kohan)

37. THE ROLE OF BAG6 IN NEURODEGENERATION. J. Johnson, Y. Kasu, C. Brower. Department of Biology

Fragsments of the TAR DNA binding Protein 43 (TDP43) are major components of intracellular aggregates associated with amyotrophic lateral sclerosis and other forms of neurodegeneration. Recently, we found that a number of aggregation-prone fragments, including those from TDP43, are bound by the molecular chaperone BAG6, whose clients include proteins with exposed hydrophobic regions. We found that BAG6 prevents fragment aggregation by increasing their solubility. In addition to making them more accessible to proteasome-mediated degradation, BAG6 may also play a direct role in the degradation of fragments through interactions with components of the ubiquitin proteasome system. In order to dissect its role in degradation, we fused a hydrophobic, 28-amino acid polypeptide derived from human TDP43 to the green fluorescent protein. Using this fluorescent reporter, we will examine the degradation of a BAG6 client not prone to aggregation. These studies will shed light on the role of BAG6 in neurodegeneration. (Faculty Sponsor: Dr. Christopher Brower)

Supported by National Institutes of Health grant R15NS095317 and TWU Research Enhancement Program.

38. TRACKING LEYDIG CELL LOSS WITH EDS BY SPECIFIC GENE MARKERS. N. Buitrago, M. Abadom, I. Osman, A. Talapatra, B. Singhal, N. Mills. Department of Biology

Ethylene dimethane sulfonate (EDS) is an alkylating agent that is cytotoxic to Leydig cells. Testosterone loss is an indicator of Leydig cell ablation in rats. However, we will look for gene expression marker that are directly changed or lost with Leydig depletion. As a result, analysis of the gene expression of known molecular markers within Leydig cells (3b-HSD, Inhibin-alpha, INS13, STAR, SF-1) assists in detecting specific levels of Leydig cells loss when they are treated with EDS. During this experiment we will be analyzing what effects time (6 hr, 15 hr, and 24 hr) after administration of EDS play in gene expression loss in Leydig cells. To accomplish this, RNA analysis for RNA integrity using Experion RNA analysis and gel electrophoresis will be utilized to determine the purity and integrity of the RNA. From these samples we will determine gene expression levels using reverse transcription and qPCR. (Faculty Sponsor: Dr. Nathaniel Mills)

Supported by TWU Research Enhancement Program and TWU Center for Student Research.

39. UNDERSTANDING BY DESIGN FRAMEWORK IN PHYSICAL EDUCATION. A. Gomes. Department of Teacher Education

A great need exists for teachers to implement methods that promote effective learning and facilitate transfer among students. This is especially true in the physical education (PE) setting as students seem to have difficulty in applying concepts to their own lives. This can be seen in the fact that 30 percent of adults do not perform regular physical activity and there is a 19 percent decrease in participation of high school students in PE classes. In addition, the percentage of obese and overweight students, and those in poor physical condition, has significantly increased in the past decades due to physical inactivity and poor dietary habits (Kelly & Melograno, 2004). The purpose of this project is to detail the process used to create a workshop for teachers around the Understanding by Design (UbD) framework, that emphasizes transfer and meaningful learning centered around the big ideas and enduring understandings in PE settings. (Faculty Sponsor: Dr. Amanda Hurlbut)

40. UNLOCKING THE DATA PUZZLE. R. Langston. Department of Teacher Education

Data analysis is an integral component of the responsibilities of a school leader. Assisting teachers in using data to drive instruction is the goal of data analysis. This project details the process used to create and implement a data protocol to assist teachers in looking at individual student data and creating corresponding plans for small group instruction in the areas of reading and writing. Teachers worked with their instructional coach, principal, and assistant principal to use the protocol as a method for analyzing the data, and then researched current curriculum and supplemental best practices to help students fill gaps in learning and increase performance on classroom and standardized testing measurements. This project will detail the processes, findings, and reflections on implementing these protocols in data analysis and intervention meetings among teachers. (Faculty Sponsor: Dr. Amanda Hurlbut)

41. USING BIMOLECULAR FLUORESCENCE COMPLEMENTATION TO EXAMINE TDP43 AGGREGATION. M. Alkhatatbeh, C. Brower, Y. Kasu, A. Arva, C. Sajan. Department of Biology

Intracellular aggregation of the TAR DNA binding protein 43 (TDP43) is a common feature of amyotrophic lateral sclerosis (ALS) and other forms of neurodegeneration. Previously, we found that proteolytic fragments of TDP43 assemble into a variety of biochemically distinct, soluble and insoluble aggregate species. Soluble oligomers emerge early in the assembly of larger insoluble
aggregates and are more susceptible to removal by the ubiquitin proteasome system. For many proteins, its soluble oligomers are also the most toxic species and are capable of “prion-like” cell-to-cell transmission. As such, targeting soluble oligomers offers potential in treating neurodegeneration. Here we developed a bimolecular fluorescence complementation strategy to identify soluble oligomers of TDP43 in vivo. This approach may be useful for identifying molecular determinants of aggregation and studying cell-to-cell transmission of toxic protein aggregates. (Faculty Sponsor: Dr. Christopher Brower)

Supported by National Institutes of Health grant R15NS095317 and TWU Research Enhancement Program.

42. VERHULST LOGISTIC EQUATION AND USA POPULATION. S. Flynn. Department of Mathematics & Computer Science

Population growth can be modeled using the logistic equation published by Pierre Verhulst in the 1846. The equation is a modification of the exponential growth equation based on the theory that, as a population nears certain limitations or carrying capacity, population growth will slow and then ultimately stop. This project will demonstrate how well the logistic equation models the United States population over time along with the predicted maximum population for the United States. It will evaluate points in time when the actual population varied from the prediction and propose potential causes. Also, it will consider what happens to the model when certain limitations change. (Faculty Sponsor: Dr. Ellina Grigorieva)

43. WAGE GAP IN STEM FIELDS. E. Rogers. Department of Mathematics & Computer Science

The wage gap between men and women in STEM fields has grown smaller over the years, yet there still is one to this day. Through my research work, I will discuss the history of the wage gap and ways in which it has changed throughout the years. A discussion of ways in which the gap can be lessened will also be detailed. (Faculty Sponsor: Dr. Ann Wheeler)

44. WHY ARE FEMALES MORE PRONE TO AUTOIMMUNE DISEASES THAN MALES? J. Shin. Department of Biology

The immune system plays a significant role that protects the human body from microorganisms that may invade and harm the body. However, sometimes the immune system functions incorrectly by treating some parts of the body as these microorganisms. This causes the body to become more susceptible to autoimmune diseases. Autoimmune diseases have been widely discussed and studied as they are types of disorders people deal with around the world. According to research, results have shown that females are more prone to most autoimmune diseases than males. Risk factors that are found to be common amongst the different types of autoimmune diseases in females include genetics and hormonal changes. For example, pregnancy affecting hormones and the disruption of the inactivate X-chromosome are some of the ways autoimmune diseases can be developed. This presentation will further expand on what has been discovered from literature research articles regarding this topic. (Faculty Sponsor: Dr. Laura Hanson)
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LIST OF TWU COMPONENTS WITH STUDENTS PRESENTING

Biology
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Chemistry & Biochemistry
Communication Sciences & Oral Health
Dance
English, Speech, & Foreign Languages
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SCHEDULE OF EVENTS

Tuesday, April 9, 2019

8:00 a.m. – 4:00 p.m.  ACT 2nd Floor Lobby  Information / Registration Tables
9:00 a.m. – 10:20 a.m.  ACT 2  Poster Presentations: Session I
                        ACT 301, 501, and 601  Platform Presentations: Session I
10:45 a.m. – 12:00 p.m.  ACT 301  “Celebration of Research” – Chancellor’s Student Research Scholars
12:00 p.m. - 1:00 p.m.  Blagg-Huey Library  Chancellor’s Luncheon to Honor Student Research Scholars (invitation only)
1:15 p.m. – 2:30 p.m.  ACT 301  Keynote Speaker: Dr. Erika T. Camacho
2:40 p.m. – 4:00 p.m.  ACT 2  Poster Presentations: Session II
                        ACT 301, 501, and 601  Platform Presentations: Session II

Evening Events:

5:30 p.m. – 7:30 p.m.  ACT 2nd Floor Lobby  Information / Registration Tables
6:00 p.m. – 7:20 p.m.  ACT 2  Poster Presentations: Session III
                        ACT 301 and 501  Platform Presentations: Session III

Wednesday, April 10, 2019

8:00 a.m. – 4:00 p.m.  ACT 2nd Floor Lobby  Information / Registration Tables
9:00 a.m. – 10:20 a.m.  ACT 2  Poster Presentations: Session IV
                        ACT 301  Platform Presentations: Session IV
11:00 a.m. – 1:00 p.m.  Patio Building  Visual Arts Graduate Students’ Open Studios (a light lunch provided)
1:30 p.m. – 2:30 p.m.  ACT 301  Showcase of Student Research
2:40 p.m. – 4:00 p.m.  ACT 2  Poster Presentations: Session V
                        ACT 301 and 601  Platform Presentations: Session V
4:00 p.m. – 5:20 p.m.  ACT 501  Special Platform Session
4:00 p.m. – 5:00 p.m.  ACT 301  “Why Research?”

Evening Events:

5:30 p.m. – 7:30 p.m.  ACT 2nd Floor Lobby  Information / Registration Tables
6:00 p.m. – 7:20 p.m.  ACT 2  Poster Presentations: Session VI

* Refreshments are provided in the ACT 2nd floor lobby during all presentation sessions.