40TH Annual Central California Research Symposium

Proceedings
of the
2019 Symposium

May 1, 2019
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FRESNO STATE
Research and Graduate Studies

Table of Contents

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May 1, 2019

Dear Central California Research Symposium Participants,

Welcome to Fresno State! The Central California Research Symposium (CCRS) provides a unique forum for the presentation and evaluation of a variety of scholarly activities supported by campuses across the Central Valley and beyond.

By encouraging scholarly exchange on topical, theoretical, and pragmatic issues, this event reflects Fresno State's commitment to promoting interdisciplinary research and discussion. This symposium further bolsters our mission to boldly educate and empower students for success by offering students and faculty the opportunity to share knowledge obtained through their research.

CCRS reminds us why we are here: To educate and empower student success through the discoveries they make, the diversity that will enrich their life experiences, and the distinctions they will imprint on a dynamic world.

We appreciate your presence and participation.

Sincerely,

Joseph I. Castro, Ph.D., M.P.P.
President

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Mr. Doug Carey	California State University, Fresno
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Mr. Chuck Radke	California State University, Fresno
Dr. Brian Tsukimura	California State University, Fresno
Dr. Oscar Vega	California State University, Fresno

Presentations will be judged based on the following criteria and considerations:

- Merit, creativity, timeliness, and value to an audience of scholars not necessarily from the same discipline
- Authors are encouraged to present their work using terminology suitable for a multi-disciplinary audience
- Results of completed work, as well as work-in-progress, for which there is preliminary data

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Oral Presentation Abstracts

Abigail Ajanel and Karine Gousset, Ph.D.
Zoua Xiong
abigail0590@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Physiological Concentrations Of Hydrogen Peroxide And Glutamate, Induce Tunneling Nanotube Formation In Hela Cells

Discovered in 2004 tunneling nanotubes (TNTS) are bridge like structure that allow cell-to-cell communication. They were initially described as long, actin-based, non-adherent to substratum, transient nano-structures. These structures are very heterogeneous and previous studies suggest that different types of TNTs are present in cell cultures. Further research demonstrates that the main function of TNTs is the transport of cellular components, pathogens and electrical signals between cells.

Most studies have focused on examining the molecules within cells that aid in TNT formation and function, but little has been documented on the role that exogenous molecules have on the formation of TNTs. Past research has determined that hydrogen peroxide (H2O2) which is secreted by cancer cells, induces TNTs in various cancer cell lines; however, the amount of H2O2 used was above normal physiological concentrations.

The aim of this research is to establish if TNT formation can be induced using H2O2 concentrations resembling normal physiological conditions. Furthermore, glutamate, another important signaling molecule released by cancer cells and an inducer of actin based filopodia in astrocytes, was also investigates as a possible tunneling nanotube inducer.

The data obtained through the use of fluorescence microscopy suggest that physiological concentration of H2O2 and glutamate are able to increase the formation of TNTs in cancer cells. Moreover, these drugs appear to affect TNT formation between cells differently. Physiological concentrations of H2O2 appear to increase the overall TNT formation, while glutamate appears to increase the overall TNT formation as well as the number of TNTs being formed between cells. These results provide useful insights regarding TNT formation pathways in cancer cells as well as the exogenous molecules involved in the formation of TNTs.

Karen Alfaro and Vicky Gomez, Ph.D.
Karen.alfaro@sjsu.edu
San Jose State University - College of Health and Human Sciences
Department of Health Science and Recreation

A Study On Women'S Perception Of Entering, Staying And Disentangling Themselves From Toxic Relationships

Romantic love can develop in adolescence and adulthood, and some are fortunate to experience healthy relationships while others suffer from experiencing toxic relationships. For the purpose of this study, we define a toxic relationship as being in an intimate partner relationship where one's mental, emotional, physical, and spiritual well-being are negatively being affected. While there are many studies that examine the specific sequela of a toxic relationship such as depression, anxiety, damage to self-esteem, psychological distress, domestic violence and addiction there are few studies that examine the developmental process and the general disentangling of a toxic relationship. Our qualitative exploratory study focused on six women who have been out of a toxic relationship for a minimum of six months. We interviewed participants about their decision-making and cognitions about leaving the toxic relationship as well as the supports and hindrances to disentangling from the relationship. Preliminary analyses highlight the use of alcohol and drugs in toxic relationships. In addition, interviewees shared how their previous familial exposure to toxic relationships may be related to why they entered into a toxic relationship in the first place. Peer support seems to play an important role in a person's choice to and ability to extricate herself from a toxic relationship. More research is needed to further understand this issue.

Alia M. Alvarez and Jenelle N. Gilbert, Ph.D.
Jenelle N. Gilbert, Stephanie D. Moore, Luke Pryor, Wade Gilbert
amarie10@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Kinesiology, Sport Psychology

Using Traditional And Pettlep Imagery To Maximize The Charity Stripe

Community college basketball players have only two years of athletic eligibility. Those seeking to extend their athletic career and transition to higher levels of competition must maximize this short time period. Mental skills training, specifically imagery (i.e., using one's senses to create or re-create an image in one's mind, Vealey & Greenleaf, 2001) can help athletes achieve peak performance (Orlick, 2016). Two popular imagery approaches include Traditional imagery (Callow, Hardy, & Hall, 2001) and a more holistic style termed PETTLEP (Holmes & Collins, 2001). The purpose of the present study was to examine the effectiveness of Traditional versus PETTLEP imagery on a free throw (FT) performance task (at the charity stripe) with community college basketball players. Participants included two California community college teams: one served as the Traditional imagery group, the other as the PETTLEP imagery group. Both teams completed three weekly 15-30 minute imagery-specific training sessions for a 6-week period. Data were collected pre- and postintervention via a 20-shot FT performance task and the Movement Imagery Questionnaire-Revised (MIQ-R; Hall & Martin, 1997). Participants completed journal entries after each imagery session where they responded to short questions about their experience. Results of dependent t-tests using pre- and posttest imagery ability scores showed significant improvement for the PETTLEP group (M= 46.73, SD= 4.82, p= 0.021); no significant differences were found for the Traditional imagery group. FT performance did not change significantly for either group, but content analysis of the journal entries indicated that all athletes perceived an improvement in their FT process. Key themes included an increase in self-awareness, improved focus, and an inclusion of relaxation techniques during their FT shooting routines. Results will assist those who train and work in community college athletics by providing insight into intervention design and the practicality of working and researching in this dynamic environment.

Ethan Amador and Tricia Van Laar, Ph.D.
Tricia Van Laar, Mamta Rawat
ethanamador@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Glutathione Manipulation Decreases Pyocyanin Production In Pseudomonas Aeruginosa

Antibiotic use is becoming increasingly ineffective as many strains of bacteria have significant antibiotic resistance. This creates a significant public health concern as resistant bacteria are very difficult to eliminate. Therefore, we must find new targets for the treatment of infection. Our bacterium of interest is Pseudomonas aeruginosa, a gram-negative organism with high levels of antibiotic resistance and virulence factor production. We are studying pyocyanin and the role of glutathione (GSH) in pyocyanin production. Pyocyanin is a blue-green toxin which can kill competing bacteria or host cells. GSH is a tripeptide which detoxifies oxidative or nitrosative stressors and maintains the redox balance within cells. Our lab previously found that a P. aeruginosa mutant not capable of producing GSH (gshA) is defective for pyocyanin production. In this study, we used a chloroform:HCl extraction followed by spectrophotometry to quantify the amount of pyocyanin produced by our target strains. We confirmed our previous results that the gshA mutant produces less pyocyanin than wild-type (3.3±1.6 v 14.5±2.6 µg/ml). We also tested gor (glutathione reductase) and gst (glutathione S-transferase) mutants. These are also significantly impaired in pyocyanin production (4.0±0.2 and 5.7±1.2 µg/ml, respectively). These data indicate that GSH and redox status is important for the production of normal levels of pyocyanin. We will continue testing mutants involved in redox to confirm our hypothesis regarding the importance of redox status for pyocyanin production. Identifying genes which reduce the production of critical virulence factors has the potential to lead to the development of novel therapies for this infection.

Anna Arambula and Heather Horsley, Ph.D.
alicia@mail.fresnostate.edu
California State University, Fresno - Kremen School of Education and Human Development
Department of Department of Literacy, Early, Bilingual & Special Education

A Program Evaluation Of Coaching Practices In Early Care And Education

Supporting children's oral language development including Dual Language Learners (DLLs) at a very young age is critical. How to do this effectively is a problem of practice that many researchers and programs have been probing. The purpose of this present project is to determine if ongoing coaching effectively support ECE Practitioners with the implementation of the Personalized Oral Language (s) Learner (POLL) strategies. The POLL strategies when used with consistency support all children's oral language development including DLLs. Nineteen early learning settings are part of a ten-year initiative taking place in Fresno, California funded by the David and Lucile Foundation. Data were collected on the cycles of coaching sessions, length of coaching sessions, learning setting observations, and length of observations for nine months for this Master's Project. The evidence suggests that there was growth albeit at different levels from the ECE Practitioners. One central finding from this project indicates that it took ECE Practitioners from two to six months to achieve their goals. Overall, the ECE practitioners receiving ongoing coaching supports are learning and implementing the POLL strategies throughout the day to advance children's oral language development. These ECE practitioners learned about the benefits of being bilingual and they share these benefits with families when completing the Family Languages and Interest interview form. The findings from this project informed the development of a coaching guide intended to assist other early education coaches with best practices for supporting ECE Practitioners with the implementation of the Personalized Oral Language (s) Learner (POLL) strategies.

Erik Arteaga and Van Laar, Ph.D.
Tricia Van Laar
hairman235@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Role For Rpos Gene Of Klebsiella Pneumoniae In Antibiotic Tolerance And Virulence

Klebsiella pneumoniae is a problematic gram-negative bacterium that commonly causes nosocomial infections such as pneumonia, urinary tract infections, burn wound infections, and bacteremia. K. pnuemoniae is particularly virulent due to its ability to form biofilms within its host. Recent studies have revealed an upward trend of nosocomial infections caused by multidrug resistant (MDR) strains of K. pneumoniae. Most worrisome are extensively drug resistant strains (XDR), as they can withstand treatment with carbapenems, which are considered the most effective antibiotics in treating microbial infections caused by gram-negative organisms. RNA-sequencing of a biofilm of an MDR strain of K. pneumoniae (BAMC) treated with carbapenems for two hours had significant differential gene expression compared to the untreated control. One gene of interest was the alternative sigma factor gene (rpoS) that controls the cells' entry into stationary phase. In this study we will attempt to identify the role of rpoS in antibiotic tolerance, resistance, and virulence in K. pneumoniae. For this proposal we created a rpoS knockout mutant in BAMC and conducted various fitness tests. To understand how the RpoS protein affects biofilm formation the crystal violet assay was completed and revealed reduced biofilm formation in rpoS null strain compared to the wild-type strain. In order to test for changes in virulence, a killing assay was done using Galleria mellonella (wax worm), our in vivo infection model. rpoS strain displayed a decreased ability to cause infection in Galleria mellonella, this showed decreased virulence in the mutant strain compared to the wild-type strain. Cell viability assay will be completed to determine the ability of the mutant strain to tolerate antibiotics in stationary growth phase. A heat tolerance assay will also be completed to determine the ability of the mutant to tolerate heat stress. This research may provide potential drug targets that may complement antibiotic therapies.

Makayla Lexyss Bailey and Emily M. Walter, Ph.D.
Arashnoor Gill, Glen Martin III, Alejandro Mendez, Lillian G. Senn, Emily M. Walter
makaylabaileyyy@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology (STEM Ed)

Exploring Faculty Teaching Practices Through The Theory Of Planned Behavior

Active learning focuses on engaging students in the learning process as opposed to the traditional style of lectures which promote passivity. Students enrolled in courses applying active learning strategies have been known to perform better than those in lecture-based classrooms and are more likely to earn a degree in STEM. Despite the benefits of active learning, such methods have yet to be widely implemented into STEM courses. This study will examine the complex set of variables that influence faculty adoption of active learning strategies. Previous studies have only observed many of these variables in isolation, but this study seeks to understand the relationship between them. By understanding what influences faculty teaching practices institutions can support faculty in adopting active learning so all students can succeed in STEM.

To understand the complex systems surrounding the faculty and their teaching, the study will employ Ajzen's Theory of Planned Behavior. The theory focuses on one's intentions to perform a certain behavior, which for this study is the adoption of active learning teaching strategies. This intent is shaped by (a) attitudes toward the behavior, (b) social norms surrounding the behavior, and (c) perceived sense of control. This framework allows us to synthesize much of the faculty change behavior through its constructs. This leads us to the study's overarching research question: how and in what ways do attitudes, social norms, and organizational factors influence faculty adoption and sustained use of active learning?

This is a mixed methods study following a sequential exploratory design to explore a single, embedded case study of 6 postsecondary STEM instructors. Our data sources include qualitative semi-structured interviews and quantitative survey and methodical classroom observations. Data collection began in February 2018 and analysis is ongoing. We intend to draw connections between framework-related themes found in interviews and observational and survey data.

Tim Bentley and Kalyani, Ph.D.
timb3825@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Structural Studies Of A Library Of Charged Heptapeptides Through 2D Nmr Spectroscopy

Structures of polypeptides are dependent on their sequence of amino acids, which defines its function and activity. Proteins such as Caspase 2 found in mammals binds to a polypeptide containing a specific amino acid sequence of alanine, aspartic acid, and valine (ADV) and is shown to inhibit via a capped pentapeptide having these repeats in its structure. The peptide ADVADVG, and derivatives, were synthesized to study the sequence-structure dependence role for each amino acid affecting the overall structure of the peptide. A library of eight peptides were created by mutating the fourth residue from alanine (A) to phenylalanine (F), glycine (G), and leucine (L), to investigate how these residues influence their respective 3D structure in solution. A similar library with the same mutations were synthesized by replacing the glutamic acids (E) with aspartic acids (D) and observe the structural effect of the polypeptide with increasing length of the side chains. The two-dimensional NMR studies were performed by total correlation spectroscopy (TOCSY) and rotating-frame Overhauser spectroscopy (ROESY). An ensemble of conformations that were obtained using CYANA by incorporation of peak intensities obtained from ROSEY experiments. Variable Temperature (VT) NMR experiments on these molecules were done to estimate the amide temperature coefficients. These derivatives were characterized with the belief that the residue at fourth position is critical for the 3D structure of the peptide and that mutating it with a more non-polar hydrophobic residue, will increase the side chain interactions between the aspartic acid and valine residue's, through inter-residue hydrogen bonds. More interactions were seen in peptides containing the glutamic acids compared to the aspartic acids. Phenylalanine and leucine provides an increased hydrophobic environment when compared to glycine that lacks side chain residues. Studying these smaller peptides could give insight into how their modulation will affect protein inhibition characteristics.

Emily Berg and Andrew Strankman, Ph.D.
Joseph Lin, Andrew Strankman
emily.berg@reedleycollege.edu
Reedley College - Reedley College
Pete P. Peters Honors Program

Contagious Inquiry: Engaging Under-Represented Community College Students Through Interdisciplinary Research

Open access at California community colleges has unintentionally led to a shockingly low rate of transfer. Within six years, fewer than 14% of community college students transfer and earn a bachelor's degree (Wyner, et. al, 2016). As these institutions enroll a disproportionately large number of low-income and first-generation students, this disparity becomes an equity issue (Bailey, et al., 2015; Espinosa, et al., 2018). One promising strategy to increase students' success is early access to scholarly research.

At Reedley College, a rural college within California's Central Valley, instructors are approaching the lack of student engagement through course-based undergraduate research (CUR). Incorporation of research has been used within the science disciplines to increase understanding, engagement, and persistence (Masterson, 2017). However, this approach has seen limited attempts within the community college populations. As the need for enrollment in STEM majors continues to increase worldwide, this strategy of CUR could be "enormously game-changing and paradigm shifting" to increase both student engagement and retention, particularly for under-represented groups (Murray et al., 2016).

The Honors Program at Reedley College (RCH) offers two STEM focused interdisciplinary research courses: Honors 3A, Applied Sciences; and Honors 3C, Biological and Natural Sciences. These research seminars are faculty recruitment based and have enrolled successful students from both within and outside the honors program. These courses seek to not only benefit to the departments, but also the recruitment helps the honors program reflect more closely the demographics of the college.

Students continue to complete CUR projects successfully, including proposals and presentations at regional and national level at research symposia. The RCH seeks to continue fostering inquiry, expand the reach of the RCH program, and bridge the gap when feeding into four-year universities such as California State University, Fresno.

Miguel Bueno and Qin Fan, Ph.D.
miguelbueno800@gmail.com
California State University, Fresno - Sid Craig School of Business
Department of Economics

Is The San Joaquin Valley Retaining College Graduates? Evidence From The California State University, Fresno.

It is largely acknowledged that graduates' entrance into the local labor market is a crucial mechanism through which public investment in higher education generates returns. Graduates possess competencies and capabilities to combine and use knowledge in new productive ways. From a regional perspective, a crucial question then becomes whether university graduates are retained in the region. Using data provided by CSU Fresno's Office of Institutional Effectiveness, this paper explores whether Fresno State graduates who reported employment post-graduation were retained in California's San Joaquin Valley. I provide descriptive statistics for graduates who indicated employment post-graduation, and then use a multivariate logistic regression to estimate the log-odds of retention for several predictive variables.

Keywords: San Joaquin Valley; Fresno; location choice; economic development; brain drain

Braden Cardoza and Alejandro Calderon Urrea, Ph.D.
bradencardoza@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Studies On A Hypersensitive Succinate Dehydrogenase (Sdh) Mutant C. Elegans Line Suggest That Sdh Is Not The Target Of Chalcone'S Mode Of Action

Plant parasitic nematodes (PPNs) are a ubiquitous and costly pest to farmers around the world, accounting for an upwards of 140 billion USD of crop loss per year. There are various agro-chemicals dedicated to the control of these pests, but nematodes have found ways to overcome the action of these chemicals. Many of these agro-chemicals used in the control of PPNs are also harmful to humans and the environment. A research group at Fresno State developed various compounds that can control these PPNs, but remain harmless to human cells and plant's associated soil microbiota. It has been determined that these chemicals, specifically denoted chalcones 17, 25, and 30 are effective in controlling PPNs. However the mechanism by which they do so has not been elucidated. A recently developed nematocide, Fluopyram, has proven to be an effective nematicide by way of succinate dehydrogenase (Sdh) inhibition. Succinate dehydrogenase is a mitochondrial enzyme found in all eukaryotes, important in the production of adenosine triphosphate, the cellular form of energy. Similarities between the fluoropyram and chalcone molecules prompted us to hypothesize that Sdh was the target of chalcone action. In order to test if the chalcones work against Sdh, a hypersensitive Sdh mutant (VC294) along with a Wild-Type worm were assayed against varying concentrations of each of the chalcones. These assays allowed for the development of a dose response curve, which indicated the level of response in each strain. The VC294 strain did not display a hypersensitive response, suggesting that the chalcones may not be working against Sdh.

Michael Carusillo and Debra Bekerian, Ph.D.
Bao Herr
Mcarusillo@alliant.edu
Alliant International University - California School of Professional Psychology
Department of Clinical Psychology

Homicide Trends Of Youth In Fresno County

Youth and pediatric homicide continue to be a widespread concern among researchers, child welfare advocates, and the medical community. Within the United States, 30% of children between the ages of 1-19 years of age die from an injury or act of violence (Ballestros, Williams, Mack, Simon, & Sleet, 2018). Due to the variation of circumstances and demographic variables, preventative strategies are now focused on societal interventions at both the national and state level. Still, there remain geographical differences specific to each county and environmental neighborhood feature may be the key to developing interventions as suggested by Culyba et al. (2016).

The objective of this study was to examine the causes of child deaths in a large rural county in California in order to promote health, safety, and protection of children. The data were collected across the span of two decades (1989-2009) and the variables examined in this study included age, gender, ethnicity, cause of death, and zip code of the incident. The sample consisted of 204 children ages between 0-17. The findings suggest the cause of death for younger children ages 0-5 were due to blunt force trauma, while the cause of death for older children ages 14-17 were due to gunshot wounds. In addition, children who lived in the southeast region of the county where social economic status is closer to the poverty line, are significantly more vulnerable and at risk of death by homicide than any other area. According to the 2006 census for the city of Fresno, approximately 90% of this area lived in poverty. Overall, the data suggest preventative strategies must target specific geographical regions and provide interventions that are customized to the income levels and primary cause of death.

Alexandria Castrovillari and Khang Tran, Ph.D.
alexscheidt@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Mathematics

Asymptotic Analysis Methods

Though exact answers are nice we often find ourselves in need of an approximation. In this presentation we will look at elementary techniques and tools for finding asymptotics, or approximations, for integrals, sums, and other functions. We look at the heuristics behind Laplace's Method, using the Gamma Function as our lead example, and see applications of Watson's Lemma. When estimating sums, we look at the summation by parts formula as well as it's more specific case Euler's Summation Formula. Finally we explore the heuristics of the Saddlepoint Method. Utilizing a variety of techniques, but grounded in the steps of this method, we find asymptotics for the famous Bessel and Airy functions.

Brian Chinnock and Brian Chinnock, Ph.D.
bchinnock@fresno.ucsf.edu
UCSF - Fresno - UCSF Fresno Department of Emergency Medicine
Department of Emergency Medicine

Sensitivity Of A Bedside Reagent Strip For The Detection Of Spontaneous Bacterial Peritonitis In Emergency Department Patients With Ascites

Introduction:

Our objective was to determine the sensitivity of of a highly sensitive bedside leukocyte esterase reagent strip (RS) for detection of spontaneous bacterial peritonitis (SBP) in emergency department (ED) ascites patients undergoing paracentesis.

Methods:

We conducted a prospective, observational cohort study of ED ascites patients undergoing paracentesis at two academic facilities. Two practitioners, blinded to each other's results, did a bedside RS analysis of the peritoneal fluid in each patient and documented the RS reading at 3-minutes according to manufacturer-specified colorimetric strip reading as either “negative”, “trace”, “small”, or large”. The primary outcome measure was sensitivity of the RS strip for SBP (absolute neutrophil count >= 250 cells/mm3) at the “trace” threshold (positive equals trace or greater).

Results:

There were 330 cases enrolled, with 635 fluid analyses performed. Of these, 40 fluid samples had SBP (6%). Bedside RS had a sensitivity, specificity, positive predictive value, and negative predictive value of 95% (95% CI 82%-99%), 48% (95% CI 44%-52%), 11% (95% CI 10%-11%), and 99% (95% CI 97%-99%) respectively at the "trace" threshold for the detection of SBP.

Conclusion:

Bedside use of the RS in ED ascites patients demonstrated high sensitivity for SBP. Given the wide confidence intervals, we cannot currently recommend it as a stand-alone test. We recommend further study with a larger number of SBP patients, potentially combining a negative RS result with low clinical suspicion to effectively rule out SBP without formal laboratory analysis.

Elizabeth Compton and Oscar Vega, Ph.D.
lizzy4brown@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Mathematics

Power Graphs Of Split Metacyclic Groups

We study the undirected power graphs of split metacyclic groups. More specifically, we look at "dihedral-like" groups that, naturally, can be written as the semi-direct product of a cyclic group of order 2 and another cyclic group of order n. Our results include presentations of power graphs as sums and unions of simpler graphs.

Megan Cornel and Tricia Van Laar, Ph.D.
Tricia Van Laar, Mamta Rawat
meganycornel@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Characterization Of Gor In Pseudomonas Aeruginosa

Pseudomonas aeruginosa is an opportunistic pathogen that commonly causes serious infections in many hospital settings. P. aeruginosa's virulence resides in its ability to readily adapt to many environments and rapidly develop antibiotic resistance. Therapeutic targeting of genes linked to virulence rather than growth may offer resistance breaking mechanisms to combat infections. Glutathione, one of these novel gene targets, is a low molecular weight thiol that P. aeruginosa produces as a redox buffer and significantly contributes to its virulence. Glutathione increases virulence by combating oxidative stress, and playing roles in biofilm formation, pyocyanin production, and swarming capabilities. Previous studies have shown that P. aeruginosa transposon mutants defective in gshA (the first step of the glutathione pathway) have decreased biomass, stunted growth under stressful conditions, decreased pyocyanin production, defective swarming motility, and increased susceptibility to some antibiotics. Genes encoding glutathione reductase (gor) are another possible target to stunt the P. aeruginosa oxidative stress response. Glutathione reductase catalyzes the reduction of the oxidized form of glutathione (glutathione disulfide) to the reduced, active form (sulfhydryl glutathione). A transposon mutant defective in gor (gor::tn) was therefore obtained. A complementation strain to gor::tn was made to use for mutation confirmation in each assay. The PJAK12 plasmid used in creation of the complementation strain was then inserted into the P. aeruginosa wild type and gor::tn strains used in each assay to ensure comparability between the three strains. Preliminary assays were done with P. aeruginosa wild type and gor::tn to reveal differences in adaptabilities to low resource environments (M9 minimal media), oxidative stress and antibiotic responses, and mixed species competition. The transposon mutant showed stunted growth and greater sensitivity to oxidative stressors. Surprisingly, gor::tn outcompeted Staphylococcus aureus to a significantly greater extent than P. aeruginosa wild type did in mixed species competition assays.

Chemyn Cortez and Alejandro Calderón-Urrea, Ph.D.
Jasmeet Gill, Shan Aujla, Dustin Escheveria
chemyncortez@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Synergistic Effects Of Linked Chalcones On Caenorhabditis Elegans

Agriculture has been an essential part of human life since its development thousands of years ago. Despite its longtime existence, scientists are constantly advancing agricultural techniques and practices. One of the issues faced today is the presence of plant parasitic nematodes (PPNs), which account for billions of dollars in losses every year. Methyl bromide was used previously as a nematicide to control the subsistence of PPNs such as Meloidogyne incognita, but was deemed harmful to humans and the environment. Chalcones 17, 25, and 30 (characterized by the presence of an aromatic ketone and an enone at their core) were tested to analyze their effectiveness as alternative nematicides and were found to be 100% effective in killing nematodes at 10-4 M concentrations. Further experiments showed that, when these chalcones were mixed together in solution, a synergistic effect was observed, causing more worms to be killed at lower concentrations. The presented study aims to link two different chalcones in one molecule (17+25, 25+30, and 17+30) to test the idea that these linked chalcones can be as potent as the individually mixed chalcones. We have thus developed a linear four-step synthesis that is modular and accommodating of various linkers, and we successfully prepared a small library of linked chalcones that is currently being assessed for their nematocidal activity. We are currently pursuing other libraries that differ in linker length and in position of linkage. Project motivation, synthesis design, troubleshooting, our library of final compounds, and biological data will be presented.

Candice Cortney and Krish Krishnan, Ph.D.
chcortney@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Solvation Thermodynamics Of The Keto-Enol Tautomerization Equilibrium In Binary Solvent Mixtures Using Nmr Spectroscopy With Acetylacetone As A Model System

Acetylacetone is the simplest β-diketone compound and is a precursor to the chemical synthesis of many bioactive compounds such as curcumin, a well-known anti-inflammatory natural product. An intrinsic property of β-diketones is they have two constitutional isomers, the keto and enol tautomer, that undergo the phenomenon of keto-enol tautomerism. Previous studies have shown that the equilibrium can be shifted between the keto and enol tautomers under different solvent polarity conditions, as defined by Meyer's rule. The purpose of this study is to determine the solvation energy of the keto-enol tautomerization equilibrium when it is affected by a total solvent polarity, derived by the mixture of two solvents, using high-resolution nuclear magnetic resonance (NMR) spectroscopy. The experiments are designed to include a range of molar ratios between the two solvents and is performed to provide a comprehensive overview of how the solvation energy of acetylacetone changes over a range of solvent polarities. The Gibbs free energy of solvation of the solutes (keto and enol tautomer) is determined using the Onsagr-Kirkwood (OK) theory, which relates the keto-enol tautomerization equilibrium to the dielectric constant of the solution. The current study examined the effects of the solvation energy of the binary solvent mixture on acetylacetone, as a model system, in the presence of seven different, independent solvent combinations, ranging from chloroform (non-polar solvent) to dimethylsulfoxide (DMSO; polar solvent). Moreover, this new experimental method, can be applied to other systems undergoing a keto-enol tautomerization. The significance of this study is the application to research areas of organic and inorganic chemistry, that may use acetylacetone in the synthesis of novel drugs and metal catalysts.

Maria Diaz Perez and Oscar Vega, Ph.D.
Yuliana Segura
mdiaz1824@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Mathematics

The Commuting Of Semi-Direct Product Of Cyclic Groups

The commuting graph of a group G, denoted C(G), is a simple graph whose vertex-set is G − Z(G), and in which two vertices are adjacent if and only if they commute in G. It is immediate that this graph captures some of the structure of the group that originates it. The question is: how much of it?

In this talk, we will go over the structure of the commuting graph of some split meta-cyclic groups.

Ariel Diggan and Katy Tarrant, Ph.D.
Katy J. Tarrant, Rodrigo Lopez, Sean Griffin
adiggan@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Agricultural Sciences

Evaluation Of Four Strains Of Bacillus Direct Fed Microbials As Viable Alternatives To Antibacterial Treatment As Measured By Production Traits In Broilersevaluation Of Four Strains Of Bacillus Direct Fed Microbials As Viable Alternatives To Antibacterial

To meet the growing demand for NAE broilers, producers require alternative methods of promoting poultry health and performance. Direct fed microbials are becoming a popular component to rations to achieve production goals. The objective of this study was to compare the performance of broilers raised on six different diet rations, including two Bacillus amyloliquefaciens strains (A and B), two B. licheniformis strains (C and D), one Bacitracin Methylene Disalicylate (BMD) ration, and one negative control ration. Nine replications of each diet were given to Ross 708 broilers totaling 54 test groups, each housed in 4.87 m2 pens. Each test group consisted of 14 straight-run birds vaccinated at DOT 0 for coccidiosis, for a total of 756 subjects. At day 42, live weight was recorded in grams for each individual. Mean live weight, feed conversion, and necrotic lesion scores comparing the BMD and control diet with Bacillus diets A, B, C, and D were made using Tukey's HSD in JMP v.13.0.0. At d 42, the control diet had the smallest measured body weight (2875 ± 65). BMD diet birds averaged 89g more than control diet. As compared to control, Bacillus average weights compared to control were the following: A at -164g, B at +62g, C +95g and D +125g. All Bacillus diets reported equal or numerically lower FC scores compared to BMD. B. licheniformis C reported lowest FC, 5 points (3%) lower than control. Bacillus amyloliquefaciens B (1.59) and Bacillus licheniformis C (1.57) had the best adjusted feed conversion scores, compared to the BMD (1.60). Necrotic lesions scores did not vary significantly between the diets. In conclusion, B. licheniformis probiotics did as well as, or numerically better than, the BMD and negative control, indicating that these specific strains may be considered useful vehicles for NAE broiler production.

Christopher Dillon and Hubert Muchalski, Ph.D.
Bagieng Keophimphone, Melissa Sanchez, Parveen Kaur
chriscdillon@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Gold(I)-Nhc-Catalyzed Synthesis Of Benzo[B]Thiophenes From 2-Alkynylthioanisoles

Benzo[b]thiophenes and benzo[b]furans are promising heterocyclic molecular scaffolds for potential drug candidates in medicinal chemistry, but current synthetic methods utilize harsh reaction conditions and sensitive reagents. Currently marketed FDA-approved drugs containing the benzo[b]thiophene core include Zileuton (asthma treatment), Raloxifene (osteoporosis treatment and preventative) and Sertaconazole (antifungal). Here we present a new and efficient synthetic pathway to 2-substituted benzo[b]thiophenes that utilizes an air- and water stable NHC (N-heterocyclic carbene) gold(I) complex with low catalyst loading and mild reaction conditions. This is achieved through the cyclization of thioanisole-substituted arylacetylenes, compounds that are easily accessed using palladium-catalyzed Sonogashira coupling reactions. In addition, this approach tolerates a wide range of functional groups with various steric- and electronic properties. We observed that the stoichiometric addition of a weak Brønsted acid, such as acetic acid, proves crucial to catalyst turnover and product formation. The role of the acid additive in the catalytic mechanism was elucidated by deuterium-labeling experiments using NMR spectroscopy. Synthetic products are characterized via NMR spectroscopy and high-resolution mass spectrometry. This methodology is also applied to the construction of benzo[b]furans with promising results.

Gregory Dzhezyan and Hubert Cecotti, Ph.D.

gregorydz@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Computer Science

Symmetrical Filters In Convolutional Neural Networks

Symmetry is present in nature and science. In image processing, edge detection techniques based on spatial filtering possess some symmetry (e.g. the Sobel filters). Convolutional layers in artificial feed-forward neural network have typically considered input weights without any constraint. In this project, we propose to investigate the impact of the symmetry constraint in convolutional layers for image classification tasks, taking our inspiration from the processes involved in the primary visual cortex. We wish to assess if it is possible to enforce a symmetrical constraint on the filters throughout the training process of a convolutional neural network (CNN) by modifying the weight update preformed in the backpropagation algorithm and to evaluate the change in performance. The hypothesis of this project is that the symmetrical constraint reduces the number of free parameters in the network, and it is able to achieve near identical performance to the modern methodology of training. In particular, we address the following cases: the x/y-axis symmetry, point reflection, and anti point reflection. A convolution involves shifting and sliding a small rectangular matrix filled with weights over an image and preforming a sum of the point wise multiplication of the matrix and the intensity values of the image directly underneath its current location. The weights of well-known pre-defined filters typically have symmetry. Weights are typically set randomly at the outset and over time, as the error at the output of the network is back-propagated and weights updated, the weights begin to approximate (i.e learn) filters used for feature detection. The performance has been evaluated on a database of handwritten digits. The results support the conclusion that while random weights offer more freedom to the model, the symmetry constraint provides a similar level of performance while decreasing substantially the number of free parameters in the model.

Omar Erekat and Aly Tawfik, Ph.D.
Aly Tawfik
Omar_alquds@mail.fresnostate.edu
California State University, Fresno - Lyles College of Engineering
Department of Civil and Geomatics Engineering

Development Of A Robust, Quantitative Method For Evaluating Walk-Access To Transit Stops And The Effect Of The Built Environment On Ridership

Walk is the predominant mode for access to most transit stops. Accordingly, walk-accessibility can directly affect public transit ridership. Numerous studies indicate that the availability and quality of sidewalks in addition to the connectedness of the street network are detrimental factors for walkability to transit stops. However, the literature lacks robust quantitative measures that are capable of capturing those factors. With the aim of contributing to the development of a robust method for evaluating walk access to transit stops by rating the built environment, this work replicates a previously developed method via application in a new geographic region. To quantify the ability of riders to access public transit stops through the existing street infrastructure, this work utilized two measures: sidewalk availability and quality index (SAQI) and connectivity index (CI). The analysis was performed for the Southeast Transit Line Bus Rapid Transit (BRT) in Fresno County, CA. The SAQI and CI measures were used to rank the bus stops for accessibility, and predict solutions for quality, quantity, and design problems affecting ridership. Regression analysis showed that a significant direct relationship exists between public transit ridership and the availability, quality, and connectedness of sidewalks. Therefore, the proposed indices SAQI and CI could be useful for predicting ridership and measuring walk access costs.

Marina Flores and Joy J. Goto, Ph.D.
mflores7485@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

"In Vivo" Interactions Between Bmaa And Sod1 In H4App Neuronal Cells

The ubiquitous metalloprotein SOD1 (CuZn-superoxide dismutase) is related to the development and progression of neurodegenerative diseases, including Alzheimer's, Parkinson's, ALS, and dementia. The environmental toxin BMAA (beta-N-methylamino-L-alanine) is suspected to degrade SOD1 protein in neuronal cells, leading to overstimulation, depolarization, and death of the neuron. In vitro studies have also demonstrated BMAA can bind to free copper and zinc ions, which are present and catalytically active in the SOD1 protein.

This experiment examines the relationship between SOD1 protein and BMAA through protein quantification of human neuroglioma (H4APP) cell lysate. The methods for this experiment include culturing a population H4APP cells which overexpress amyloid precursor protein (APP). Neuronal cultures were exposed to BMAA at concentrations of 0 µM, 30 µM, 100 µM, 300 µM, and 1000 µM for 24 hours before lysis. The total protein in each of the sample groups was quantified through BCA assay.

We found that BMAA concentrations of 30µM, 100µM, 300µM and 1000 µM increased cellular total protein concentration two-fold for all concentrations, and peaks at an average BMAA concentration of 375 µM. Increased cellular protein levels correlate with cell stress, which supports BMAA neurotoxicity. Further work remains to analyze SOD1 protein concentration within the total protein sample. If BMAA is shown to be related to SOD1 protein degradation, then an important future direction for this experiment includes a molecular analysis of BMAA and SOD1 interactions. This analysis will assist in the effort for drug design and possible therapies for those afflicted with neurodegenerative disease.

Emmanuel Flores and Tricia Van Laar, Ph.D.
Mo Kaze, Mark Sistrom, Tricia Van Laar
flowresolution90@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Antimicrobial Resistance In Bacillus Strains Found In Probiotics

Despite the pathogenic characteristics of some Bacillus spp. (B. anthracis, B. cereus), B. subtilis and B. coagulans are deemed “generally recognized as safe” (GRAS) by the FDA and are added to a plethora of probiotic products. Although these species have attained GRAS status, they may still possess genes conferring antimicrobial resistance (AMR) which could be shared among other bacteria. We aim to determine if probiotic Bacillus are resistant to antibiotics and analyze their potential to transfer AMR genes to potentially pathogenic Bacillus. We tentatively identify commercial Bacillus strains through gram and endospore staining before confirming with 16S rRNA gene sequencing. Once confirmed as Bacillus, we perform antibiotic sensitivity assays on each strain using a disk-diffusion method with a panel of 15 antibiotics. We have isolated and tested six strains isolated from probiotic foods and found resistance to antibiotics such as bacitracin and sulphamethizole. The second part of this study uses bioinformatic analyses to mine sequenced genomes of B. subtilis and B. coagulans for the presence of known AMR cassettes. Draft and assembled genomes of 170 B. subtilis and 28 B. coagulans were compared with the Comprehensive Antibiotic Resistance Database (CARD) using BLAST command line tools. We found resistance to macrolides, lincosamides, streptogramines (MLS), beta-lactams, fluoroquinolones, rifampin, tetracycline, and aminoglycosides B. coagulans and B. subtilis sequences. Finally, as Bacillus species are able to readily engage in horizontal gene transfer with other members of the genus, we will perform mating assays to determine whether some of these AMR genes can be transferred to more pathogenic species, including B. cereus or B. pumilus. Taken together, the results from this study will provide insight into the potential risks of antimicrobial resistance in probiotic supplements and the potential for spread of AMR to pathogenic species.

Jordan Friedlein and Laurent Dejean, Ph.D.
Laurent Dejean, Stephen Manon
jbfriedlein@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Investigating The Role Of N-Terminal Domain Exposure Of Bax In The Regulation Of Intrinsic Apoptosis At The Mitochondria

A defining characteristic of cancer cells is the loss of the ability to properly undergo apoptosis, otherwise known as programmed cell death. It has been well known for over two decades that the Bcl-2 protein family, which is made up of pro and anti-apoptotic proteins plays a major role in regulating the intrinsic pathway of apoptosis. Bax is a pro-apoptotic member of the Bcl-2 family. In its inactive form, Bax is primarily a cytosolic and monomeric protein. Upon activation by upstream apoptotic signals, Bax undergoes multiple conformational changes as it translocates from the cytosol to the mitochondrial outer membrane where it permeabilizes the membrane, releasing cytochrome c into the cytosol, at which point the cell is committed to apoptosis. Because Bax plays such a pivotal role in cell death signaling, it is highly regulated. Bax mediated MOM permeabilization requires the involvement of BH-3 only proteins and protein kinases involved in cell survival regulation. Activation of Bax also requires a substantial change in conformation and of localization of the Bax protein. We know that when Bax is active the N-terminus is exposed. However, the molecular processes linking N-terminus exposure with respect to Bax's ability to translocate to, insert, and permeabilize the mitochondrial membrane remain to be defined. Previous research has shown when Bax mutants P168A and S184A are expressed in yeast, they have higher mitochondrial localization than WT Bax. However, The S184A mutant is far less capable than P168A or WT Bax in releasing cytochrome c. By using an ELISA to probe the recombinant Bax mutants for N-terminus exposure, we have found significantly lower levels of N-terminus exposure in the S184A mutant when compared to P168A or WT Bax. These results suggest that the N-terminus plays a more predominant role in either pore formation or stabilization as opposed to mitochondrial localization.

Kelly George and Jenna Kieckhaefer, Ph.D.
Jenna Kieckhaefer, Ryan Juan
klgeorge@mail.fresnostate.edu
California State University, Fresno - College of Social Sciences
Department of Criminology

Examining The Timing Of Police Rapport-Building With Witnesses And Victims Of Crime

Officers may spend minutes to hours with witnesses during investigative interviews attempting to gather information about a particular criminal event. This study seeks to understand how much time officers dedicate to building rapport with witnesses. This study was conducted utilizing an in-person questionnaire given to participating officers that included open-ended, close-ended, and scale questions. It was found that officers stated they averaged between 9 and 28 minutes in a witness interview. A factor that may influence the amount of time spent in an interview, as well as the witness's ability to recall information, is building rapport before the interview questions begin. Officers also indicated that they typically spend 6.5 minutes building rapport with witnesses. This is a considerable amount of time officers are likely to dedicate to establish a connection with the witness. Majority of the participants (60%) indicated that they build rapport at the beginning of the interviews instead of at the end (5%) or after the witness's initial statement (6%). There is no standard amount of time set for conducting interviews or building rapport, but recall may take longer depending on the witness. Therefore, a substantial amount of time is set aside by officers to build rapport with witnesses.

Allyssa Gomez and Emily Walter, Ph.D.
Emily Walter
allyssa119@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

First Year Experience: A Study Of Self-Efficacy Among Stem Students

It is critical that American citizens have a strong foundational understanding of STEM for the continuation and development both in and out of the classroom. Yet out of all the students who begin as a STEM major in college, less than 40% of students actually graduate with a STEM degree. Some ways that universities have attempted to reconcile this is through the implementation of First Year Experience (FYE) programs for incoming freshman. The FYE program at Fresno State, also known as the BOND program, is designed to help freshman STEM majors build meaningful connections among peers as well as develop the tools necessary to succeed as a STEM major within the College of Science and Mathematics. While there are copious amounts of research in support of the positive correlation between student involvement in FYE programs and college retention, there is far less research on how STEM-specific FYE programs influence student self efficacy. The goal of my study is to understand the effect of a STEM-specific FYE programs on students' self efficacy. During my CCRS presentation, I will provide an overview of valid and reliable survey data with an interest in looking at six factors of motivation; three of which I will be discussing in greater detail: self-efficacy, active learning strategies and achievement goals. I have collected data from ~30 students during the Fall 2018 semester and will be presenting patterns found in this data. For example, students who are not enrolled in Math 45 courses have significantly higher achievement scores ($p = 0.005$) than students who are enrolled in Math 45 courses. Another key finding were students who are interested in attending STEM-related graduate school have significantly higher active learning strategies compared to students who are interested in attending medical school.

Allyssa Gomez and Emily Walter, Ph.D.
Emily Walter
allyssa119@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology (STEM Education)

Advice Exchange And Self-Efficacy Among Students In A First Year Experience Program In Stem: A Social Network Approach

Science, Technology, Engineering, and Mathematics (STEM) is one of the most challenging fields in which to get a degree. Only about 40% of students who begin a major in STEM actually complete a STEM degree, and that number drops to 20% if you happen to be from an under-represented minority. A number of factors influence STEM student success, including experiences both before and during college. Some answers to resolve this STEM success issue lie in literature exploring college student success in general. Many colleges and universities have adopted First Year Experience (FYE) programs for their incoming freshman. FYE programs generally have a positive influence on first year and ongoing year-to-year retention, but less research has been done on how discipline-specific FYE programs impact students. It follows that an FYE program designed for STEM students could help to improve STEM student outcomes. These programs could influence students in any number of ways, but ideally, it should affect an outcome with well-established links to entering the STEM field. As such, my research explores how an FYE program affects students' self-efficacy and their relationships to exchange information with other students. We have gathered data from 35 students in an FYE program in October 2018, and will gather data again in May 2019. In the current data set, we have found that students with more connections in their social network (not Facebook, but social network advice networks), have significantly higher self-efficacy scores. In addition, students who were not in Math 75 have significantly higher self-efficacy scores. We will discuss implications of these findings for both the FYE program and the Fresno State curriculum plan as part of this talk, and unpack additional results.

Casandra Gomez Alvarado and Denise Chavira, Ph.D.
Carolyn Ponting, and Denise A. Chavira
casandra456@g.ucla.edu
University of California, Los Angeles - College of Letters and Science
Department of Psychology

The Role Of Resilience And Extracurriculars On The Relationship Between Family Conflict And Internalizing Symptoms In Rural Latinx Youth

Internalizing disorders such as depression and anxiety are common, affecting 22% of adolescents (Merikangas et al., 2010). Rural context and Latinx ethnicity are demographic factors associated with higher rates of internalizing disorders in youth, as compared to their counterparts from other ethnicities and urban contexts (Probst et al., 2006; Anderson & Mayes, 2010). Stressors within the family, such as family conflict are salient for Latinx youth given the cultural centrality of close family bonds (Smokowski & Bacallao, 2006). Further, family conflict has been associated with increased internalizing symptoms (Smokowski & Bacallao, 2006) and reduced resilience in adolescents (Repetti, Taylor & Seeman, 2002). A moderated mediation model was utilized to examine the extent to which personal resilience mediated the relationship between family conflict and internalizing symptoms. Further, we examined whether extracurricular (EC) activities (a system level resilience factors in the child's environment), moderated the relationship between family conflict and personal resilience in rural Latinx youth. Results revealed that our overall model was significant and confirmed personal resilience as a mediator ($\beta = -.16$, $SE = .02$, $p < .001$), though we found no moderating effect of ECs. Our results support a growing literature on personal resilience as an intervention target for underserved youth with internalizing symptoms.

Jesica Gonzalez and Jenna Kieckhaefer, Ph.D.
jesicayvete@mail.fresnostate.edu
California State University, Fresno - College of Social Sciences
Department of Criminology

Examining Views Of California'S Current Cash Bail System

The purpose of this study is to examine people's stance on the current cash bail system in light of California's proposed new bill, Senate Bill 10 (SB 10), that will appear on the ballot in 2020. If SB 10 is successful, cash bail will be replaced with a pretrial assessment program. Beyond examining whether people favor or oppose the current cash bail system, we also examined the reasoning behind each individual's beliefs about bail. Participants included Fresno State students enrolled in at least one criminology class. Each student read a brief synopsis of the current cash bail system and Senate Bill 10 to gain a better understanding of the two systems, if they were not previously exposed to either beforehand. The student then completed a questionnaire assessing their feelings on cash bail and the proposed pretrial assessment program, as well a demographics questionnaire. Overall, participants somewhat favor the elimination of the cash bail system. This may be due to the fact that they believe cash bail disproportionately affects various groups, such as the poor or minorities. Being aware of the public perceptions of the current cash bail system allows those in the criminal justice to create changes, if needed, to allow for a better system to be in place. Once an individual is arrested and detained, it can indirectly affect their family members as well. Currently, it seems that participants would prefer certain changes to be made in our state's system.

Kori Gutierrez and Samer Sarofim, Ph.D.
Samer Sarofim
korig2014@mail.fresnostate.edu
California State University, Fresno - Sid Craig School of Business
Department of Marketing

The Effect Of Product-Athlete Expertise Congruency: The Mediating Role Of Ad Credibility, Attitude Towards Brand, Attitude Towards Ad And The Downstream Consequences Effect On Consumer Purchase Intention

This research addresses how the fit between athlete and product may influence the purchase intention. The importance of the relationship between the endorser and endorsed product has been characterized by the “match-up hypothesis. This paper investigates the effect on congruent expertise on purchase intentions. The mediation model will investigate the underlying mechanism testing the role of perceived advertisement credibility, attitude towards brand, attitude towards advertisement to explicate the relationship between expertise congruency and purchase intention. This research contributes to theory through investigating the role of expertise congruency as an antecedent for the above mentioned variables. Furthermore, it contributes by providing a comprehensive model that links expertise congruency to perceived ad credibility, attitude towards brand, attitude towards ad and purchase intention in a sports advertising context. Findings will inform marketers on effective advertising and communication strategies.

Oscar Guzman and Juan Carlos Gonzalez, Ph.D.
oguzman4@mail.fresnostate.edu
California State University, Fresno - Kremen School of Education and Human Development
Department of Educational Leadership - Higher Education Administration and Leadership (HEAL)

The Educational Aspirations Of Salvadorans In The United States: A Qualitative Study Of Barriers To Higher Education Participation And Attainment

For this study, the researcher gained further insight into the higher education aspirations of the Salvadoran population living in the United States. Utilizing a qualitative, narrative inquiry research method, the researcher conducted semi-structured interviews with 14 participants who are native born from El Salvador and have attended a two or four-year institutions in the United States, regardless of their legal status, and are located in urban regions of California. This study analyzed the Salvadoran population experienced, and addressed the influence of these experiences on their pursuit of higher education degree. This study addressed the research on Salvadoran higher education aspirations. The findings contained five pathways to higher education. The five pathways to higher education were (1) the influence of resettling in a new country on pursuing a higher education degree, (2) the financial impact on attending and pursuing a higher education degree, (3) effects of linguistic limitations in higher education, (4) the influence of support systems in higher education, and (5) discrimination in higher education. These findings were used to understand how to better support the pipeline of Salvadorans in higher education. Based on the results, three recommendations were made. The three recommendations consist of: (1) mentoring programs, (2) diverse cultural programs, and (3) student alliances.

Haylee Harris and Oscar Vega, Ph.D.
harris8509@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Mathematics

The Coloring Graphs Of Complete Graphs

One of the topics studied in graph theory is graph coloring. A graph coloring is an assignment of labels “colors” the elements to a graph that are subject to certain constraints. An n coloring graph is a graph with vertices that correspond to the different colorings of some original graph using n colors. The edges between colorings connect a vertex to another only if the coloring of one vertex differs by exactly one vertex of the original colorings. The main focus for my project is finding coloring graphs of complete graphs. For my talk I plan to show properties of regularity in complete graphs. This will include automorphisms of the coloring graph of complete graphs.

Alejandro Hernandez and Alejandro Calderon Urrea, Ph.D.
alexhv@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Identification Of Dna Sequences Responsible For Chalcone Resistance In Caenorhabditis Elegans Using An Ems-Based Deep Sequencing Mapping Approach

Chalcones are aromatic ketones that form the central core for a variety of important biological compounds. Previous research in Dr. Calderón-Urrea's laboratory showed the efficacy of eight chalcones (1, 16, 17, 18, 19, 22, 25, and 30) to kill wild type C. elegans (Attar, O'Brien, Alhaddad, Golden, & Calderón-Urrea, 2011); they cause 100% mortality at concentrations of 10 -4 M (Singh, 2013). Furthermore, Chalcones 17, 30 effectively kill not only C. elegans but also the plant parasitic nematode Meloigogyne incognita at even lower concentrations (10-5 M). However, the mechanism by which the chalcones kill the nematodes is not known. Previous work, also from Dr. Calderón-Urrea's laboratory, identified a mutant strain of C. elegans, induced by Ethyl methanesulfonate (EMS) mutagenesis of the standard strain PD4251, that is resistance to Chalcone 17 (the new mutant strain was named strain RT-Ch17.1.2); a simple dominant/recessive test indicated that the RT-Ch17.1.2 strain carries a recessive mutation (Tamayo, 2016). Here we set out to identify the DNA sequence responsible for the mutant phenotype of strain RT-Ch17.1.2 using a combination of genetics, Whole Genome Sequencing (WGS), and bioinformatics tools.

Our preliminary results identified six single nucleotide polymorphisms (SNP), corresponding to two genes; these two genes are therefore putative candidates for being identified as the RT-Ch17.1.2 causing mutation. These two genes are the Mitochondrial Ribosomal Protein, Large subunit (mrlp-15), and a 5'-to-3' DNA helicase (pif-1). Both of these genes play a role in the proper functioning of the mitochondria, which suggest that the chalcones may target essential elements of the mitochondria to cause lethality in the nematodes.

Tess Hernandez and Dermot F. Donnelly, Ph.D.
Dermot F. Donnelly and Eric Person
te_hernandez@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

An Investigation Of The Impact Of A Zoo-Context Chemistry Laboratory On Undergraduate Learning And Conservation Perspectives

Fundamental scientific literacy is vital for a competitive economy. As a call to action, the American Association for the Advancement of Science, the National Science Foundation, and the American Association of Colleges and Universities collaborated to improve curriculum via implementing student-centered approaches that encourage student inquiry-based learning, collaboration, and increased relevancy. Answering that call, California State University, Fresno (CSUF) developed a long-term partnership with the Fresno Chaffee Zoo (FCZ) and established the Zoo-Inquiry Project (ZIP) laboratories. In the ZIP laboratories, students visit the zoo to collect water samples with zoo chemists; then design and conduct experiments focused on class topics. Due to the ZIP laboratories being in their infancy, this study attempted to understand how student perceptions of the zoo affect enrollment and participation, along with investigating students' conservation habits. The investigation was performed via multiple choice pre- and post-tests containing questions focused on general chemistry topics, student's perceptions of the zoo, past attendance, and open-ended questions to gain further insight. In-person interviews were also conducted to further understand pre-test data. Results found that a large majority of students were interested in learning how chemistry related to the zoo; although zoo practice was a concern, a majority of those students were still interested in the class. Visitation data determined that students were more inclined to visit with family and friends than with classmates. Lastly, a large majority of students were interested in learning about conservation, but did not believe their daily actions affected it. For the first time, an in-depth investigation of students' perceptions was conducted, leading to valuable information that will help enhance ZIP laboratory experiences through future course redesigns. In addition, the study strengthened the collaboration between CSUF and the FCZ by providing a better understanding of the young adult population and their reasons for current attendance rates.

Cirenio Hisasaga Jr. and Katy Tarrant, Ph.D.
Rodrigo Lopez, Sara Orlowski, Nicholas B. Anthony, Katy J. Tarrant
cirenio@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Animal Sciences and Agricultural Education

Evaluating Skeletal Parameters Between 1995 And 2015 Broiler Lines In Chicks At Hatch

To meet consumer demand for chicken production, genetic, nutritional, and management techniques are continuously being updated. Intensive genetic selection in broiler meat chickens have led to massive increases in economically important traits since the 1950s. In order to preserve the genetic information from historic broilers, the University of Arkansas maintains two random-bred genetic broiler lines representative of 1995 and 2015. To understand how selection has played a role in the anatomy of the chicken, this study aims to evaluate the skeletal integrity of a broiler chickens separated by twenty years of selection. For this experiment, 31 measurements were taken from the left leg of 20 broilers per research line at the day of hatch, for a total of 160 broilers. Using these measurements, 27 total ratios were calculated to understand the proportion of the measures. Means were separated using a T-test in JMP v.11, where significance was measured at a level of $P<0.05$. Traits such as live weight and muscle yield are primary selection parameters in broilers; thus, current broilers are larger than broilers from the past. As expected, the d 42 weight average of 1842g from the 2015 line is significantly larger compared to the 1995 line at 1469g ($P<0.0001$). Interestingly, during the evaluation of chicks at d 0, multiple raw measurement means relevant to the total leg and femur were observed as being significantly larger in the 1995 line including: leg length ($P=0.0143$), leg weight ($P=0.05$), femur weight ($P=0.0012$), and femur midpoint diameter ($P<0.0001$). Due to the unpredicted variability in the measures taken, it is evident that embryonic development in the leg structure is different between the 1995 and 2015 lines. Data from this study indicate that selection emphasis on structural integrity of the skeletal system, specifically the femur, is warranted in order to maintain healthy leg structure.

Heather Horsley and Heather L. Horsley, Ph.D.
Kimberly Coy; Dennis Wiechmann
hhorsley@mail.fresnostate.edu
California State University, Fresno - Kremen School of Education and Human Development
Department of Literacy, Early, Bilingual and Special Education

Meeting The Needs Of Emergent Bilingual Students: A University-District Teacher Residency Partnership

Serving 1.3 million English Language Learners, the California public school system is home to the largest and fastest growing population of Emergent Bilinguals in the United States (CalEdFacts, 2017). Often diverse academic, linguistic, and social needs of students who speak English as a second language are not being met (Hanel, Wolf, Banks, LaFors, 2014). Although local school districts are working to strategically address these needs, progress toward English language proficiency remains limited, further contributing to the widening of chronic achievement-opportunity gaps in education (Garcia, Kleifgen, & Falchi, 2008; Ladson-Billings, 2006). In order to unlock the benefits of the Emergent Bilingual brain (Lopez & Santibanez, 2018), schools of education seek innovative models (i.e., residencies) and methods of preparing teachers candidates with the knowledge, skills, and dispositions needed to best meet the needs of Emergent Bilinguals. Utilizing an Improvement Science framework (Bryk, Gomez, Grunrow, & LeMahieu, 2015), "user-centered" data was collected for rapid inquiry cycles to test change ideas to help us better understand: How does providing teacher candidates with feedback on their classroom practice specific to Emergent Bilingual Development support them in meeting the diverse needs of Emergent Bilinguals? The findings indicate that the use of a skills-based rubric increased the number of times the teacher candidates received formative feedback on practice intended to support Emergent Bilingual development by 2.4 times in the semester. Findings from the empathy interview data with teacher candidates suggests that improving the quality of the feedback given by their instructional coaches is necessary. Broadly speaking, this study helped strengthen a research-practice partnership between a university and a local school district in ways that support the development of a blueprint for continuous improvement of the teacher preparation program over time.

Rohan Jadhav
Risto Rautiainen
rjadhav@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Public Health

Risk Factors For Serious Agricultural Injury

Background: This study focused on risk factors for serious injuries in farm and ranch operators in the central United States.

Methods: The Central States Center for Agricultural Safety and Health, in collaboration with the National Agricultural Statistics Service, sent mail surveys to 6953, 6912, and 6912 farms/ranches in 2011-2013, respectively, covering seven Midwestern states. Results: The average survey response rate was 35%. The average annual incidence rate. (injuries/100 workers) was 6.91 for all injuries and 2.40 for serious injuries. Univariate analyses determined several demographic and farm production-related risk factors for serious injury. Adjusted analysis showed a greater risk of serious injury for operators of age 45-54 years (vs. 65 and higher), those who worked 75-99% of their time (vs. less time), and those who operated larger land areas (vs. smaller).

Conclusion: The identified risk factors should be considered when targeting injury prevention programs.

Nadia Jassim and Jennifer Miele, Ph.D.
njassim23@mail.fresnostate.edu
California State University, Fresno - Sid Craig School of Business
Department of Finance

An Exploratory Analysis Of Undergraduate Business Student Majors, Gender, Trust, Selfishness, Ethics, And Financial Decision Making

This study investigates investor behavior and "other regarding preferences," specifically, how trust, selfishness, and ethics play a role in financial decision making. While there are a number of studies that look at these social factors, our study is unique in that it combines multiple social factors in one survey. We also use a demographically diverse undergraduate student sample that is comprised of approximately 70 percent first-generation students and consists of various cultural backgrounds. The data is still being collected and currently there are over 100 participants ranging from 11 different undergraduate options within the business field. We will explore how gender and different choices in business major options and courses taken relate to trust, selfishness, ethical responses, and financial decisions. Previous studies have found that women tend to be more ethical than their male counterparts and that finance and management majors are less ethical than the other business major options. We are interested in whether these patterns persist in our diverse sample and how they relate to financial decisions and attitudes toward money. A 2013 study by Merill Lynch in the Dow Jones Industrial News (December 3, 2013) found that "gender is less a determinant of investing success than other social, demographic, and circumstantial factors" and that "men and women who have a similar level of financial knowledge share similar risk behavior." Following the results of this, we hypothesize that major option, cultural background, and other demographic factors play a bigger role in decision-making and attitude toward money rather than gender alone. This will make a contribution to research in financial decision-making and will help to better understand whether gender alone results in behavior differences or if gender is perhaps proxying for other factors such as business major option choice and financial knowledge and experience.

Ganesh Jha and Hubert Cecotti, Ph.D.
ganeshjha@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Computer Science

Data Augmentation For Deep Learning Classifiers Using Generative Adversarial Network.

Machine learning techniques have gained popularity in a large number of applications to perform classification tasks such as in computer vision, or document analysis and recognition. Despite these recent progresses, these techniques require a large number of labeled examples. To solve this issue, it is possible to augment the training dataset with artificial images. This research project lies in the area of feedforward artificial neural networks, in particular with deep-learning for the generation of artificial images that can increase the classifier performance. One of the limitations for effective training of deep learning algorithms is that it requires a substantial amount of labeled data. In case of a training dataset with a low number of labeled examples that are described in a high dimensional space, the classifier generalizes poorly. The hypothesis of this project is that Generative adversarial networks (GAN) used for data augmentation improve the classifier performance. Therefore, by designing and training GANs for creating artificial images for each class of the problem, i.e. one GAN per class, we expect to enrich databases for improving the performance of convolutional neural networks. To assess the extent to which GANs can provide a substantial improvement in accuracy, we evaluate the following conditions: 1) training on the original dataset, 2) training on the GAN generated images, 3) training on the combination of the original dataset with the GAN generated images. The performance analysis has been conducted with a database of handwritten digits (10 classes). The accuracy in conditions 1, 2, and 3 was: 99.15%, 99.3%and 99.33% respectively. These results support the conclusion that GAN represent an efficient technique for enriching the original dataset and improving the classifier accuracy.

Harshdeep Jhajj and Nan Wang, Ph.D.
Nan Wang
harshdeepjhajj@mail.fresnostate.edu
California State University, Fresno - Lyles College of Engineering
Department of Electrical and Computer Engineering

An Efficient Multipath Aodv Routing Algorithm For Manets

Introduction: Mobile nodes in MANET communicate over a shared wireless medium using radios. Routing information of a node and its neighbors is propagated through the network using certain routing protocol. This helps all the nodes in a network gain knowledge regarding the topology of a network. AODV and DSR are the famous reactive routing protocols. The proposed Multi-path AODV determines a path for the route discovery by using the time to live (TTL) factor that reduces the overhead rather than flooding the entire network with RREQ packets. The value of TTL is incremented by the source node until a route to the destination node is determined after which the source node receives an RREP packet.

Simulation and Results: Simulations have been carried out using the Network Simulator 2 (NS2). The proposed improved AODV has been compared to two existing reactive protocols, AODV and DSR based on packet loss, packet delivery ratio (PDR), end to end delivery (ETED) and throughput. Packet loss, PDR, ETED and Throughput for 100 nodes in the proposed multi-path AODV are better at 6912, 78.937, 0.1464 and 401.981 respectively compared to 7159 and 5391, 78,883 and 83.481, 0.1484 and 0.1512, 400.061 and 395.371 respectively in the existing ADOV and DSR protocols. Similar results have been achieved for 60 and 10 network nodes. The proposed multi-path AODV performs better on ETED and Throughput compared to both AODV and DSR.

Conclusion: This paper focuses on congestion alleviation of the AODV routing protocols due to link failures and rebroadcasting of the RREQ packets. This has been achieved by creating a path for route discovery in the proposed routing protocol. This research work is supported by the NSF under Grant No. 1816197.

Mike Jian and Mike Jian, Ph.D.
Matthew Mendoza, Cory L. Brooks
mikejian@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

The Role Of The Non-Canonical Disulfide Bond On The Binding Affinity Of The Nanobody R303 To The Listeria Monocytogenes Protein Internalin-B

Listeria monocytogenes is a food-borne pathogen that causes listeriosis, a potentially fatal disease with symptoms that include abdominal pain, nausea, and meningitis. Vulnerable populations include the elderlies, immunocompromised individuals, newborn babies, and pregnant women. During infection, the bacteria must invade and internalize within their host cell. This process is mediated by the surface protein Internalin-B (InlB), and is a prime target for therapeutic intervention. Recently, several single-domain antibodies (also known as nanobodies) derived from camelid species have demonstrated to be novel solutions to preventing infection by binding to InlB. The nanobody R303 contains a non-canonical disulfide bond between the CDR-1 and CDR-3, and role this disulfide bond has yet to be explored. We removed the non-canonical disulfide in R303 to generate the mutant protein Cys-R303, and demonstrated that the removal of the non-canonical disulfide enhances the binding affinity between R303 and InlB. B-factor analysis for the X-ray crystal structures of R303 and Cys-R303 shows that Cys-R303 has increased mobility across the CDR-1. In addition, analysis of the X-ray crystal structures of R303 and Cys-R303 in complex with InlB shows that Cys-R303 forms addition hydrogen bonds with InlB. These results suggest that removing the non-canonical disulfide bond in R303 increases protein flexibility, thus allowing the nanobody to form addition hydrogen bonds and increase the binding affinity to InlB.

John Jimenez and Marat Markin, Ph.D.
jimenezmjohn@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Mathematics

On The Chaoticity Of Rolewicz Type Operators On Function Spaces

We discuss examples of chaotic bounded linear operators on certain function spaces similar to those found on sequence spaces by S. Rolewicz.

Kaylee Jones and Jenna Kieckhaefer, Ph.D.
kaylerrrr@mail.fresnostate.edu
California State University, Fresno - College of Social Sciences
Department of Criminology

Examining Police Question Use In Cooperative Witness Interviewing

This study examines how police officers ask questions when interviewing a cooperative witness. Previous research has shown that open-ended questions elicit the most accurate and thorough information from witnesses, however are not the most common question asked by officers. Transcripts from police interviewing witnesses of a mock crime were broken down by officer-stated questions/statements which were separated into five question types: (1) non-question statements, (2) open-ended questions/statements, (3) closed-ended questions/statements, (4) multiple choice questions, and (5) yes/no questions/statements. Non-question statements and yes/no questions/statements were found to be the most frequently used question type.

Harsimrat Kaur and Peter Garcia, Ph.D.
harsimrat91@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

An Educational Module: Increasing Awareness Amongst Nursing Students Regarding Personal Protective Equipment Used In Isolation Rooms.

There has been an immense increase in isolation rooms and the injuries among health care workers in the hospitals. Working as a registered nurse in a hospital, I have seen nursing students struggling with the choice of appropriate personal protective equipment. Even though the signs of isolation rooms are presented clearly, the non-compliance has been a major issue over the period. Despite all the regulatory guidelines by Centers for Disease Control (CDC) and Occupational Safety and Health Administration (OSHA), discrepancies have been seen in the performance of personal protective equipment (PPE) by health care workers (HCW's). A survey was conducted by World health organization (WHO) in 2008 to identify the factors affecting the use and acceptability of PPE by the HCW's. According to the survey, factors such as beliefs and values, risk perception, interference in mobility, comfort and heat stress, work factors and lack of training plays an important role in the acceptance of PPE. Another study performed by John et al., 2016 shows that PPE training was sub-optimal and the major thing lacking was proper education. Thus, this study aims to promote the education of a nursing student in a healthy way i.e educational presentation. The level of knowledge of the participants will be accessed through pre and post-test. Educational presentation will be provided as an intervention to Bachelor's of Science in Nursing students at California State University, Fresno. An ANOVA and T-test will be used to analyze and compare scores before and after the educational intervention. Results of the project are pending project completion.

Satwinder Kaur and Yoshiko Takahashi, Ph.D.
Ksatwinder@mail.fresnostate.edu
California State University, Fresno - College of Social Sciences
Department of Criminology

Front Line Workers: South Asians' Experiences Of Intimate Partner Violence In The United States

The question that is being explored in the current study is how the experiences of South Asian intimate partner violence victims in the United States compare to non-South Asians/general population based on perceptions of front-line workers. It is important to explore the similarities and differences based on the front-line workers perceptions to see if the reality and perceptions are parallel. In addition, the knowledge can better help to provide culturally appropriate services and intervention and prevention strategies for the individuals in need. The data is collected using interviews with about seven front line workers who work with intimate partner violence related clientele in their respective fields or teach on the topic. The front-line workers work with individuals from various backgrounds, some including South Asians. The questionnaire used to interview the front line workers is a mix of questions that have been asked by researchers for previous research purposes related to domestic violence. In addition, some of the questions are changed to better fit the study and some of the questions are new. The interviews take place within a month to a month and a half. The participants were reached out to in-person or by e-mail. All participants were asked about intimate partner violence. The purposes of the study are to assess perspectives of front-line workers who work with South Asian and non-South Asian clients about the clients' experiences of intimate partner violence and how the experiences are similar and differ from those who are not from the South Asian background.

Keywords: intimate partner violence, front line workers, non-South Asians, South Asians

Patrick Kelly and Ettore Vitali, Ph.D.
Annette Lopez
ptfk121493@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Physics

Exotic Phases In Cold Atoms: The Supersolid State

Cold atomic Fermi systems are gaining strong interest due to the unprecedented experimental control that can be achieved. Those systems can be realized in the laboratory by cooling and trapping Lithium or Potassium atoms. This allows us to visualize quantum mechanics at work in a controlled setting. Normally in physics the forces acting among particles, like gravitational or Coulomb forces, never change. On the other hand, in cold gases we are allowed to change the strength of the forces by tuning a magnetic field. What makes this possible is a phenomenon in atomic physics called Feshbach resonance which makes these gases unique laboratories to explore the behavior of quantum many body systems. We will provide a description of this phenomenon in our presentation. The Hamiltonians that can be engineered through Feshbach resonance find applications in Condensed Matter Physics, in connection to Superconductivity, in Astrophysics of compact objects like neutron stars, and in Nuclear Physics, related to the pairing mechanism. We focus on a two dimensional, attractive Fermi gas on an optical lattice at high density, using first principles Quantum Monte Carlo simulations. We address the existence and stability of a supersolid state of matter when the number of particles is equal or close to the number of sites in the optical lattice. We will present results about the density correlation, which gives us information about the spatial arrangement of the atoms on the lattice, as a function of the density, and we provide clear evidence for the supersolid phase. We also study density fluctuations in the system, which yield information about the motion of the atoms, and we investigate the possibility of the existence of special features of the dispersion relation, that is special kinds of motion, that are unique for the supersolid state.

Aakash Lalchandani and Shih-Hsi "Alex" Liu, Ph.D.
aakashl1993@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Computer Science

An Efficient Cnn Based Approach For Diabetic Retinopathy Stage Classification

Diabetic Retinopathy (DR) is the foremost cause of blindness among adults of age 16-59 worldwide. Early detection of this condition is very important for prognosis. At present, detecting Diabetic Retinopathy is a time-consuming procedure that needs an expert to evaluate and examine digital fundoscopic images of the retina. By the time experts provide their reviews, the delay leads to a follow-up gap, miscommunication, and late treatment. To tackle this problem, I propose a way to improve the stage detection of Diabetic Retinopathy by training and enhancing the architecture of a Convolutional Neural Network (Inception V3) so that it can contribute to preventing further vision loss from diabetes. There are studies to differentiate DR from Non-DR fundoscopic images but there is barely any efficient research to classify stages of DR accurately. To solve the existing problem and improve accuracy, I plan on using a larger dataset that will be produced from data augmentation (rotating, flipping, shifting) of existing 166 images. More number of images for training may lead to better training sets which overall results in improved accuracy of the model. Moreover, I plan to enhance the architecture of the Inception V3 for DR Stage Classification. Additional layer/layers may help improve the accuracy furthermore by refining the fundoscopic images in every iteration. Hard exudates are major symptoms of stage II and III DR, and this detection can introduce new features, which help us again improve the accuracy of the DR stage classification. Currently, I collaborate with Virginia State University to obtain in-depth domain knowledge and dataset and to verify the results. Improved accuracy and research results from my experiments can be used as a reference point for further DR stage classification research and real-life applications. Significant learning rate and accuracy will have a high impact on applied research.

Lisseth Lauri and Zhanna Bagdasarov, Ph.D.
Zhanna Bagdasarov, Alexandra E. MacDougall, Kelsey Medeiros
lizzielysia@mail.fresnostate.edu
California State University, Fresno - Sid Craig School of Business
Department of Management

The Influence Of Internship Experience On Ethical Decision Making

Unethical business practices have dominated the news in recent years. In order to combat future instances of this, institutions of higher learning are considering the integration of greater ethical training into business school curricula. One way business students may be exposed to ethics in their education is through formal internship participation, which is very common in business school education. Using the sensemaking approach to ethical decision making (EDM), we empirically tested the relationship between internship experience for business students and their EDM. Using Qualtrics, participants read an ethics case and responded to various follow-up questions meant to delve into their EDM process. The data is currently being analyzed; however, we hypothesized that business students with internship experience will make decisions of better quality than those who lack internship experience. We obtained 135 responses, and will match participants with and without internship experience on gender - a stable demographic variable known to affect EDM. This study is unique in that there have not been prior empirical studies conducted to examine the effects of internship experience on EDM. This research will make contributions to the literature in the fields of business ethics and experiential learning pedagogy. It also has the opportunity to provide educators and business leaders insight into the ethical implications of internship experiences. Future expansion of the research may include obtaining a larger sample to further examine the data trends.

Yia Lee and Steven Church, Ph.D.
Nou Her, Jer Xiong
lis1218@mail.fresnostate.edu
California State University, Fresno - College of Arts and Humanities
Department of English

Hmong American Creative Writing: A Panel

Narratives surrounding the Hmong are dominantly framed as refugee or assimilation narratives and are often told through a dominant other, perhaps initially because of language barriers. However, in retaking ownership of these stories, in being the storytellers rather than the subject of stories, we can expand the narratives of Hmong—of what it means to be Hmong and to be Hmong in America. We can be more than just a refugee or an assimilation narrative. Because writing is also a tool connected with power and privilege, by utilizing the medium of writing, we Hmong-Americans become active participants that create, engage, and document ourselves in a system that has historically left us behind, and that has presented a particular image of us. Today, Hmong American literature is a field ripe with potential. This panel presents research on the cultural pioneers who established the first Hmong voices in the literary world, providing a detailed survey on the evolution of Hmong American literature. Presenters debate the tension between the Hmong language as a minority cultural voice and the English language as the dominant sphere, sharing autoethnographic texts and personal experiences to address questions about the present and future growth of Hmong American writers. The panel brings awareness to current resources and support for Hmong writers, in particular analyzing the methods of the Hmong American Writers' Circle (HAWC), a writing workshop group which has built up a network of published and emerging Hmong writers. In conclusion, as Hmong American literature is still a developing field, the presenters recommend more spaces/workshops for Hmong American writing to ensure continuation and future success.

Cheaheng Lim and Woonki Na, Ph.D.
cheal@mail.fresnostate.edu
California State University, Fresno - Lyles College of Engineering
Department of Electrical and Computer Engineering

Development Of Artificial Neutral Network Based Maximum Power Point Tracking Algorithm For A Photovoltaic Application

In this research, Artificial Neural Network (ANN) is utilized to improve the efficiency of the Maximum Power Point Tracking (MPPT) controller in a photovoltaic (PV) system. The data used in this proposed ANN training are obtained from a fuzzy controller in the buck converter connected to a PV panels. The use of the combined ANN and the fuzzy controller allows the PV system to operate at its maximum power point in both full and partial irradiation condition more efficiently compared to conventional controllers such as perturb and observe (P&O), incremental conductance (IC), and genetic algorithms. The proposed algorithm is tested and validated through the MATLAB simulation and experiment.

Nathanial Loh and Janet Tomiyama, Ph.D.
Dellawar, N., Franco, A., Seitz, B., Tomiyama, J.
nloh25@gmail.com
University of California, Los Angeles - College of Social Sciences
Department of Psychology

Are Meal Memories Special? ' Evidence For Enhanced Memory Of Eating Events Compared To Similar Tasks

Evolutionary theory suggests memory should be biased towards remembering fitness relevant (i.e. related to one's survival) information compared to non-fitness relevant information (Anderson & Schooler, 2000). With this in mind, we asked how memory of eating events compares to memory of a similar, but not fitness relevant, procedural task. Participants (N=159) watched a film and were cued to either eat 30 M&M's, transfer 30 M&M's from one bowl to another container, or transfer 30 beads from a bowl to a container throughout. Participants were then tested on their memory of how many times they performed the task. Memory of the eating event was more accurate than both the M&M and bead moving tasks. This suggests that eating events are particularly well remembered and may even be governed by unique mnemonic processes. These findings add to a growing literature demonstrating the link between memory processes and eating behaviors. The theoretical and clinical implications of these findings are discussed.

Rodrigo Lopez and Katy J. Tarrant, Ph.D.
Rodrigo Lopez, Katy J. Tarrant
rlopez0795@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Animal Science

Platform Enrichment Usage By Commercial Broilers From Two Genetic Lines

Consumer demand regarding standards of care, welfare, and production methods are increasingly important for livestock producers. To meet consumer demands, the U.S. is on a path to increase levels of welfare regulation for poultry through involuntary legislation and voluntary actions. Structures added to the environment act as welfare enrichments, but establishing scientific understanding of their impact is critical. To warrant the usage of platforms as enrichments in conventional broiler systems, bird utilization of the platform must be established. Due to intensive selection of economically important production traits within genetic lines of broilers, it is possible that behavioral variations also exist between lines. This study aims to determine if behavioral differences exist between two lines of broilers to the extent that the lines will vary in their usage of platforms. In a commercial broiler house, six 4.88m2 pens were constructed for Cobb 500 birds, and six constructed for Ross 308 birds. Within each pen, 12 broilers from a single line had access to ad libitum feed and water, and access to a 0.91m2 platform set 0.05m above the ground. Scan sampling of the platforms were conducted twice daily for six weeks. Bird usage counts were calculated as the number of birds occupying the platform, and were analyzed per line. Means were separated using a T-test in JMP v.11. Numerically, bird usage by the Cobb line was higher than the Ross line in all weeks examined. Week 5 had the largest variation in usage between the Cobb (0.89±0.08) and Ross (0.66±0.08) lines (P=0.03), followed by week 6 at 1.54±0.01 birds per Cobb pen and 1.41±0.01 per Ross pen (P=0.37). The data from this study suggests line differences equate to usage variation between lines. Establishing this knowledge is critical, as conclusions drawn from research studies on enrichment usage could vary based on line.

Marisa Loza and Andrea Arndorfer, Ph.D.
Dr. Andrea Arndorfer
lunatrinidad@mail.fresnostate.edu
California State University, Fresno - College of Social Sciences
Department of Criminology

Additional Opportunity To View: Can The Inclusion Of A Novel Instruction Improve Showup Identification Accuracy?

To date, over 360 wrongful convictions of the innocent have been exposed through post-conviction DNA testing. These wrongful convictions shed light on systemic problems within the criminal justice system. For example, over 70% of these cases were caused, in part, by eyewitness misidentification, which has been identified as the leading factor contributing to these wrongful conviction cases. The current study examines one method for gathering eyewitness evidence: the showup identification procedure. The showup identification procedure has been cited as problematic because it inherently suggests the identity of the police suspect. Research has shown the provision of an additional-opportunities instruction to reduce the number of mistaken identifications from showups – a benefit which occurred without reducing correct identifications of the culprit. The current study further explores the effectiveness of this instruction. Approximately 120 adult participants will watch a mock crime video and will be randomly assigned to receive the additional-opportunities instruction or not before making an identification from either a culprit-present or culprit-absent showup procedure. After making an identification decision, participants will answer questions about their decision making and identification experiences (e.g., confidence, view, ease of identification, etc.). Finally, all participants will indicate whether they wish to have an opportunity to view additional photos to identify another individual and the reasoning behind their decision (e.g., strength of certainty, effectiveness, etc.). Data collection is currently ongoing. Results are expected to replicate extant findings. Furthermore, because this is the first study to investigate the motivation behind the desire to accept the opportunity to view additional photographs, results will advance the field's understanding of conditions under which an opportunity to view additional suspects would be considered necessary. Findings may have implications for how law enforcement conduct showup identifications.

Christina Macias and Myunghwan Shin, Ph.D.
Myunghwan Shin
clc34@mail.fresnostate.edu
California State University, Fresno - Kremen School of Education and Human Development
Department of Curriculum and Instruction

"Kids' Voices Matter!": Transforming Elementary Stem Education With Preservice Teachers' Collaborative Inquiry

Inquiry-based pedagogies have provided an opportunity for preservice teachers to engage in practices that ensure equitable experiences for all children through the careful examination of real-world problems, data collection, and problem solving (Cochran-Smith, 2009; Levy et al., 2013). While previous research on inquiry-based pedagogies has focused mainly on preservice teacher inquiry guided by teacher educators, few studies have investigated the role or value of collaborative inquiry with elementary students as a tool for change in STEM education.

This study examined how Fresno State's preservice teachers in a science methods course utilized a collaborative inquiry model with elementary students. Through exploration of students' funds of knowledge, cultural practices, and multiple identities, the preservice teachers engaged in inquiries with elementary students to transform STEM education in local schools or communities. The guiding research questions are as follows:

1. How do preservice teachers leverage collaborative inquiry with elementary students to ensure equitable STEM education?

2. How do preservice teachers position themselves as STEM educators utilizing the collaborative inquiry?

This study employed an ethnographic research method for data collection and analysis (Creswell, 2013). Multiple qualitative data were collected using (a) participant observation, (b) artifact collection, and (c) focus group interviews. The data analysis was guided by the constant comparative method (Strauss & Corbin, 1990) to organize and discover emergent themes.

Findings illustrate examples of successful collaborative inquiry, including (a) a range of elementary student voice and representation, (b) varying opportunities for elementary students among placement sites based on socio-economic resources, and (c) positive teacher candidate positioning as STEM educators based on the use of collaborative inquiries.

The findings suggest that the collaborative inquiry that preservice teachers and elementary students participated in can provide a new pedagogical model for STEM teacher development and socially just STEM learning experiences for all students.

María Madrigal Piceno and Paula Sanmartín, Ph.D.

mariagmadrigalp@mail.fresnostate.edu
California State University, Fresno - College of Arts and Humanities
Department of Modern and Classical Languages and Literatures

¿Autor O Esclavo? ¿Esclavo O Autor?: La Identidad Del Esclavo En Las Obras De Manzano Y Avellaneda/ Author Or Slave? Slave Or Author? The Slave'S Identity In The Works Of Juan Francisco Manzano And Gertrudis Gómez De Avellaneda

In Cuba during the colonial times, African slaves were seen as a tool used for heavy work in the sugar cane plantations and as domestic slaves. Due to their mistreatment, in the first half of the nineteenth century in Cuba there were several rebellions leaded by slaves. sometimes with the help of Cuban creoles who wanted to end the slave trade. Therefore, during this colonial period, it was prohibited to write a literary text that talked about the situation of slaves. The texts of Autobiografía de un esclavo [Autobiography of a Slave] (1839?/1840) by the Cuban former slave Juan Francisco Manzano, and the Romantic novel Sab (1841) by Spanish-Cuban author Gertrudis Gómez de Avellaneda were published outside of Cuba, due to the censorship of the colonial government. These texts contained a criticism of some features of slavery and the government did not accept this content. The works of Manzano and Avellaneda present the complex identity of domestic slaves that see themselves as part of the master's family. In my paper, using the theoretical term created by the sociologist and historian W. E. B. DuBois, to analyze the complex identity of African-Americans after the Reconstruction period, I explore how the slave protagonist in these texts is pictured as a being with "double consciousness," through his use of the written word.

Andy Magdaleno and Kimberly Stillmaker, Ph.D.
Kimberly Stillmaker, Maryam Nazari, Francisco Perez
andymr86@mail.fresnostate.edu
California State University, Fresno - Lyles College of Engineering
Department of Civil and Geomatics Engineering

Simulation Of Proposed Shake Table Testing Of Scaled Steel Moment Frames

Column splices are required in steel moment frame structures exceeding three stories due to transportation limitations. Such splices constructed prior to the 1994 Northridge earthquake were fabricated using partial joint penetration welds, a connection in which only a portion of the adjoining surfaces are fused with weld material, leaving a crack-like flaw. These splices have been shown to exhibit a high risk of fracture. However, simulations validated by shake table testing are needed to assess the risk to human safety caused when column splice fracture occurs. Previously, the authors developed a test plan for shake table testing that included the design of a small scale moment frame and scaling of earthquake ground motions to levels appropriate for the scaled structure. The present study simulates the seismic performance of this scaled structure subjected to ten scaled ground motions using OpenSEES. These simulation results will be validated in a future study against shake table test results. Once validated, this simulation methodology may be used to simulate existing structures to inform whether retrofitting of their column splices is warranted. In the present analyses, stresses in the column splices, lateral drift, and vertical uplift are compared between structures with and without fracture splice. The results for stresses occurring in the column splices indicate identical performance up until the occurrence of fracture. At this point, fractured splices continue to provide resistance of compressive stresses, while ceasing to provide resistance to tensile stresses. Lateral drift and vertical uplift results of the structure with and without column fracture will also be discussed in the presentation.

Brenna Mandujano and Martin Shapiro, Ph.D.
Martin Shapiro
brenm@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Psychology

The Role Of Affect In Risky Decision-Making

For this project, we are investigating the effect of emotional states on risky economic decision-making. There is some evidence from our lab that seeing negative images (e.g., a dead body) increases riskiness compared to seeing positive images (e.g., water skiing). In the present study, we are measuring individual emotional reactions and risk-taking behavior. Emotions are being assessed by physiological activity and self-report. Participants complete a gambling task where they solve short memory problems using images; they then have an opportunity to risk points based on perceived accuracy. While playing the game, we monitor three physiological responses, heart rate (ECG), skin conductance (EDA), and facial expression (EMG). We are also using subjective measures of emotion and stress before, during and after the experiment. We hypothesize that those most affected subjectively and physiologically by the images will show the most significant change in their risk-taking behavior.

Devinalexus Marin and Allen Azizian, Ph.D.
Sarah Paden, Allen Azizian
devin_alexus@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Psychology

Importance Of Reliability In Risk Assessment Of Sexually Violent Predators

Sexually Violent Predator (SVP) commitment allows for an indefinite post-sentence civil commitment of sex offenders who pose a serious and well-founded risk to public safety. Given the high-stakes involved, the risk assessment tools used by evaluators must be reliable and valid.

We examined the inter-rater reliability of the Static-99R and paraphilic disorders. The sample consisted of 431 individuals who were detained or civilly committed pursuant to the SVP Law. Interclass correlation and Kappa statistics were used to determine inter-rater reliability. Results showed excellent reliability on the Static-99R with an ICC score of .917 and substantial agreement on pedophilic diagnosis with a Kappa of .836. High inter-rater reliability confirms that the risk assessments used are reliable. Further implications will be addressed.

Marat Markin
mmarkin@csufresno.edu
California State University, Fresno - College of Science and Mathematics
Department of Mathematics

On The Entireness Of Weak Solutions Of An Abstract Evolution Equation With A Scalar Type Spectral Operator On The Real Axis

Found are conditions necessary and sufficient for all weak solutions of an abstract evolution equation with a scalar type spectral operator in a complex Banach space to be entire vector functions. Also, revealed are certain interesting inherent smoothness improvement effects. The important particular case of the equation with a normal operator in a complex Hilbert follows immediately.

Lizbeth Marquez and Lizbeth Marquez, Ph.D.
James Mullooly, Nancy Akhavan, Donald Wise, Barbara Hioco
lunacy33@mail.fresnostate.edu
California State University, Fresno - Kremen School of Education and Human Development
Department of Educational Leadership

Central Valley Promise: Creating A K-16 College And Career Pipeline For Central Valley Students

This mixed-methods study examined the student perspective of the transition to college experience and the role of career pathways in student success. The following questions guided this study: (a) what is the difference in career choice knowledge and transition to college experience between Central Valley Promise (CVP) students and traditional students based on their ability to describe future career and college plans and the transition to college experience? and (b) how do students describe their career choice knowledge and transition to college experience? Method: This study utilized two existing measures to create an online survey. Specifically, students rated their confidence in choosing a college major. The second survey measured student's adjustment to college and campus life. These scales, along with another created by the researcher, were merged to create one online survey that measured self-efficacy, adjustment, and college major knowledge. Among the 594 students who received the online survey, 190 responded. An independent t-test was conducted to compare results among the treatment and comparison groups. Results: Both groups responses were compared using specific variables such as attitudes toward academic goals, satisfaction with social and academic life, and adjustment to college. Findings included an increased satisfaction and confidence level in academic performance, social life, and choosing a college major among the treatment group. Also, CVP students were unaware of the program's requirements. Contributions: Findings contributed to the literature by validating the use of new student orientations as a method for student retention and transition to college. Conclusion and Recommendations: Recommendations include continued support for students through orientations, the creation of purposeful curriculum, and the addition of team-building activities throughout the first semester.

Glen Martin and Emily Walter, Ph.D.
Emily Walter
glenem@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology Department (Science Education)

Exploring The Relationship Among Student Attitudes About Science And Conceptual Understanding In Undergraduate Biology

National policy calls for change in undergraduate science education to promote meaningful learning among a diverse students. This need is particularly acute in introductory level courses for STEM majors, where up to 40% of students receive a D, F, or withdraw from the course entirely. There are a number of reasons for this problem, many of which are beyond the direct reach of faculty. Since student attitudes can impact how they approach learning, it is important that educators familiarize themselves with how student attitudes affect learning specific science content. This study explores a large-sample of (N=1201) of undergraduate students using four published surveys. We explore (a) how attitudes and conceptual knowledge were affected pre- to post-instruction, (b) how these differed by demographic variables of interest and (c) how these attitudes change over the course of a college science career. Our analyses indicate no clear relationship between knowledge and attitudes; however, for most course samples, Enjoyment/Personal interest and Problem-Solving Strategies were significantly correlated with scores on concept tests ($p<0.05$). Courses did not always affect student attitudes, but Problem-Solving Synthesis and Application scores significantly increased in lower division Course A and B, but not upper division Course C or D. Views of learning by memorization were stable pre-to post-instruction in all courses, indicating that participants agreed that learning happens through memorization. Among demographic variables of interest, first generation students had significantly lower pre-instruction scores in Genetics ($p=0.040$). We hypothesize that views about memorization as 'learning' could be an artifact of instruction; these views could be targeted if instruction was more active. The increase in Problem-Solving Synthesis and Application attitudes may be attributed to those skills being increased earlier in college. Additional implications and results of this work will be discussed in the full presentation.

Javier Medina and Va Nee L Van Vleck, Ph.D.
jnmedina75@mail.fresnostate.edu
California State University, Fresno - Sid Craig School of Business
Department of Economics

The Criminalization Of Marijuana And The Opioid Epidemic

The Opioid Epidemic is a worldwide and domestic crisis that has been around since the late 1990s. The past few years society has begun to focus its efforts on reversing the increasing overdose rate. A major tool has been the legalization of marijuana, a non-addictive pain relieving alternative. The goal of this project is to see if the criminalization of marijuana, arrests for the sale and possession of marijuana contributed to increased opioid usage leading to overdoses. A multivariate linear regression was run, the opioid overdose rate was the dependent variable, arrests for marijuana possession and sale, and the opioid prescription rates were the 3 independent variables. All variables are at the state level, including D.C., for the year 2012. The results showed that an increase in arrests for the possession of marijuana actually decreased the opioid overdose rate, while the increase in arrests for the sale of marijuana led to an increase in the opioid overdose rate. Given our results, we recommend further push for legislation to decriminalize and normalize usage of marijuana.

Vanessa Medrano-Ramirez and Aimee Rickman, Ph.D.
Evelyn Reyes, Taylor Mole, Shastina Lara, Courtney Berk, Aimee Rickman
vanemed23@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Child and Family Science

"Just Google It": A Semiotic Study Of Google Search'S Representation Of University Students' Identities

Over the past two decades, U.S. adolescence has lengthened. This has extended adolescent liminality into the third decade of life while placing new demands on young people to seek out understandings and to gain access to financial independence and other cultural markers of adulthood (Larson, 2002). Google has grown over this same period, easing access to social resources through algorithmic Web-based search. Adolescents experience developmental challenges that require them to consider themselves in reference to wider social expectations (Erikson, 1968; Vygotsky, 1934), and the Pew Center finds them trusting Google search to provide credible, vetted guidance that informs cognition and identities. When traditional college-age students turn to Google for advice, what do they learn?

Method: This semiotic study was guided by sociocultural theory. Using public computers, five researchers conducted 10 separate Google searches – five for links to information and five for images – three times over a one month period (n=150). Informational queries reflected questions females attending Fresno State might ask. Four of the image queries reflected identities of students. Two did not. The first page of information and first four lines of images returned from Google were documented. Open coding identified signs with each artefact, and researchers wrote descriptions of signifiers, semes, and meaning. We discussed codes and used axial coding to identify patterns. Cultural knowledge was discussed, drawing out cultural codes.

Results: Searches varied widely in information provided. For example, certain queries were consistently more likely to return commercial links than others. Also, Google images reflected partial and demeaning representation of adolescents' realities.

Conclusions: Google search helps to organize information available through the Web, but it is not neutral (Noble, 2018; Vaidhyanathan, 2011). Further research is needed to understand the quality and type of guidance provided to adolescents advised to make sense of their world by "just Google[ing] it."

Lihong Mo and Carlos Sueldo, Ph.D.
Lourdes Correa, Haydy Uriondo, Cristian Alvarez Sedo, Carlos Sueldo
lmo@fresno.ucsf.edu
UCSF - Fresno - UCSF Fresno
Department of OBGYN

Comparison Of Two Methods To Reduce Sperm Dna Fragmentation

OBJECTIVE: Spermatozoa preparation skills and the ability to select a normal viable spermatozoa for injection are important factors in the success of Intracytoplasmic sperm injection (ICSI). They play a key role because the direct injection of spermatozoa into the oocyte bypasses natural selection, thus it could inadvertently introduce a defective paternal genome. Traditionally, sperm preparation is through a density gradient centrifugation (DGC) or swim-up. The use of DGC significantly reduces the levels of DNA fragmentation compared to the neat semen 1. Nevertheless, some samples may still contain high levels of DNA damage after DGC. For these case, a following procedure by using Magnetic-Activated Cell Sorting (MACS) with annexin V microbeads to deselect apoptotic sperms can be offered to further decrease sperm DNA fragmentation levels. However, MACS is not allowed in some countries with pending clinical safety trials. Hence, we propose to compare the efficiency of performing two consecutive DGCs versus DGC+MACS in DNA damage reduction.

DESIGN: Experimental study

MATERIALS AND METHODS: Twenty five patients who underwent ART at an infertility center (2018) were selected for the study. Inclusion criteria: volume >= 1 ml and concentration >= 5 million sperms/ml. Samples were collected by ejaculation. After 60 min liquefaction, basic semen analysis was performed, followed by density gradient centrifugation (DGC), with either subsequent MACS or another DGC. TUNEL assay was used to assess apoptotic level in: Neat sample (T0), after first gradient (TG1), after DGC+MACS (TG1+M) or after second gradient (TG1+G2). Five hundred spermatozoa were counted under microscope for each group. Statistical analysis was performed with paired student t test.

RESULTS: The overall average donner age was 38.6±4.2. DNA fragmentation was significantly decreased comparing neat semen to after the first gradient (TG1) (28.1±12.3 vs. 14.6±7.4; $p < 0.0001$); TG1 and after subsequent MACS (TG1+MACS) (14.6±7.4 vs. 8.4±4.1; $p < 0.0001$). Finally, TG1+MACS and TG1+TG2 had similar results (8.4±4.1 vs. 8.0±.4.3, $p = 0.22$).

CONCLUSIONS: Sperm DNA fragmentation is significantly decreased after density gradient centrifugation regardless of the initial levels of the samples. Preparations with DGC followed by MACS further decrease DNA fragmentation. However, performing a second consecutive DGC is as effective and potentially more cost and time-saving in ICSI procedures.

Elnaz Mohammadiyaghini and Fariborz M. Tehrani, Ph.D.
Mohammad Pouramini - Roshanak Farshidpour
elnazmy@mail.fresnostate.edu
California State University, Fresno - Lyles College of Engineering
Department of Civil and Geomatics Engineering

Sustainability Of Lightweight-Expanded-Clay-Aggregate Masonry Walls

This research presents the outcome of a case study on life cycle analyses of masonry walls containing lightweight expanded clay aggregates (LECA) in respect to energy inputs and carbon dioxide emissions. Masonry walls influence various parts of the building, including heating, ventilation, and air conditioning (HVAC). Furthermore, physical and mechanical characteristics of materials will change the consumption of energy and the release of greenhouse gas emissions during operation, maintenance, and decommissioning phases of the life cycle analysis. The referenced case study involves a completed conventional building and utilizes actual records to evaluate the sustainability of the proposed material. Analyses emphasize the potential of these materials to enhance the sustainability rating of infrastructures. The methodology relies on calculation of energy and emissions associated with the application of LECA masonry units in an office building. The employed procedure provides insights on the life cycle processes, including mining, production, construction, and operation of the system.

Theresa Monreal and Samer Sarofim, Ph.D.
Samer Sarofim
theresamonreal@mail.fresnostate.edu
California State University, Fresno - Sid Craig School of Business
Department of Marketing

The Differential Effect Of Athletics And Notable Alumni On Purchase Intentions, Potential Enrollments, And Donations: The Mediating Role Of Attitude Towards The Ad And Attitude Towards The Brand

Consumers are constantly surrounded by information that influences their decisions in everyday lives. Universities use several forms of advertisements to communicate with prospective students and alumni to help develop their perceptions of their respected school, enhance enrollments, and foster philanthropic donations. Past research has focused on what factors affect student and alumni behavior toward their attended university. However, consistent evidence is lacking on how ads featuring university's athletic programs and alumni networks affects these respected group's interactions with their universities. At Fresno State, successful athletic teams/players and connections to notable alumni are two of the most distinguishing aspects of the university. Thus, it is imperative to understand the role they play and their impact on individuals associated with the university. Investigating attitude toward the ad (A_Ad), attitude toward the brand (A_b), this study explores the effects the university's athletic programs and notable alumni have on university willingness to enroll, willingness to donate, and willingness to purchase tickets. The model contributes to theory by investigating the differential effect on featuring athletic (vs. non-athletic) notable alumnus on the aforementioned variables. Further, the mediation roles of Attitude Towards the Ad and Attitude Towards the Brand is investigated to explain the relationship between the athletic (vs. non-athletic) notable alumnus on Purchase Intentions, Potential Enrollments, and Donations. Managerial implications are generated and discussed.

Derek Morrelli and Santanu Maitra, Ph.D.
Jacob Guerra, Bhvandip Bajwa, Prarthana Kumar, Krish Krishnan, Santanu Maitra
derekmorrelli@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Solvent Effect And Electronic Modulation Of Amide Bond Resonance In Deet Analogs

Spotted wing drosophila (SWD) is an invasive species of fruit fly that are detrimental to California agriculture. N,N-diethyl-m-toluamide (DEET) is a common insect repellent that can be used to deter many species of fruit fly, including SWD. In an attempt to explore better repellency, a structural examination of m-DEET and its interactions with odorant binding proteins is underway. The amide bond in DEET analogs is a key component to the molecule's structural conformation. The amide bond is in resonance between two structural conformations, one with free rotation about the amide bond and one with a double bond, restricting rotation and resulting in a planar geometry. This restricted rotation is observed by the chemical exchange of the hydrogen atoms on the carbon atoms adjacent to the nitrogen atom. Examination of DEET analogs have shown that the degree of double bond character can be influenced by steric interactions and the electronic properties of substituents bound to the aromatic ring as well as the size of the amide substituents. This effect can also be influenced by the chemical environment the molecule is in. A solvent commonly used for NMR studies is deuterated chloroform, which has a low dielectric constant, but is a poor representation of the chemical environment in which DEET interacts with its biological targets. Because of this, a range of solvents were used to examine the solvent effect on DEET analogs. This solvent effect on the resonance of the amide bond in DEET analogs are compared experimentally between deuterated toluene, deuterated chloroform, deuterated pyridine, deuterated acetone, deuterated methanol, and deuterated dimethyl sulfoxide as the solvents for VT-1H-NMR.

Catherine Mueller and Joy J. Goto, Ph.D.
catjmueller@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

The Effects Of Nmda And Ampa Receptor Antagonists On The Neurotoxicity Of Bmaa In Drosophila Melanogaster

The non-protein amino acid beta-methylamino-L-alanine (BMAA) may contribute to the onset of a group of neurodegenerative diseases known as amyotrophic lateral sclerosis-Parkinsonism dementia complex (ALS-PDC). BMAA in the presence of bicarbonate has a similar structure to glutamate, an excitatory neurotransmitter, allowing it to overstimulate the N-methyl-D-aspartate (NMDA) and α-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid (AMPA) glutamate receptors and cause damage via excitotoxicity. Drosophila melanogaster is used as a model to investigate BMAA's effects on these receptors as visualized by locomotor ability and viability. This project aims to study potential protective effects of NMDA and AMPA receptor antagonists to prevent BMAA binding and neurotoxicity.

To investigate the in vivo effects of ingested BMAA and NMDA and AMPA receptor antagonists, age-matched, female fruit flies are fed food containing these agents. The flies are observed during feeding trials for locomotor ability and viability. Locomotor ability is assessed using a tap-down test, wherein the flies are tapped down inside a vial for each day of feeding, and the number of flies that climb above a 5.5 cm mark after 10 seconds is recorded. This data quantifies the motor function of the treated fruit flies and assesses the neurotoxic or protective effects that the agents impart on the flies. Pre-feeding experiments using NMDA receptor antagonist MK-801 have been conducted, and further pre-feeding, co-feeding, and rescue experiments will be conducted using both NMDA and AMPA receptor antagonists.

On average, 39.10% of the MK-801-pre-fed flies surpassed the 5.5 cm mark at the time of BMAA feeding compared to 87.63% of the control-fed flies, while 31.56% of the flies that did not receive MK-801 surpassed the 5.5 cm mark at the time of BMAA feeding compared to 90.18% of the control-fed flies. The MK-801-pre-fed flies performed slightly better in the locomotor test, and further trials will be conducted to further investigate this.

Edgar F. Munoz and Emily Walter, Ph.D.
Emily Walter
efm1989@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology (STEM Education)

The Impact Of A First-Year-Experience (Fye) On The Stem Identity Of Undergraduate Students

One of the most challenging fields for college student success is Science, Technology, Engineering, and Mathematics (STEM). In the U.S., 40% of students who begin a major in STEM actually complete a STEM degree. A number of factors influence STEM student success, including experiences both before and during college. Some answers to resolve this STEM success issue lie in literature exploring college student success in general. Many colleges and universities have adopted First Year Experience (FYE) programs for their incoming freshman. FYE programs generally have a positive influence on first year and ongoing year-to-year retention, but less research has been done on how discipline-specific FYE programs impact students. It follows that an FYE program designed for STEM students could help to improve STEM student outcomes. These programs could influence students in any number of ways, but ideally, it should affect an outcome with well-established links to entering the STEM field. As such, my research explores how an FYE program impacts STEM student identity, a personal trait key to future success as professional. The goal of the study is to explore the impact of a STEM-specific FYE program on four aspects of students' STEM identity, including recognition, performance, competence, and interest based on data from 91 students in Fall 2018. We highlight a few of our findings herein. We have learned that women were significantly more likely than men to agree that they wanted recognition from others as a "science person" ($p=0.004$). We have also that despite low incoming SAT scores, students of color were significantly more likely to have a network of support among other FYE students. In this talk, we will discuss patterns in the data and implications for the FYE program we investigated. This will include a detailed analysis of how characteristics impact students' STEM identity and overall success trajectories in STEM.

Kevin Muthima and Qiao-Hong Chen, Ph.D.
Maizie Lee, Xiang Li, Guanglin Chen, and Qiao-Hong Chen
muthima@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

The In Vitro Evaluation Of Fisetin Derivatives In Prostate Cancer

The most common cancer among men worldwide is prostate cancer. While early stage prostate cancer is treatable with hormone therapies, there is yet an effective treatment available for metastatic, advanced prostate cancer. In vitro and in vivo studies in natural products have revealed promise in fisetin, a bioactive phenolic flavonol found in strawberries at about 160µg/g. Fisetin has potential in treatment of both early stage and metastatic, advanced prostate cancer. The limitations of fisetin are moderate potency and low bioavailability. This study aims to alleviate, at least partially, the drawbacks of fisetin as an anti-prostate cancer agent through appropriate chemical modifications. To this end, eight 7-O-aminopropyl-3,3',4'-O-trimethylfisetins, and one bifisetin derivative have been successfully synthesized. All synthesized fisetin derivatives have been characterized by their NMR data. Our WST-1 cell proliferation assay data indicate that methylation of 3,3',4'-trihydroxyl groups only led to slightly increased potency in suppressing cell proliferation towards three human prostate cancer cell models. Incorporation of an amine group through a three-carbon linker to 7-hydroxyl group of fisetin can significantly increase the anti-proliferative potency.

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Catalina Olea and Laurent Dejean, Ph.D.
Joel Castillo, Itzel Lopez, Sean Carpenter, Andrew Gilbert, Nathaniel Luna, Laurent Dejean
lina08@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Investigating The Effects Of Bcl-2 And Bcl-Xl Over-Expressions On Carbohydrate Metabolism In Growing Prolymphocyte Cells

Non-Hodgkin lymphoma is one of the most common types of cancer in the United States; it accounts for approximately 4% of all cancers. The imbalance of cell death observed in lymphomas can be associated with changes in the expression of genes encoding for anti-apoptotic (such as Bcl-2 or Bcl-xL) or proapoptotic members of the Bcl-2 proteins family. The overexpression of the protooncogenes Bcl-2 or Bcl-xL, observed in several types of blood cancers, are good candidates to better understand the molecular mechanisms associated with cancer related resistance to cell death. Cancer cells are often characterized to undergo metabolic changes such as an increased of lactic acid fermentation regardless of the availability of oxygen. This shift towards fermentative metabolism is known as the Warburg effect which is now considered as a hallmark of cancer cell transformation. Our laboratory recently showed that Bcl-2 overexpression lead to a Warburg like effect in a model of prolymphocyte cells put in resting (non-proliferative) conditions. The goal of this study was to investigate the effects of a controlled increase in the expression of the proto-oncogenes Bcl-2 and Bcl-xL on the proliferation and glucose metabolism of this same prolymphocyte cell model. Both glucose consumption and lactate production rates have been determined by 300 MHz NMR, using [U-13C6] glucose in independent cell cultures. Our preliminary data show that Bcl-2- or Bcl-xL-overexpression tends to decrease the lactate production rates from glucose by the prolymphocytes. These last results suggest that Bcl-2 overexpression has an opposite effect on cell lactate production rates in growing vs. resting conditions; and that the Warburg effect may be a more appropriate hallmark for solid tumors vs. proliferative cancer cells.

Matthew Olson and Jenna Kieckhaefer, Ph.D.
mattolson53@mail.fresnostate.edu
California State University, Fresno - College of Social Sciences
Department of Criminology

Should Bail Be Replaced With A Pretrial Assessment Program In California?

In this study, we sought to gather opinions regarding California's newly proposed Senate Bill 10. This bill could potentially eliminate the current cash bail system and replace it with a pretrial assessment program. In this new system, defendants will have the ability to be released just like under the bail system, but without having to pay money as a promise to appear at their trial. Instead, each person would be evaluated for their risk to the community and the likelihood that they will not appear at their court dates. The evaluation entails assessing the individual through various questions and through their past criminal record. In this study, participants first read a brief synopsis of both the cash bail system and pretrial assessment program and then completed a survey. Participants were asked various open-ended and Likert-type scale questions that allows for accurate measurements of their opinions and the reasons for those opinions. The findings indicate that participants prefer the pretrial assessment program over the current cash bail system because it helps balance several inequities present with cash bail. There are, however, several things that participants believed could be potential drawbacks to the new system, like a lack of trust in the new assessment. By understanding the positive and negative aspects of Senate Bill 10, we can potentially put forth conditions that would better please today's society.

Beng Ong and Beng Soo Ong, Ph.D.
Keith Story
bengo@csufresno.edu
California State University, Fresno - Sid Craig School of Business
Department of Marketing & Logistics

Sustainable Solutions To Global Disruptions From China'S 2018 Ban On Plastic Scraps Import

China's January 1, 2018 ban on imports of plastic scraps and paper/cardboard has countries such as US, Japan, Germany, UK, and France scrambling to find new markets for their plastic and paper scraps. Imports of plastics into Malaysia, Vietnam, Thailand, Taiwan, India, and Indonesia in 2018 have doubled or tripled in tonnage compared to 2017. Governments in these Asian markets have started to restrict or even ban scraps import, and enforced recycling regulations via audits and raids. U.S. trash collection companies, in the past, were able to derive revenue from the sales of plastic, paper, and cardboard scraps to brokers downstream, and some municipalities also earned a fraction of the scrap sales revenues. Old inventoried low-quality scraps (that need to be purged because of fire hazards), and rejected plastic scraps from escalating consumptions of single-use plastic containers (i.e., recyclers' demanding high-purity/quality bales of scraps) are going to landfills. Now, collection and/or recycling companies are incurring landfill disposal and hauling fees of these unwanted scraps. Trash collection fees will likely be raised but have no significant impact on reducing plastic and paper waste (especially from online purchase shipments).

Hence, we are curious about solutions for this disrupted global recycling industry. We have interviewed two managers from a California based collection, processing of trash, and recycling company, scheduled an interview (in early April) with a scraps broker, as well as reviewed current literature on this global crisis. Our emerging rationalization is that escalating landfill disposal costs will incentivize infrastructure and technology investments/expansions in domestic processing, recycling, and reclaiming facilities/plants. The value-added domestically produced plastic resins can be exported to manufacturing intensive countries such as China. Large Chinese recycling companies may invest in U.S., Japanese, or European domestic scrap processing plants or paper mills to ensure supply of the reclaimed raw materials.

Ryan Parra and Bruce Chorpita, Ph.D.
ryan.parra02@gmail.com
Fresno City College - University of California, Los Angeles (UCLA)
Department of Psychology Department

Qualitative Analysis Of Mental Health Providers' Definitions Of Diversity

There is a substantial gap between the mental health needs of diverse (e.g., ethnic minority, low income) communities and the services that are available for these populations. Most evidence based-treatments have been developed in research settings with non-Hispanic White clients, which does not reflect the populations served in community health settings (Southam-Gerow, Rodriguez, Chorpita, & Daleiden, 2012). To better understand how to serve diverse youth in a culturally responsive manner, the present study aims to examine what "diversity" means for mental health providers in a community mental health setting, as well as to identify provider characteristics that may be related to perceptions of various aspects of diversity. We qualitatively coded transcripts of interviews with 55 mental health providers to identify what diversity means to providers. We hypothesize that providers who identify as Latinx will define diversity in a more comprehensive manner than providers who identify as non-Hispanic White. Each transcript will be coded for the following items: Age, Beliefs/Values, Culture, Family Dynamics, Family Structure, Gender Identity, Generational/Immigration Status, Geographic Location, Individual Identity/ Intragroup Differences, Language, Mental Health, Race/Ethnicity, Religion, SES, Sexual Identity/Orientation, Social Support, Treatment of Diverse Populations and Other. These findings may have implications for how to increase cultural competence to better meet the needs of diverse clients.

Faiaz Rahman and Maryam Nazari, Ph.D.
Bhavesh Jeevanlal, Mojtaba Ansari , Maryam Nazari, Fariborz Tehrani
faiazrahman15@mail.fresnostate.edu
California State University, Fresno - Lyles College of Engineering
Department of Civil and Geomatics Engineering

Rubberized Concrete Pavement Slabs For Non-Auto Transportation Applications – Experimental Study

This presentation aims to investigate the application of Tire-Derived Aggregates (TDA) in concrete slabs used in road pavements and bridge decks serving non-auto traffic, such as bicycle routes. To this end, TDA, which is obtained from recycled tires, substitutes coarse aggregates in conventional concrete. The final product, also known as rubberized concrete, is durable and economically-efficient. It also enhances the sustainability of transportation infrastructure by mitigating the necessary maintenance and rehabilitation needs of these slabs. In this paper, an experimental study, funded by California State University (CSU) Transportation Consortium and Fresno State Transportation Institute, has been undertaken to first estimate mechanical properties of rubberized concrete using 0%, 80%, and 100% TDA replacements by the volume of the coarse aggregates. Next, a series of half-cyclic static and impact-fatigue dynamic tests were performed on simply-supported beam specimens and slab assemblies, respectively, to measure their modulus of rupture and durability when subjected to the applied loads. The cyclic testing results confirmed lower flexural strength of the specimens using rubberized concrete; however, they sustained larger plastic deformations up to their failure. The results of impact-fatigue tests also confirmed long-term benefits of constructing green and durable infrastructure, using TDA, on transportation investments.

Pravien Rajaram and Qiao-Hong Chen, Ph.D.
Alyssa Rivera, Qiao-Hong Chen
pravien@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Studies Towards Total Synthesis Of Enantiopure Hydnocarpin D

Hydnocarpin D was isolated from the flowering plant Hydnocarpus anthelminthic in family Flacourtiaceae, as a racemic mixture devoid of optical activities, in an extremely limited amount. Racemic Hydnocarpin D has been reported to have promising anti-proliferative potency towards a human DU145 prostate cancer cell line. There are no reports, however, on the anti-proliferative potency of its optically pure enantiomers. Also, no other anticancer activity has been reported for hydnocarpin D due to the supply issue. This study aims to synthesize the (10S,11S)- and (10R, 11R)-hydnocrapin D. So far the key intermediate, 4',5,7-O-tri(p-methoxybenzyl)luteolin has been synthesized from naturally abundant hersperidin. The six-step reaction procedure that was employed to synthesize this intermediate includes dehydrogenation, benzylation, glucoside hydrolysis, and selective demethylation, phenol protection and selective debenzylation. Also, another key intermediate containing the phenylpropanoid moiety with R,R and S,S-configuration at C-1 and C-2 has been synthesized through a six-step transformation.

Amanda Rea and Hwan Youn, Ph.D.
Christian Montiel, Hwan Youn
amandareax3@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Comparative Analysis Of Crp And Clp Revealed An Unexpected Role Of The Dna-Binding F-Helix In Rna Polymerase Recruitment.

The Escherichia coli cAMP receptor protein (CRP) belongs to a family of proteins, some of which are known to function as virulence factors in human pathogens such as Listeria monocytogens and Pseudomonas aeruginosa. These proteins commonly function by transcriptionally activating their target genes. However, their capacity for transcriptional activation is different. For example, it is well known that Clp, a CRP homolog, has a higher transcriptional activation activity. A sequence alignment between CRP and Clp revealed two dissimilar F-helix residues. To test the correlation between the two, we made F-helix swapped CRP and Clp mutants via site directed mutagenesis and measured their in vivo transcriptional and DNA-binding activities using lacZ-based E. coli reporter strains. The T182M/V183A CRP mutant mimicking the Clp F-helix behaved like Clp in terms of transcriptional activation. Conversely, the M202T/A203V Clp mutant mimicking the CRP F-helix behaved like CRP in transcriptional activation. However, these CRP and Clp mutants showed no changes in DNA binding compared to their wild type counterparts. Our data therefore demonstrates that the higher transcriptional activation activity observed in Clp must originate from more effective F-helix derived RNA polymerase recruitment, not from enhanced DNA binding. This is a significant finding because the F-helix has never been associated with RNA polymerase recruitment. Future studies will focus on elucidating the molecular basis underlying this unexpected role of the F-helix.

Stephen Richards and Kin Ng, Ph.D.
bobbobman@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Electrothermal Atomizer For Nanoparticle Synthesis

Nano-materials can exhibit properties such as enhanced electrical conductivity, mechanical strength and flexibility, or optical properties not exhibited by the bulk material, and the nature of these unique properties depend upon both nanoparticle composition and shape/structural arrangement. Due to these unique properties, nano-materials are at the forefront of research in many fields with a diverse array of potential applications.

In this work a fast, inexpensive, simple, and miniaturized chemical vapor deposition method for nanoparticle generation is showcased in the form of an electrothermal atomizer. The device is a vacuum chamber which houses a resistively heated graphite cup to atomize solid, liquid, or gaseous reactants, after which the component atoms may deposit and self-assemble on a substrate to form nanoparticles. Chamber pressure is controlled by varying the flow rate of carrier/reagent gas into the reactor and the graphite cup temperature is controlled by varying the voltage across it. The modular design of the device allows for precise control of parameters such as resistor temperature, substrate composition, reactor atmosphere, and resistor geometry, and provides shorter reaction times compared to conventional CVD methods.

Variation of synthesis parameters such as temperature, reaction time, pressure, carrier gas, substrate composition, and resistor geometry has yielded zinc oxide and tantalum oxide nanoparticles of various morphologies including wires, rods and “hairs”, spheres and “hairy” spheres, stars, and nano-porous coatings as characterized by scanning electron microscopy and energy dispersive x-ray spectroscopy. Tantalum oxide nanospheres were synthesized in an argon atmosphere using a graphite resistor and tantalum substrate, whereas tantalum oxide three-pointed nano-stars were generated when the substrate itself was resistively heated under similar reaction conditions. Additionally, zinc oxide nanorods and “hairy” spheres were found when a gold substrate was utilized in an argon methane environment, however, zinc oxide nanowires and nano-porous coatings were observed when a silicon substrate was employed under similar reaction conditions.

Agustin Rivera and Hubert Cecotti, Ph.D.
Majid Farhadloo, Miguel Pedroza-Villarreal, Huber Cecotti
eleqtriq@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Computer Science

Grape Segmentation Using Deep Learning

The Central Valley of California has a large number of wineries, and technology has become a key asset for the development and improvement of the wine making process. In this project, we propose to use machine learning to segment automatically images of gapes to define within an image where are the grapes from the remaining elements. This project stems from a collaboration between the Department of Computer Science and the Department of Viticulture and Enology at Fresno State. Images of grapes corresponding to two types of grapes have been acquired during the summer of 2018 at different days corresponding to key periods of the grape growth. The images at the last day correspond to when the grapes were gathered for wine making. The images of grapes have been manually labeled to create the image ground truths using polygons to represent the area containing grapes. The images are then decomposed into blocks of size 32x32 pixels that represent the input of a classifier. In relation to the high performance of deep learning classifiers in computer vision, a convolutional neural network was used for the binary classification of blocks being part of a grape versus blocks from non-grapes elements. The overall performance has been evaluated using a 5-fold cross validation by estimating the area under the ROC curve (AUC). The performance for block segmentation provides from Albariño white grapes and Barbers red grapes an AUC of 95.71% and 99.903%, respectively. The results indicate that it is possible to both reliably locate grapes in an image, representing a key asset to the development of an automatic harvesting system. Future works will include the improvement of the deep learning architecture for optimal performance with images of different scales and to classify grapes of different ages.

Lemuel Vince Rivera and Joy J. Goto, Ph.D.
lemuelrivera23@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Analyzing The Therapeutic Role Of L-Serine In Neurodegenerative Disease

Beta-methyl amino alanine (BMAA) is a cyanotoxin that has been implicated to cause Amyotrophic lateral sclerosis-Parkinsonism dementia complex (ALS-PDC), a set of neurodegenerative disorder with symptoms including loss of motor function, tremors, and dementia. Past studies have shown that BMAA is likely misincorporated during protein synthesis leading to aggregation in neuronal cells. However, the addition of the amino acid L-serine seems to abrogate the debilitating effects of BMAA. The objective of this investigation is to understand L-serine's therapeutic capacity by analyzing the circadian rhythm of BMAA-fed Drosophila melanogaster (fruit flies).

The Drosophila Activity Monitoring (DAM2) system was used to simultaneously measure the activity of the individual fruit flies (gender and age-matched). The DAM2 system has integrated IR sensors that quantifies the activity level of each fruit fly at 30-minute intervals which correlates to their circadian rhythm. The control group is fed with 5% sucrose and 2% agar solution while treated groups are fed with either 7 mM BMAA, 7 mM L-serine, or 7 mM BMAA + L-serine. Data collection spanned for 10 days with 12:12 hour light:dark cycle at 22 OC.

Activity peak differences between the control and BMAA group show an elevation in the overall activity level for the BMAA group. Flies co-fed with BMAA and L-serine, and pre-fed with L-serine display a similar circadian rhythm demonstrating L-serine abrogates the effects of BMAA alone.

Suzanne Rodriguez and Jennifer Watson, Ph.D.
szrodri@mail.fresnostate.edu
California State University, Fresno - Kremen School of Education and Human Development
Department of Educational Leadership

The Urgency Of Principal Professional Development In California And The Implications For Policy And Practice

California principals need professional development to build their leadership capacity not only during principal preparation but throughout their leadership career. School districts have a responsibility to provide professional development to principals and they are lacking in their development and implementation of a system of support (Honig, Copland, Rainey, Lorton, & Newton, 2010; Kearney, 2010; Manna, 2015; Sun, 2011). The purpose of this study was to conduct an examination of what California school districts are doing to supervise and provide principal professional development that is aligned to standards, and effective professional development constructs. This study utilizes theoretical frameworks of leadership development and human capital management and reflects on the semi-structured interviews of nine school district superintendents, and 18 school principals, to inform policy, practice and answer the research questions. What school district systems of support and personnel are responsible for helping principals grow as leaders? What strategies and practices are used in school districts to provide differentiated professional development and support to principals? What professional development strategies and practices used in school districts are aligned to the California Professional Standards for Educational Leaders (CPSEL) and effective professional development constructs? What are K-12 principal perceptions of the alignment of professional development they have received to effective professional development constructs, the CPSEL and their professional development needs? The findings share promising practices and models that can be used to support school districts and principal supervisors in their quest to support and develop principals.

Annie Rubio and Jonathan Biggane, Ph.D.
annierubio@mail.fresnostate.edu
California State University, Fresno - Sid Craig School of Business
Department of Management

The Moderating Effects Of Leader Effectiveness And Behavioral Integrity On Employee Performance

Research has shown an indirect link between perceived leader behavioral integrity (BI) and employee-related outcomes, such as performance. Specifically, high levels of perceived BI will increase employee performance through trust in the leader. This paper focuses on analyzing the role leader effectiveness plays in this relationship. It is predicted that leader effectiveness will be a moderator, such that high levels will strengthen the relationship between BI and performance. A group of management students will be surveyed using various scales from previous studies on BI (Simons 2007), leader effectiveness (Yukl et al. 2002), and self-reported measures of performance (Griffin et al. 2007). The results are expected to identify a new moderator relationship within the BI framework and add to the current literature on behavioral integrity and leader effectiveness research.

Fatemeh Samavati and Chris Golston, Ph.D.
solale@mail.fresnostate.edu
California State University, Fresno - College of Arts and Humanities
Department of Linguistics

Foot Binarity In Persian Poetic Meters

The meter of Persian poetry comes from Arabic poetic meters, and there are many similarities between them in shape, number, and the combination of metrical units, but one important feature of Arabic poetic meters is missed in Persian which is having binary feet in some metrical units. For more than one thousand years, the study of the meters of Persian poetry has been dominated by the theories devised by the traditional analysts that the Persian poetry is rhythmic in Arabic metrical frames while they were not aware of the phonological meter rules which Persian poetry did not borrow from Arabic. For example, the original form of Hazaj, Hazaj Salem, in Arabic and Persian is composed of several (LHHH) units (L is a short form for light syllable and H is a short form of heavy syllable), so in all original metric categories like Hazaj Salem, Persian verses follow the Arabic meter formation rules including having binary feet. However, some of the derived forms in Persian meters do not exist in Arabic. For instance, one of the derived forms of Hazaj is (HHL)(LHLH)(LHH) which has three metric units that respectively are called Axrab, Makfuf, and Mahzuf in the traditional poetic meters and they do not have binary feet. Crucially, this problem will not go away unless the poetic meter of the derived forms that only exist in Persian treated in another way of categorization. Based on the definition of a syllabic foot which applies to all Arabic meters, eight patterns can be considered as real syllabic feet that are: spondee=(HH), trochee=(HL), dactyle=(HLL), iamb=(LH), pyrrhic=(LL), tribrach=(LLL), anapest=(LLH), or proceleusmatic=(LLLL). One proposal method can be (HH)(LLH)(LH)(LH)(H-) for the above example in Persian verse. According to this pattern, all feet are binary, and the number of moras and syllables fit for a syllabic foot.

Bradley Scott and Oscar Vega, Ph.D.
bradscott24@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Mathematics

Even Cycles Of The Levi Graph Of A Partial Plane

Using a geometric and graph theoretical approach, we prove that the Levi graph of a partial plane constructed by intersecting t partial pencils, for t=2,3, has subgraphs isomorphic to even cycles of all possible sizes.

Matthew Sharps and Matthew Joseph Sharps, Ph.D.
Jana L. Price-Sharps
matthew_sharps@csufresno.edu
California State University, Fresno - College of Science and Mathematics
Department of Psychology

Ptsd: A Psychological And Historical Perspective

With the wars in western Asia about to enter their third decade, and with the operational tempo of domestic police work having risen significantly in recent years, the consequences of post-traumatic stress disorder (PTSD) have become increasingly important. However, questions have arisen, in some quarters, with regard to the legitimacy of PTSD as a disorder and a diagnosis. Is PTSD "real?" Or has widespread public awareness of the symptoms popularly associated with PTSD resulted in an over-reporting of those symptoms, with a consequently inaccurate legitimization of the syndrome?

One way to address this question was to examine the consistent validity of PTSD, in terms of its symptomatology, over time; to examine cases of probable PTSD in the past, before the current wide-spread publicity and awareness of the relevant symptoms came into being. We addressed this question in field research, involving a field trip of some 5000 miles in the American West. We researched battlefields and crime scenes of the 19th century, ranging from the Little Big Horn to the Fetterman Massacre to the murder of Wild Bill Hickok, violent crises which occurred over a century before the symptoms of PTSD were known, understood, or available to the general public. This research made use of the standard techniques of crime scene analysis, forensic cognitive science, and "checklist" evaluation against the current standards of the Diagnostic and Statistical Manual-V (DSM-V). We found that the behavioral factors involved in these 19th century crises, including the constellation of behaviors which at that time became known as the "soldier's disease," were entirely consistent with the symptom picture presented by diagnoses of PTSD in the 21st century.

The results of this field research strongly support the concept that PTSD represents a completely valid diagnosis, in all symptomatic and etiological respects, in the modern world.

Edward Sichel and Marat Markin, Ph.D.
Edsichel@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Mathematics

On The Nature Of Expansions On Compact And Totally Bounded Metric Spaces And Beyond

When proving a known result describing expansive mappings on compact metric spaces as isometric surjections, we observe that relaxing the condition of compactness to total boundedness preserves the isometry property, and nearly so that of surjectivity. While a counterexample is found showing that the converse to the above descriptions do not hold, we are able to characterize boundedness in terms of a certain specific type of expansions we call anticontractions.

Chaithanya Sreenivas and Soumyasanta Laha, Ph.D.
chaithanyas@mail.fresnostate.edu
California State University, Fresno - Lyles College of Engineering
Department of Electrical and Computer Engineering

Wireless Rf System For Non-Invasive Glucose Monitoring

The PSOC6(Programmable System on Chip) wireless module used for blood glucose monitoring. The"IN-VITRO" approach is used to verify the correlation of glucose concentration by testing using glucose levels in the liquid by understanding the transmission coefficient emanating from EM wave. we could see that the absorption of the EM waves is more as the levels of glucose increases. By this approach, we can avoid the In-vivo approach of blood sugar testing. This "IN-VITRO" approach will lead to a painless diagnosis of Blood sugar levels.

Hector Tapia and Steve Adisasmito-Smith, Ph.D.
hector95@mail.fresnostate.edu
California State University, Fresno - College of Arts and Humanities
Department of English

An Unquenchable Desire For The "Forbidden Fruit": Exploring The Inversions Of Gender And Sexuality In Euripides' Bacchae

In this essay, I explore the rigid, seemingly fixed, dichotomies of gender and sexuality found in Classical Greek literature. Most poleis in Greece were highly patriarchal and exhibited an ever-present desire to maintain power, in all of its aspects, especially that of the phallus. Furthermore, the Greeks viewed gender relations and sexuality as constructs that apportioned power. Thus, heavy proscriptions were placed on gender and sexuality: i.e. men stripped women of all autonomy and commoditized them. Furthermore, "homosexuality" in the ancient world equated the passive (penetrated) male to women. These constructs, consequently, stripped gender and sexuality of their inherent fluidity and solely benefited the society's idealized man. My essay, then, fleshes out the power dynamics that surrounded gender and sexuality by using Euripides' tragedy Bacchae as a paradigm. My research focuses on Euripides' intentional inversion of these "fixed" notions surrounding gender and sexuality. I argue that Euripides did not believe that the phallus was a symbol of absolute power. Instead, he allots power to the once powerless to not only illustrate the fluidity of gender and sexuality but to also reveal the problematic nature of confining them to rigid dichotomies: the ideal vs. non-ideal.

Nathan Thom and Oscar Vega, Ph.D.
nathanthom@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Mathematics

The Veldkamp Space Of W(P)

The Veldkamp space of a geometric object S is a space whose points are the geometric hyperplanes of S and whose lines are formed by geometric hyperplanes that share an intersection set. In this talk, we will describe the geometric hyperplanes of finite generalized quadrangles and list some properties of the Veldkamp space of a specific class of generalized quadrangles of prime order, called W(p).

Diem Truong and Fariborz M. Tehrani, Ph.D.
Maryam Nazari
diem_truongmcdaniel119@mail.fresnostate.edu
California State University, Fresno - Lyles College of Engineering
Department of Civil Engineering Department

Life Cycle Energy, Gas Emissions And Cost Analysis Of Tire-Derived Aggregate Concrete

Tire-derived aggregate (TDA) have superior performance due to their toughness and damping. Experimental evidences indicate that the substitution of mineral aggregates with TDA significantly enhances the toughness and energy absorption of cementitious concrete. However, such substitution reduces the mechanical strengths and modulus of elasticity of concrete. Thus, application of TDA in concrete needs further optimization in respect to the balance between mechanical and dynamic performances. Moreover, substitution of natural mineral aggregates with recycled TDA provides a potential opportunity to resources and protect the environment. This paper aims to analyze energy, gas emissions and cost of TDA concrete. The methodology incorporates the assessment of 116 concrete mix designs used in 18 experimental research projects. Results include the comparison between economic and environmental performance measures for different ratios of aggregate substitution with TDA. Furthermore, outcomes include a case study on life cycle assessment of these performance measures for pavements to facilitate sustainability rating using ENVISION, a rating system for sustainable infrastructure. Conclusions of this research provides insights for TDA concrete and pavement applications, which are essential as decision-making tools to evaluate the sustainability performance of infrastructure projects.

Shylesh Umapathy and Aaron Stillmaker, Ph.D.
shylesh_umapathy@mail.fresnostate.edu
California State University, Fresno - Lyles College of Engineering
Department of Electrical and Computer Engineering

Design Trade-Offs Between The Ring And Grid Style Of Power Gate Placement In A Fine-Grained System Design

With the 54th commemoration of Moore's law and the intense development of VLSI technology has permitted more and more IP components to be integrated on a single chip. However, factors such as power consumption has been limiting this growth rate. Low power techniques such as clock gating, power gating, dynamic voltage and frequency scaling, body biasing, and many more have emerged as potential solutions. This work explores power gating technique and presents the design trade-offs between the ring and grid style of power gate placement in a fine-grained system design. The study used 24 physical designs of 12 different sized MAC units ranging from 44 to 320-bit inputs, and extracted various parameters. The results depict that, using a ring style of placement gives an average increase in IR drop of 9.59% when compared to grid style of placement for 128 to 320-bits input MAC unit. The grid style possesses an additional average congestion of 1.66% when compared to ring style of placement for 192 to 320-bits input MAC unit.

Anthony Vogt and Maria Nogin, Ph.D.
av593635@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Mathematics

Ciphers In Cryptography

Sending encrypted messages has been a tool used for thousands of years. From the simple Caesarean shift cipher to the famous enigma machine, sending a message to someone without the possibility of it being intercepted and subsequently read has been a goal for much of written history. While many historical ciphers are beaten by modern computers, there exist simple ciphers that range from nearly unbreakable to completely unbreakable. In this talk, I will provide an introduction to these ciphers. In doing so, I will also introduce some basic number theory that will be used in these encryption schemes.

Brandy White and Cory Brooks, Ph.D.
Teresa Brooks, Cory L. Brooks
brandymurray@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Humanization Of A Muc16 Specific Monoclonal Antibody For The Treatment Of Pancreatic Cancer

Pancreatic ductal adenocarcinoma (PDAC) has had no advances in clinic other than traditional therapeutics such as surgical resection, chemotherapy, and radiation. Lack of treatment options are likely contributing to the consistently low 5-year relative survival rates. On the other hand, immunotherapies such as therapeutic antibodies have had phenomenal clinical successes. One potential target of therapeutic antibodies in PDAC is a large membrane-bound mucin glycoprotein, MUC16. A mouse monoclonal antibody (m-mAb) specific to a MUC16 tandem repeat epitope has recently been discovered. In mouse models, the antibody has shown great promise in reducing tumor size and metastases of pancreatic tumors and may function by blocking the EGF binding site to ErbB-1 thereby inhibiting the FAK/Akt pathway. However, humans mount an immune response against foreign proteins rendering the m-mAb useless in clinic. In order to overcome this obstacle, the antibody needed to be humanized (hu-mAb) to reduce immunogenicity and shown to bind the same MUC16 epitope with high affinity. Additionally, it was originally hypothesized that the antibody binds a small linear fragment within an abnormally glycosylated MUC16 epitope. This project began with the humanization of the m-mAb; shows equivalent binding of the mouse, chimeric, and humanized mAbs to the MUC16 epitope; determines the smallest binding unit is the SEA5 domain within the epitope; shows that deglycosylation has a negative effect on binding; and highlights the specific binding region of the hu-mAb and the accessible regions of the MUC16 epitope available for binding via protein crystallography. Ultimately, this work shows that a fully functional humanized antibody has been created and the work presented here lends further insight into the mechanism of action for this antibody in its ability to slow the progression of PDAC.

Jeanine Yoder and Nancy Delich, Ph.D.
jeanineyoder@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Social Work

Resilience And Shadow Of Collective Trauma: The Mennonite'S Great Traumatic Trek To Canada

Mennonites living in Russia at the start of the Bolshevik Revolution in 1917, entered into a climate of almost relentless violence. Mennonites are a Protestant group that formed during the 16th century Reformation. As victims of systemic violence, Mennonites in Russia experienced a typhus epidemic, famines, murders, rapes, collectivization, imprisonment, exiles, communist indoctrination, and executions. No Mennonite family was immune to disappearing family members. Many fled Russian in 1943 with the retreating German army. Once in Germany, most of the men were forced to join the Nazi army. Therefore, once WWII was over, the majority of the Mennonite men were dead and the women and children were left to find a place to emigrate to. Long-term psychological implications of these events continue for remaining survivors and their offspring to this day. In this study, four memoirs of Mennonite survivors were read, analyzed and coded to learn how traumatic experiences were narrated. Placing each writer into their shared historical context was presented to determine both collective and unique features in their experiences. Common themes emerged in the memoirs that demonstrate both resilience and challenges in expressing emotions, processing transitions, and coping. Last, differing experiences with attachment was discovered for each writer to draw inferences to the intergenerational transmission of trauma. Results speak to ways social workers can contextualize trauma and create interventions that take collective features of trauma into consideration instead of solely individualizing trauma outcomes.

40th Annual
Central California
Research Symposium

Poster Presentation Abstracts

Kelly Ables and Keith Putirka, Ph.D.
kfables@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Earth and Environmental Sciences

Pre-Eruptive Storage Conditions Of The Long Valley Caldera

The Long Valley caldera eruption has long been observed as one of the most violent events in California, with its main product, the Bishop Tuff, extending as far eastward as Nebraska. Wes Hildreth proposed that the eruption composed mainly of two ignimbrite outflow packages that occurred before and after the only momentary break in the eruptive stratigraphic sequence. In his model, the two packages in the reservoir were strictly set with the first erupted package on top and the second underneath. Recent studies in petrology have shown that crystals hold records of temperature and pressure changes during their time of growth in the magma reservoir before being erupted onto the surface. Inconsistencies in Bishop Tuff feldspar geothermobarometry data have caused speculation for depth of primary crystallization. Conducting microprobe analysis on feldspar minerals and using pumice fragments, glass, and whole rock compositions can give insight to magma reservoir conditions prior to eruption, reveal possible magma mixing before or during the eruption, and determine whether the second ignimbrite package originated from a deeper source or the same reservoir as the first ignimbrite package.

Sarah Abuelreich and Jason Bush, Ph.D.
Nicole Leon, Daisy Medina
sgabuelreich@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Evaluating The Metabolite Profile Of Her2-Positive Breast Cancer Cells

One in eight U.S. women will develop breast cancer over the course of their life (American Cancer Society, 2019). It is estimated that 15-20% of breast cancer patients have overexpression of the oncogenic receptor Human Epidermal Growth Factor Receptor 2 (HER2). Studies have shown that overexpression of HER2 is associated with poor survival due to its aggressive growth and increased disease recurrence. Although HER2 treatments are available to women with breast cancer, some patients develop resistance to the treatment after multiple exposures to the anti-HER2 therapies. Our understanding of the biochemical impact of HER2 on cancer cell metabolism is poor. Our goal is to better understand the molecular mechanism of HER2 in breast cancer and identify new strategies to target the disease. By establishing the comprehensive metabolic changes, we can develop biomarkers that will allow for a more accurate selection of patients who can benefit from anti-HER2 therapies. For this project, we have a series of eight different breast cancer cell lines with a low, medium, and high HER2 expression. We have adapted the cellular model system to a common medium, evaluated the HER2 expression using western blotting, and analyzed metabolites using high-resolution NMR spectroscopy. This approach allows for a better understanding of the global metabolic changes associated with HER2-positivity such that we have identified lactate accumulation and branched chain amino acid catabolism as alternative metabolic routes used by cancer cells to make the necessary building blocks that drive continued growth of cancer. The results from this research will also be used to develop a database of metabolites in this system which can be used for future data-driven research.

Myraelen Aguilar and Jennifer Roos, PT, DPT, GCS
Jeniffer Adame-Walker
myraelen427545@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Physical Therapy Rehabilitation Of A Female Status-Post A Stable Right Lateral Malleolar Ankle Fracture: A Case Report

Studies over the last decade have reported increasing ankle fracture incidence, with a higher rate of lateral unimalleolar ankle fractures. Ankle stiffness and pain are experienced after a period of ankle immobilization that subsides over time, however, patients will need physical therapy rehabilitation in order to return to their prior level of function. While extensive literature regarding knowledge of ankle fractures is available, there is little research on the rehabilitation of non-surgical lateral unimalleolar ankle fractures. Most research focuses on rehabilitation of post-operative ankle fractures. The purpose of this case report was to describe a comprehensive physical therapy rehabilitation program for a 52-year-old female with a healed stable right lateral unimalleolar ankle fracture. The patient's goals were to return to full duty as an in-home caregiver and participation in Zumba classes. The plan of care consisted of two therapy sessions per week for a duration of six weeks and were divided into three phases. Interventions included therapeutic exercises, stretching, manual therapy, neuromuscular re-education, gait retraining, modalities, and patient education to address the patient's functional deficits. Following skilled physical therapy, the patient demonstrated improvements with ankle range of motion, strength, proprioception and pain. The Foot and Ankle Ability Measure subscale for activities of daily living demonstrated a clinically significant score implying improvement in physical function. The patient was able to return to full duty at work, however, she did not return to Zumba due to fear of refracture, even though Zumba was not the mechanism of injury. A rehabilitation program that incorporates strengthening, ankle mobility, balance, and weight bearing activities may facilitate the patient's return to functional activities, but education must be included to help allay fears. This study demonstrates that although patients can return to functional activities, psychosocial limitations such as fear, could inhibit their return to recreational activities.

Jessica Aguilar and Jessica Aguilar, Ph.D.
Brenda Ramos, Alejandro Calderon-Urrea
jessica_aguilar@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Effects Of Nematicidal Agents On The Vertebrate Fish Danio Rerio

Nematicidal agents are used to control the detrimental effects of plant parasitic nematodes (PPNs) on U.S. agricultural crops. Agents, such as methyl bromide, that were used for years to control PPNs, are known to have toxic effects on humans and the environment. Current alternatives to methyl bromide include LUNA (Bayer) and NIMITZ (Adama), which are considered safer to the environment. Synthetic chalcone derivatives are a potential alternative, proving to be an effective nematicide at concentrations of 8 ppm, while also being safe to microorganisms and human cells. LUNA, NIMITZ, Chalcone 17, Chalcone 30, and combination Chalcone 17+30 were tested against four days old fry in order to compare the levels of toxicities the different agents have on zebrafish. Such model organism was used in this study to resemble the possible effects PPNs have in unfavorable physiological effects with similar aquatic life. Low concentrations, comparable to that of diluted runoff nematicides used on U.S. crops, were used. Specifically, 0.16 ppm of each chalcones, positive and negative control, and 0.08 ppm of each LUNA and NIMITZ. Five fry were placed in chambers containing 5 mL total solution of each LUNA, NIMITZ, Chalcone 17+30, Control (+,-), Chalcone 17, Chalcone 30. Chronic treatment was used for each of three trials. The fry in both chambers of NIMITZ and LUNA did not survive longer than seven days. Chalcone 30 and combination chalcone 17+30 fry continued to live while exposed to chronic treatment. Chalcone 17 presented the least detrimental, containing the most living fry at the end of seventh day of each trial. As a result, all chalcone treatments proved to be a better alternative nematicides compared to LUNA and NIMITZ, showing no visible signs of motor or growth detriments when treated at low concentrations.

Alya Ahmad and Serena Yang, Ph.D.
Luella Guzman
aahmad@fresno.ucsf.edu
UCSF - Fresno - UCSF-Fresno Department of medicine
Department of Pediatrics

Risk, Complexity, And Special Health Care Needs Scoring For Hospitalized Children With Medical Complexities In An Academic Central Valley California Community Hospital

High acuity, complexity, & special needs in hospitalized pediatric patients have been shown to have measurable economic costs & effect on quality of care. A 2014 Lucile Packard study demonstrates that CMC represent 5% of patients but account 50% of heath care costs. This study examines criteria for CMC & scoring tools to stratify risk using Exeter "HOMES"(Hospitalization, Outpatient care, Medical chronic disorders, Extra services, & Social determinants) complexity index, & a validated Children with Special Health Care Needs (CSHCN) Screener. By measuring both complexity & special needs an effect on higher health care utilization, Length of Stay, (LOS) & readmission rates (RR) are predictive of economic burden. A 6-month retrospective observational study was conducted from May-Nov, 2018, for a(n=204) pediatric patients, admitted to the general pediatric unit. An EPIC report was generated, and demographics, ICD10, PCP's, total number of admission, Gestational age, LOS, number of re-admissions occurring in last 180 & 90 days of the study period were entered into Excel. Criteria fitting CMC definition, as well as registry patients (Cystic Fibrosis, asthma, cardiac, & mental health), outpatient clinical encounters , chronic medications, medical devices, & social determinants were reviewed for CMC patients. The total number of re-admissions, LOS & scores for H.O.M.E.S & CSHCN screeners were collected. The scoring was compared for CMC & an equal number of non-CMC pediatric patients admitted during the same study period. In the total study population, two peaks of age distribution were noted: 12-18 yrs. (27%) & less than 6 months (22%). The male to female ratio was almost equal 1.04 to 1. Of the patients less than 1yo, 17% had a history of extreme prematurity, 24-27wks. CMC patients were 20.3% of the group. Disease registry revealed: 14.9%, asthma, 2% CF, 5% DM, 11.9% mental health, & 2% cardiopulmonary conditions. Over 180days, the number of patients with a single admission was 52% (n=105). Within the last 90 days of the study, 37% of total had 1 re-admission & 3.5% had 3-6 readmissions. The avg. LOS for CMC vs. non-CMC pediatric patients was 7.4 to 3.4 hospital days, while the number of readmissions in 180 days was 2.1to 1.3 for CMC & non-CMC patients, respectively. For CMC patients in the cohort the average HOMES score was 7.5, with CSHCN score of 2.9, while the non-CMC patients were 2.9 to 1.1. For CMC patients, the complexity index scores are 2.5- 2.6 times higher while the LOS also increases by a factor of 2.1. Twenty percent of patients of admitted require care with high degree of medical complexity. Validated risk stratification tools applied to CMC patients demonstrate increased LOS & readmission rates that are more than twice that of the non-CMC patients. CMC patients consume hospital resources. Further studies to improve outcomes for CMC are needed. A high risk index can lead to inefficient health care utilization, unaccountable patient/family cost, and poor outcomes. Recognizing risk should prompt application of care coordination, engaging care team members and families for greater satisfaction and improved health management.

Shyma Ahmed and Lynn Jakobs, Ph.D.
sahmed@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Breast Cancer Screening In Arab-American Women

Breast cancer is the most common type of cancer amongst Arab women. There is a universal finding on the importance of cancer screening on the prevention and early detection of various cancers. However, breast cancer remains the second leading cause of death nationwide and the leading cause of cancer death in women. In the Arab population, numerous factors have been identified as hindering women from participating in health screening practices; these include lack of knowledge of breast cancer, fear, financial barriers, etc. This study explores the health screening practices of Arab-American women and the effectiveness of providing breast cancer screening education to a select population of Arab-American women who attend mosque. Three months after the educational intervention, participants who answered they had not had screening mammograms were contacted and questioned regarding their health seeking practices after the educational intervention. The researcher's aim was to identify whether or not the teaching has led to change in the participants' breast cancer screening practices and to compare demographics data from participants who have had mammograms with those who have not.

Nagat Alrubati and Qiao-Hong Chen, Ph.D.
Maricarmen Gonzalez, Irvin Vides, Qiao-Hong Chen
nagatal@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Synthesis Of Two Key Fragments For The Lactam Mimics Of Zampanolide

Prostate cancer is the second leading cause of cancer death in the US men. It is estimated that 1 in 8 males can expect a prostate cancer diagnosis in their lifetime. The current available chemotherapeutics for advanced castration-resistant prostate cancer can prolong 1-3 year survival time, but the patients become resistant inevitably. A solution to this is to look into promising natural marine products. Zampanolide exhibits anti-proliferative properties against drug-sensitive and drug-resistant cancer cell lines. This compound is classified under a class of compounds called microtubule-stabilizing agents (MSAs). MSAs are successful in anti-cancer therapy drugs because of their ability to bind with microtubules, which promote polymerization leading to a halt during mitosis, and then finally causing cell death. Due to its low abundance in nature and the metabolic instability of the lactone moiety, this study aims to synthesize a stable lactam mimic of zampanolide in hope to improve its metabolic stability and availability. The mimic was designed to be synthesized from two fragments: fragment one (C1-C8) and fragment two (C13-C18). Fragment one was synthesized through a 10-step chemical transformation. Fragment two was achieved by a 6-step procedure. All the intermediate products were monitored by TLC spotting compared against reference samples to verify reaction correctness and completion. Also, some intermediates were characterized using 1H NMR to confirm the presence of the desired products.

Audrey Ang and Nicole Smith, Ph.D.
Eric LeNorgant, Morgan A. Spiegel, Denise M. Ramirez, Ashley J. Dwelle
4udr3yswim@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Kinesiology

If You Build It, Will They Come? Direct Observation Of The One-Mile Bulldog Trail And Outdoor Exercise Area: Healthy Campus, Csu Fresno

Promotion of physical activity (PA) is a public health priority. To this end, CSU, Fresno is participating in Healthy Campus, a campus-wide health promotion campaign sponsored by the Partnership for Healthier America. As a function of participating Healthy Campus, stakeholders at CSU, Fresno agreed to promote increases in PA and healthy eating by adopting environmental and policy changes on campus. Environmental changes included promoting walking on Bulldog Trails and upgrading the outdoor exercise equipment between the North and South Gyms. Importantly, these efforts are just getting underway and there is a need to collect baseline data to better understand the impact of these changes. It would be helpful to assess baseline utilization patterns on the Bulldog Trails and the current exercise equipment before additional changes occur. The data can be used to leverage for resources to support future Healthy Campus initiatives and to promote Healthy Campus success and lessons learned on our campus. The purpose of this study is to describe utilization patterns on the one-mile Bulldog Trail and to describe usage of the outdoor exercise area located between the North and South Gyms. Direct observation methods will be employed to collect data. The data from this study will help Healthy Campus stakeholders understand the status quo and may also point to important targets for intervention in the future. This information can then be used to help plan and evaluate future PA promotion efforts. For example, understanding utilization patterns can also help identify ideal locations, days of week, and times of day to target PA promotion efforts (i.e., where and when are the most people).

Jenna Aoki and Nicole Smith, Ph.D.
Nicole Smith
jennaaoki@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Kinesiology

Objectively Measured Movement Of Office Workers: Csu, Fresno

Sedentary behavior is a threat to public health. Objective surveillance studies of office workers are warranted given the sedentary nature of their job duties.

The purpose of this project is to objectively monitor physical activity in a small sample of office workers on the CSU, Fresno campus. We aim to learn about the physical activity behavior of office workers and to determine if personal characteristics or other factors including day of week and time of day predict their behavior. Two full-time employed, adult office workers with no ambulatory limitations will be recruited to participate.

Participants who meet the selection criterion and who consent to participate will be asked to complete a brief questionnaire and to wear an Actigraph GT3X+ accelerometer for a seven-day period. Subjects with at least three weekdays and one weekend day of valid wear-time will be included in subsequent analyses. There are minimal benefits to subjects; however, participants with sufficient wear-time data will receive a $20 Visa gift card as an incentive to participate. The data may be useful as baseline if interventions are warranted. The risks of participating in this study are minimal. Some participants may feel uncomfortable answering survey items and/or wearing an accelerometer on their waist for a seven-day period, may become tired of keeping a wear-time journal, and may feel bothered at times by the reminders/prompts to participate. Participants will be advised they can opt out at any time without consequence. This includes opting out of the prompts at any time. The identities of human subjects will remain confidential in the study. Each participant will be identified by a unique ID code. All data will be stored in a locked office within a locked file cabinet and/or on password secured devices.

Andrea Aparicio Ramirez and Rory Telemeco, Ph.D.
Karina Perez, Rory Telemeco
andya16@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Temperature Preference And Performance In Crested Geckos (Correlophus Ciliatus)

The Crested Gecko (Correlophus ciliatus) lizard was rediscovered in New Caledonia 20 years ago and despite becoming common in the pet trade, there are currently no data on their life history or physiology. Crested Geckos have a very small geographic range at risk of habitat destruction and climate change, both of which will alter their thermal environment. However, the importance of changes to the thermal environment for Crested Geckos is uncertain because, unlike most reptiles, they do not have any special temperature requirements, and are comfortable at room temperature, which is generally colder than what reptiles prefer. We measured thermal behavior (preferred body temperature and voluntary limits) and performance (optimal and maximum temperature for running) of adult and juvenile crested geckos to describe thermal tolerances, assess correlations between behavior and performance, and assess differences among life stages. Crested geckos displayed typical thermal biology for a lizard with no difference among life stages. The optimal temperature for sprint performance (32.2 ± 3.5 ºC) was substantially higher than the preferred body temperature (26.2 ± 5 ºC) but corresponded to the maximum temperature voluntarily experienced by the lizards (33.0 ± 2.9 ºC, all are mean ± s. d.) Our results demonstrate that despite tolerating a broad range of temperatures, Crested Geckos actively thermoregulate and their performance is highest at lower temperatures than for most reptiles. These data allow us to improve captive care of Crested Geckos and begin making predictions for how they could be affected by climate change.

Adam Avila and Katherine Waselkov, Ph.D.
Katherine Waselkov, John Constable
guada69@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Investigating Bacterial Endophytes In Parasitic Cuscuta Campestris And Its Helianthus Annuus Host

A diverse community of microorganisms colonizes plant surfaces. These microorganisms can colonize the external leaf surface (the phyllosphere), the external root surface (the rhizosphere), and the plant interior (the endosphere). Microorganisms existing internally, called endophytes, can have symbiotic, commensal, or pathogenic relationships with their host plant. Our prior work has demonstrated a consistent endophyte community in leaf and petal tissue of the common sunflower (Helianthus annuus), which is dominated by the phyla Proteobacteria and Actinobacteria, and classes Alphaproteobacteria and Betaproteobacteria. The endophyte community in parasitic plants and how it affects the composition of the host endophyte community has not been described. We are examining the endophyte community structures of H. annuus, the holoparasite Cuscuta campestris (dodder), and their interaction to build an understanding of microbiota diversity in each species. We also intend to assess possible changes in host microbiota resulting from a dodder infection. Our goals are to (i) isolate/identify endophytic bacteria in the parasitic plant C. campestris and a host, H. annuus; and (ii) examine changes in the H. annuus endophyte community resulting from dodder infection. Fifteen samples of dodder tissue, dodder-infected and non-infected H. annuus stem and leaf tissue were field collected in Central California. All tissues were surface washed to minimize phyllospheric bacteria; complete surface sterilization was verified by plating the final water rinse on 1/10 trypticase soy agar. DNA was extracted by grinding plant tissue in liquid nitrogen and will be amplified with chloroplast-excluding 16S primers due to the primer's affinity for non-target DNA. Endophyte PCR products will be isolated, sequenced (MiSeq platform) and analyzed using the QIIME2 pipeline. The identification and assessment of specific endophytes and their community structure in both host and parasite has the potential to provide insight into the development of effective control strategies for C. campestris infestations in agricultural crops worldwide.

Harpreet Badhesha and Kathleen Rindahl, Ph.D.
hbadhesha@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Hypertension Awareness In The Young Adult Population

Hypertension, or high blood pressure, is a modifiable risk factor that causes significant health complications and costs healthcare billions of dollars annually. Early detection and knowledge about hypertension, along with lifestyle changes and/or strict medication adherence can aid in controlling high blood pressure. Hypertension is known to be common in later adulthood, but research indicates it is becoming increasingly pertinent in young adults. In 2017, the Eighth Joint National Committee published new blood pressure guidelines that are said to impact young adults the most. The purpose of this study was to assess hypertension-related health literacy in Fresno County for participants 18 to 39 years of age. The study focused on identifying a correlation between the knowledge participants had on hypertension and their blood pressure readings. The researcher created an assessment tool to determine participants' knowledge of hypertension regarding early detection, prevention, and lifestyle modifications that can be implemented to decrease blood pressure. A single blood pressure was taken to correlate the patient's blood pressure with the patient's knowledge of hypertension determined by the assessment tool results. The results revealed there was low health literacy regarding hypertension in participants with high blood pressure readings. This study reinforces increased knowledge of hypertension can lead to prevention or improved control of hypertension in the young adult population.

Inderpreet Bal and Santanu Maitra, Ph.D.
inderpreet_bal@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Development Of An Effective & Efficient Amide Coupling Scheme Utilizing 1-Ethyl-3-(3-Dimethylaminopropyl) Carbodiimide (Edc) To Enable Rapid Generation Of Small Focused Libraries

DEET, is a repellent against pests in the Culicidae family. Analogs of DEET have been previously synthesized in the S. Maitra Lab, and are continuously being produced in order to assess their potency against Drosophila Suzukii. Drosophila Suzukii harms crops at every stage of ripening thus resulting in immense revenue loss for agriculture industries including those in California. To combat such pests our lab has been designing and synthesizing molecules similar to DEET. The first few focused libraries of DEET analogs were synthesized using thionyl chloride. This methodology is hazardous, inefficient, time consuming, and very difficult to apply in a parallel reaction scheme which would ultimately improve productivity. In order to maximize efficiency, enhance productivity, and to utilize a less hazardous approach, EDC was considered to be an alternative activating coupling agent to synthesize an amide bond. Earlier attempts in our research group to use this one-step amide bond coupling reaction did not fulfill our requirements. Essentially once again the EDC route had been replaced with the thionyl chloride method despite its inherent challenges and drawbacks. More recently through extensive modification of reaction conditions and work up technique, this EDC amide coupling approach became our lab's primary DEET analog formation scheme that now allows efficient parallel synthesis. This poster will describe the challenges, difficulties, and the ultimate success in the creation of this synthetic methodology. It is imperative to mention here that this 'reinvented, clean, and rapid' methodology has been unanimously adapted by our entire research group as the only synthetic procedure for this project.

Sarah Banks and Monica Rivera PT, DPTSc, Ph.D.
Sbanks17@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

The Importance Of Self-Efficacy In A Comprehensive Rehabilitation Program Focused On Increasing Quality Of Life For A Patient With Brown Sequard Syndrome: A Case Report

An estimated 17,700 new occurrences of spinal cord injury occur each year in the United States. Brown-Sequard Syndrome is a rare incomplete spinal cord injury presenting with asymmetrical clinical features below the level of the lesion. Spinal cord injuries impact a patient's quality of life due to physical and psychosocial factors, interference with an individual's life role or activities of daily living, and loss of meaningful activities. The purpose of this case report is to examine the importance of self-efficacy in physical therapy intervention focused on increasing quality of life of a patient with chronic Brown-Sequard Syndrome. The patient was a 23-year-old female student seen in outpatient physical therapy eight years post diagnosis of Brown-Sequard Syndrome. The patient was referred to physical therapy for right leg weakness and left leg soreness. The patient was seeking physical therapy services to increase strength, balance, and activity level, decrease her lower extremity soreness, and get a job while attending university. Intervention focused on reducing activity limitations and increasing quality of life as they relate to the patient's life role as a student and ability to get a job. Treatment involved traditional neuromuscular rehabilitation and patient education, while emphasizing self-efficacy. Important findings include improved lower extremity strength, walking duration, balance, and Lower Extremity Function Scale score. The patient had a positive change in factors that are associated with Brown-Sequard Syndrome. Physical therapy outcomes and the patient's ability to get a job, demonstrated increased function following physical therapy treatment which can be linked to increased quality of life.

Adam Barnard and Jennifer Roos, PT, DPT, GCS
adamsbarnard@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Determining Efficacy Of Pt Interventions For Traumatic Brain Injury: A Case Report

Introduction: The purpose of this case report is to discuss interventions for the recovery of functional mobility provided to a 58 year—old Hispanic male who suffered a subarachnoid/subdural hematoma, as well as T12 vertebral fracture. The patient was also diagnosed with sick sinus syndrome, secondary to pacemaker implantation, and acute hypoxemic respiratory failure. Comorbidities included hypertension and gout.

Methods: The Rancho Los Amigos Levels of Cognitive Function Scale (LCFS) was used, as well as dual-tasking and task-oriented activities. Patient education was also provided regarding pain relief for his vertebral fracture, as well as for gout and hypertension. The patient was seen for a total of 13 interventions, over the course of 3 weeks, in the inpatient rehabilitation setting.

Conclusion: With the Rancho Los Amigos LCFS guiding treatment, this patient's movement patterns, task-oriented learning, and neuromuscular coordination were improved with physical therapy intervention. Assist levels required by the patient improved from moderate assist at examination, to standby assist at discharge.

Yaneth Barreto and Tricia Van Laar, Ph.D.
Lindsey Burbank
yanethb11@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Role Of Xylella Fastidiosa Pnpase In Rna Metabolism During Cold Stress

Xylella fastidiosa (Xf) is a xylem-obligate plant pathogenic bacterium that causes diseases in diverse crop plants. In grapevines the infection known as Pierce's disease, is limited to regions with warmer climates. In previous research, it was observed that grapevines infected with Xf can lose the infection during the winter season ("cold curing"), but this phenomenon is not completely understood. Compared with other bacterial pathogens, Xf lacks certain aspects of cold response, including expression of cold-inducible cold shock proteins. Due to the importance of cold shock proteins in RNA stabilization, this study investigates the role of RNA metabolism in Xf in response to cold temperatures, specifically a polynucleotide phosphorylase homolog (PNPase). PNPase has been characterized in other bacterial systems for RNA exonuclease and polymerization activity essential to survival at low temperatures. Xf PNPase is differentially expressed at the transcriptional level in a cold shock protein mutant (Xf Δcsp1) as determined by RNAseq analysis, and purified Xf PNPase shows functional activity in an RNA synthesis assay. An Xf PNPase knockout mutant (Δpnp) is currently being evaluated for cold survival, in planta virulence, and cold-inducible gene expression. The results will provide important information regarding Xf cold response which is relevant to understanding the mechanism of cold curing of Xf in grapevine.

Silvia Bedolla and Silvia N. Bedolla, Ph.D.

neri479@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Compassion Fatigue And Burnout Among Emergency Nurses

Background/Objective: The purpose of this project was to increase the awareness of compassion fatigue and burnout among emergency department (ED) nurses. Also, if establishing post-shift destressing huddles would help improve symptoms of compassion fatigue and burnout among ED nurses, thus, improving job satisfaction. ED nurses are subjected to unexpected stressful events numerous times during their shift in an unexpected hectic environment. Frequent exposure to stressors eventually causes compassion fatigue and burnout among ED nurses, consequently leading to poor coping skills: detachment, physical illness, job dissatisfaction, increase nurse turnover, poor quality of patient care and ultimately negative thoughts about the nursing profession. The review of the literature on compassion fatigue and burnout among ED nurses focused on risk factors, incidence, comparison with other specialties, interventions, and how post-shift de-stressing huddles can be beneficial to improving job satisfaction.

Methodology: Compassion Fatigue and Burnout was assessed with the use of a pre and post questionnaire ProQOL-5. The study sample included 19 full-time nurses from the emergency department of Sierra View Medical Center. A Survey Monkey was used to gather data regarding job satisfaction and the quality of de-stressing huddles in the emergency department. Overall 14 de-stressing huddles took place during January 2019, results on compassion fatigue and burnout.

Results: Further analysis and results will be discussed in the poster presentation

Conclusion: The project concludes that the implementation of post-shift de-stressing huddles, had a favorable impact on decreasing compassion fatigue, burnout and increasing job satisfaction among ED nurses.

Jacob Berard and Jennifer Roos, PT, DPT, GCS

jmb1109@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Return To Sport Rehab Of An Adolescent Female Utilizing The Back-Doctor App And Dynamic Sport Specific Core Neuromuscular Re-Education: A Case Report

A large percentage of young female athletes experience low back pain. Most cases are of musculoskeletal origin. A new method incorporating core strengthening is a phone application called Back Doctor. The purpose of this case report is to discuss the interventions, including the use of the Back Doctor phone application, for low back pain in a young female athlete, with decreased trunk strength and neuromuscular control, for her return to sport. The patient was a 16-year-old female high school athlete with the chief complaint of intermittent low back pain that hindered her from playing softball. The patient demonstrated fair strength of trunk extensors and flexors. The patient was seen for one visit a week, for nine weeks, to improve core and trunk strength and muscular control, with the goal of returning to softball. Therapeutic exercise and neuromuscular re-education were utilized to improve this patient's core and trunk strength, as well as train the musculature to activate appropriately with softball activity. The Back-Doctor application, with exercises, was used initially to improve core strength, and then more dynamic exercises were implemented for neuromuscular re-education. The patient's Modified Oswestry score decreased by 12 to 0 points, pain at worst decreased from 6 to 0 points, and manual muscle test grade also improved from 3/5 to 5/5. Along with quantitative data from these measures, the observation of the patient's posture and core engagement with movement improved. The patient was able to successfully return to sport.These improvements demonstrate the effectiveness of these interventions for treating low back pain for return to sport of an adolescent athlete. One of the largest takeaways, however, is the potential effectiveness of the Back-Doctor app. The Back-Doctor application can aid physical therapy by its ease of administration and ability to increase patient compliance.

Jessie Betancourt and Jeff Crane, Ph.D.
jessierbetancourt@mail.fresnostate.edu
California State University, Fresno - Kremen School of Education and Human Development
Department of Counselor Education and Rehabilitation

The Role Of School In Helping Emerging Adults Formulate Their Purpose In Life

Since school is instilled as a commitment to learning through personal and academic purposes, individuals gain a variety of skills, experiences, and values throughout their lifetime. Therefore, this study's purpose was to examine the role school has on helping emerging adults (ages 18-29) formulate their purpose in life. Purpose has been significantly researched in many scholarly journals, but the role of school in defining purpose within emerging adults has yet to be examined in relation to purpose. By examining the role that school has on purpose among emerging adults, this study aimed to aid educators of all kinds in understanding the role of purpose among emerging adults, barriers of purpose within emerging adulthood, school in relation to purpose, and purpose as a developmental perspective. In order to achieve this goal, a phenomenological study was conducted using interviews from emerging adults. The interviews were transcribed, and common themes were drawn. The results indicated varying degrees of purpose among emerging adults, experiences within school having a high degree of impact on emerging adults, significant time, financial, and motivational barriers to access resources among emerging adults, and an unreadiness to enter adulthood. Therefore, we can infer the high degree of school on emerging adulthood within school through the varying degree of change, purpose, and constrains of emerging adulthood.

Andrew Bishop and Albert Valencia, Ph.D.
drewcrew2@mail.fresnostate.edu
California State University, Fresno - Kremen School of Education and Human Development
Department of Educational Leadership

The Evaluation And Effect Of Middle School To High School Transition With Regards To Academics, Behavior, And Attendance

The purpose this study were to determine if the transition programming currently in place at El Dorado High School is a having a positive effect on students regarding grade point average, absences, tardies, and behavioral incidents. The researcher examined archival data with regards to grade point averages, behavior incidents logged, tardiness and absenteeism data. The data used was from the course of four cohorted years of all students and high-risk students from four different middle schools transitioning into their feeder high schools in the same district. A multivariate repeated measure one-way analysis of variance (MANOVA) use be used with Wilks's Lamba statistic and partial eta square using the 0.05 alpha level will be used in order to ensure a high level of significance. Two research questions were developed, and results yielded rejection of the null hypotheses. The results of this study indicated that there were statistically significant differences of the dependent variables (grades, absences, tardies, and behavioral incidents) among the independent variables (School and School Year) for all students and high-risk students using the multivariate results. Upon further review of the univariate results, it was shown that there was a variety of results depending on the year and variable analyzed. GPA was higher during a student's eighth grade year compared to the end of their ninth-grade year. For high-risk students, significance was found in the results as the outcomes tended to be in favor of higher GPA, less absences, less tardies, and less incidents at the middle school level. It was concluded that transition programming at El Dorado High School had a positive effect on students as in the final year of the transition components resulted in student's earning less absences, less tardies, and less incidents in an overall mean average compared to their middle school years.

Jocelyn Boe and David Lent, Ph.D.
Kiana Cabasa, Lillian Vang, David Lent
joeboe01@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Development Of Histological Procedure For Cross Species Comparison Of The Lateral Pallium In Muraenidae

Moray eel (Muraenidae) behavior has not been extensively studied, due to their aggressive nature and cryptic habits. The aim of this project was to examine speciation and brain morphology differences between morays in different environments. We propose to test the hypothesis that the lateral pallium, the region of the teleost brain associated with spatial cognition and navigation, is more developed in morays inhabiting structurally complex environments (ie. coral reefs), as compared to those species which inhabit structurally simple environments (ie. brackish estuaries). The first step in this project was to develop the appropriate histological protocol necessary to visualize and map differences in the moray brain. Histology presents a unique method to observe the distinctive characteristics of various tissue and cell types. However, due to its specific and delicate nature, histology often requires high levels of modification, depending on the materials of interest. Our results have produced an optimal methodology to examine the brain morphology of members of the family Muraenidae. The methodology proposed herein involves dissection, paraffin embedding, rehydration, and staining. Our results have produced a detailed procedure, which (simplified) is as follows: The brains of moray eels of varying species are removed via posterior-superior cranial entrance dissection, formalin-fixed for 48 hours, then embedded in paraffin wax after successive degrees of dehydration. The brains (now in blocks of paraffin) are then cut into 10 μm sections and mounted on slides. The slides are then immediately rehydrated and stained using Toluidine Blue to differentiate the various regions of the brain. All microscope slides are sealed with mounting fluid in order to prevent desiccation and cracking of the tissue. The prepared sections have allowed us to visualize brain regions and quantify morphology. In future, these methods will be used for cross species analysis and could be applied for other histological studies.

Amneet Brar and Kathleen Rindahl, Ph.D.
amneetbrar@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Assessing The Need For Exercise Prescription For The Prevention And Management Of Cardiovascular Disease

Cardiovascular disease (CVD) is the leading cause of death in the U.S., causing approximately 630,000 deaths nationwide every year and costing approximately 200 billion dollars annually. One of the major risk factors for CVD is physical inactivity. Integrating healthy behaviors such as regular physical activity into one's lifestyle can help decrease the risk for developing CVD and lead to better outcomes for those who have cardiovascular risk factors or a confirmed diagnosis of CVD. Although lifestyle or behavioral changes can be made to prevent CVD, the prevalence of CVD continues to be on the rise. Research has shown that increased awareness about CVD, increased patient education, and increased use of exercise prescription are all needed to motivate patients to engage in healthy lifestyle behaviors and improve their cardiac health. The study assessed whether the underserved migrant population in rural Central California would be more inclined to exercise if given an exercise prescription by their health care provider. The researcher created an assessment tool to determine whether participants engage in regular exercise, if they have been encouraged to exercise by their health care provider, if they have ever received an exercise prescription from their health care provider, and whether they have or would follow an exercise prescription from their health care provider. Those who were 18 years and older that attended the Fresno State Community Health Mobile Unit were asked to participate in the survey. The results revealed that although none of the participants have ever received an exercise prescription from their health care provider, 96% of participants would follow an exercise prescription from their health care provider. The study reinforces the increased use of exercise prescription to reduce physical inactivity, ultimately decreasing the incidence of CVD and resulting in better outcomes for those who have a confirmed diagnosis of CVD.

Marivel Bravo-Mendosa and Albert Valencia, Ph.D.
mbravome25@mail.fresnostate.edu
California State University, Fresno - Kremen School of Education and Human Development
Department of Counselor Education and Rehabilitation

Latino Perspectives On Educational And Vocational Resource And Access

The goal of this study is to understand the knowledge and perspective of older documented immigrant Latino adults who are over the age of 30 with low levels of education below a high school preparation on continuing education and entry level positions that require high school credentials or GED. The benefit of this study is to gain an understanding of how Latino immigrant adults understand educational or vocational aspirations if they would like to pursue them and how they can be supported. Although this study is of minimal risk the researcher will do their best to avoid inducing feelings of discomfort, judgment, shame, pressure or anything negative that could risk the subjects well-being. Older immigrants may be many years removed from their last educational experience and those who seek education in the U.S. for upward mobility will be challenged (Janis, 2013). The results of this study will contribute to the understanding of immigrant adult education and vocational aspirations.

Candido Breceda and Krish Krishnan, Ph.D.
Krish Krishnan
candidobreceda@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

H Nmr Investigation Of Metabolites By Lactobacillus Acidophilus Digestion Of Cheese

Nuclear magnetic resonance (NMR) spectroscopy is a leading technique used to investigate metabolites, metabolomics. 1H NMR has been used to compare spectra of metabolic profiles of differently aged cheeses that were subject to in-vitro digestion. The in-vitro digestion model proposed by Bordoni et al. showed there were notable difference in metabolic profiles between the differently aged cheeses which were attributed to bacterial activity. We wanted to know if bacteria present in the human digestive tract would also show metabolic profile differences if they were exposed to different nutritional sources. To determine if bacterial metabolites profiles would change Lactobacillus acidophilus, a bacterium that ferments sugar into lactic acid was introduced to in-vitro digestion of cheese. To study the effect that bacteria have on metabolite formation in human digestion a control was used to compare metabolite formation of human enzymes and important secretions alone. An in-vitro digestion model mimicking oral, gastric and duodenal conditions was used to prepare control samples containing metabolites of digested food. The supernatant liquid was separated from undigested solids for NMR analysis. We expected lactic acid to be present in only the samples that contained L. acidophilus but we found that lactic acid was present in both the control sample and the sample where L. acidophilus was introduced to the same conditions, as well as a few notable differences in respective metabolic profiles. These results show that when a bacterium is introduced to in-vitro digestion of cheese small differences can be detected although more investigation is needed to determine if metabolites besides lactic acid were present. This ability to detect small differences will allow us to move toward in-vitro digestion of various diets each containing specific ratios of fats, sugars and carbohydrates and proteins to potentially detect altered metabolic activity.

Shannon Brewer and Sara Shinn, Ph.D.
Jamie Levitt
shannonfresno@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Food and Nutritional Sciences

Development And Evaluation Of Reusable Food Wraps: Contributing To A Zero Waste Status At Fresno State

Single-use plastic waste, such as disposable plastic food wrap, has been found extensively in marine environments, with an estimated range of 4.8 to 12.7 million metric tons entering the ocean in 2010 alone (Jambeck et al., 2015). Many environmental, governmental, and commercial agencies are attempting to reduce single-use plastic wraps and other disposable food packaging in order to reduce the amount of waste entering landfills and oceans. Recently, the California State University Chancellor released a sustainability policy mandating that all California State University campuses reduce their solid waste disposal rate by 50 percent by 2016 and 80 percent by 2020 to ultimately achieve a zero waste status (California State University, 2017). Therefore, this research aims to develop a reusable, food-safe wrap that preserves food as effectively as single-use plastic food wraps, and is easy to sanitize. The production method for the beeswax-based food wrap will be optimized. Then food wrap samples will be inoculated with coliforms in order to evaluate their antimicrobial properties. The longevity and reusability of the samples will also be tested by evaluating the physical properties of the samples after being repeatedly manipulated and washed. In addition, food samples will be covered with the food wrap samples to compare quality preservation, relative to single-use plastic wrap as a control. It is anticipated that the product will closely resemble beeswax food wraps that are currently commercially available. Additionally, this product will likely be widely accepted, purchased, and utilized by the Fresno State community, and will be determined by consumer acceptance testing.

Madelyn Broach and Janine Spencer, Ph.D.
mbroach@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Education On End-Of-Life Care For Nurses To Promote Stress Reduction And Increase In Quality Of Care

The idea that focused education could provide reassurance of the quality care given by nurses should provide the proper motivation for further research on the educational levels of our caregivers for the end of life population. Research has found that providing simple hands on tools, and addressing handpicked areas of self-doubt, could promote a stress-free environment for nurses when providing care. Through a self-efficacy survey, students anticipating graduation from their Bachelor's in nursing program could address their concerns and fears regarding caring for the dying patient. After a lecture seminar, the students could utilize their new knowledge and simulate real life stressful conversations regarding death to a patient and their family members. The results showed that after the education module, students felt more prepared and less stressed if the situation were to come up in the field after graduation. Overall, the illustration of the physical, psychosocial, and emotional implications death plays on us as caregivers, should not affect the quality of care, especially if the information and education is available to be taught in seminar and handled through simulation.

Jamile Bucio and Michael Botwin, Ph.D.
Maribell Garcia, Krystal Duarte, Michael Botwin
Jamile07@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Psychology

Mating Intelligence And Happiness: An Evolutionary Perspective

Over the last thirty years, Evolutionary Psychology has become an important new area of study in Psychology. An exciting new construct is mating intelligence (MI), or the mind's own reproductive system. It consists of a series of psychological mechanisms for sexual courtship, competition for mates, mate-search, mate-choice, mate-guarding, and any other behavioral capacities that bring mainly reproductive payoffs. The present study examines the relationship between measures of personality, MI, mate value, relationship success, and measures of happiness or subjective well-being (SWB). We predicted that individuals who are successful at important evolutionary tasks would have higher levels of SWB. 194 heterosexual participants completed several measures related to these constructs. Participants completed the Mating Intelligence Scale (MIS) and the Mate Value Inventory (MVI). Dating success was measured with the Dating and Assertion Questionnaire (DAQ), The Social Avoidance and Distress Scale (SAD), and the Survey of Heterosexual Interactions. SWB was assessed with the Satisfaction With Life Scale (SWLS) the Flourishing Scale (FS), and the Index of Well-Being. We found that higher scores on the MIS and MVI were correlated with measures of dating success and happiness. The MVI was significantly correlated with the FS and the SWLS. For men, the MVI was significantly correlated with the FS, but not with the SWLS. For women, the MVI was significantly correlated with the FS and the SWLS. There are different versions of the MIS for men and women. For men, MI was significantly correlated with the MVI ($r=.44$, $p<.01$), FS ($r=.31$, $p<.05$), SAD ($r=.30$, $p<.05$), as well as DAQ Assertiveness ($r=.26$, $p<.05$), and DAQ Dating ($r=.39$, $p<.05$). For women, MI was significantly correlated with the SAD ($r=.42$ $p<.001$). Discussion focuses on how research on happiness can provide insights into our understanding of human mating strategies as well as personality and evolutionary psychology.

Alyssa Cabri and Jennifer Roos, PT, DPT, GCS
Jennifer Roos
alyssacabri@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Physical Therapy Interventions In The Home Health Setting For An 80-Year-Old Female Status Post Tha: A Case Report

When an individual has end stage osteoarthritis (OA) of the hip, normal everyday activities become difficult and their quality of life (QOL) decreases. The patient experiences hip pain, joint instability, decreased muscular strength and decreased joint mobility. One option for end-stage OA is a total hip arthroplasty (THA). Research supports that a THA is a cost-effective surgical approach performed to restore the patient's function and relieve pain. The purpose of this case is to discuss a comprehensive physical therapy plan of care (POC) for an 80-year-old female receiving home health services status post THA. The patient was an 80-year-old female referred to home health physical therapy services. She was diagnosed with severe OA in her left hip by her physician and due to the pain and the degenerative degradation of the hip joint over time, the patient underwent a posterior approach left THA. POC included two times a week for four weeks focusing on improving strength, mobility, gait, transfers, balance, functional mobility, and patient education. After four weeks, the patient showed a 25% improvement in strength along the involved extremity and improved joint mobility. Her functional independence scores increased from 3/7 to 6/7 with functional mobility and 3/7 to 7/7 with transfers. She also improved her static and dynamic standing balance from fair to good- and showed compliance with her home exercise program (HEP). Interventions included therapeutic and balance exercises, gait and transfer training, a HEP, modalities and patient and caregiver education. The following outcome measures were used: Numeric pain rating scale (NPRS), range of motion (ROM), manual muscle test (MMT), functional independence measure (FIM), functional balance scale, and pitting edema scale. The results suggest that a comprehensive physical therapy POC for an 80-year-old female receiving home health services status post-THA is beneficial in regaining functional mobility and increasing QOL.

Sean Carpenter and Laurent Dejean, Ph.D.
Andrew Gilbert
sean_carpenter@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Effect Of The Overexpression Of The Proto-Oncogene Bcl-2 On Oxamate-Induced Cytotoxicity In Pro-Lymphocytes

Apoptosis is a programmed cell death which rids the body of potentially toxic cells. This death program is often inhibited in cancerous blood cells. In mammalian cells, glucose acts as a major fuel source to generate energy, breaking down into pyruvate via glycolysis. In normal aerobic cells pyruvate enters the mitochondria where it is oxidized by the tricarboxylic acid cycle to generate ATP. However, in cancerous cells, it is believed that an increased portion of this pyruvate generated by glycolysis is used for lactic fermentation; a process requiring the enzyme lactate dehydrogenase (LDH). There have been several studies showing that LDH inhibitors such as oxamate can severely impact the growth and survival of cancer cells more so than normal cells. From previous experiments, research shows an association between overexpression of Bcl-2 and carcinogenesis in pre-lymphatic cells. To date, we have executed experiments that explore the type of metabolism (i.e. oxidative and/ or fermentative) deviation of pre-lymphocyte cells overexpressing Bcl-2 antiapoptotic proteins. Thus far, our studies have shown that an overexpression of these anti- apoptotic proteins lead to an increase of lactic acid production in this cell model; suggesting the role of antiapoptotic Bcl-2 family proteins as positive regulators of fermentative metabolism. Our hypothesis follows that inhibitors of lactic fermentation, such as inhibitors of the lactate dehydrogenase enzyme, will be more toxic to Bcl-2-overexpressing cells as such cells would rely more on fermentative metabolism to produce energy. Preliminary results after short term treatment with oxamic acid indicate that the Bcl-2 overexpressing background is more sensitive to the LDH inhibitor compound. This finding reinforces the concept that Bcl-2 family proteins are potential co-regulators of apoptosis and carbohydrate metabolism; and that abnormal expression levels of these proteins may be a direct cause of carcinogenesis.

Maria Castro and Heather Horsley, Ph.D.
mariaacastroo@mail.fresnostate.edu
California State University, Fresno - Kremen School of Education and Human Development
Department of Literacy, Early, Bilingual and Special Education

Parent Involvement: Reading To Children With Autism

The purpose of this project is to see whether the implementation of literacy bags increases the enjoyment of reading for children with autism along with an increase in parent involvement at home. However, there is little to no research on the use of literacy bags for children with autism. In this project, a new literacy bag designed for children with autism is implemented to see whether there is a positive impact on parent involvement when reading to children with autism. This project followed two parents with 5-year-old children diagnosed with autism. Data were collected from a home literacy environment survey, observations of children with autism using the literacy bags, and feedback from families using the literacy bags. Findings indicate that parent involvement has a direct impact on the literacy development of children with autism in that their desired on task literacy behaviors increased while their undesired behaviors during literacy activities decreased. For future directions, more research should be considered on the development of literacy bags intended for children with autism. Based on the findings of this project, additional literacy bags will be created and continued to be implemented within home tutoring programs for children with literacy in the Central Valley of California.

Carolyn Chan and Jennifer Roos, PT, DPT, GCS
Jennifer Roos
carolynjchan@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Outline Of Specific Interventions That Were Successful In Improving Exercise Tolerance Of A Patient With Copd Exacerbation

For patients with Chronic Obstructive Pulmonary Disease (COPD), exercise capacity decline and limitations in physical activity due to the symptom of breathlessness can severely impair a patient's daily life. Literature recommends lower extremity (LE) training and interval training for increasing exercise endurance in patients with COPD; however, they lack detail needed to implement the interventions in practice. Therefore, the purpose of this case report is to outline physical therapy interventions that were successful in improving exercise endurance for a patient with exacerbation of COPD symptoms.

The patient was examined in an acute care hospital for five days, receiving four visits. Physical therapy provided functional mobility training, LE exercise, and patient education for diaphragmatic breathing which was applied in all activities. Emphasis was placed on therapeutic exercise interval training. Objective monitoring for progress included: subjective level of breathlessness based on the modified Borg dyspnea scale, oxygen saturation levels, and reducing level of assistance with functional tasks.

Initially, the patient was unable to complete a sit to stand without her four wheeled walker and required multiple attempts before successfully coming to a stand. She was also only able to walk 10 feet of before stating that she was severely out of breath. By the end of physical therapy, she was able to sit to stand independently with one attempt and tolerated 300 feet of continuous walking while keeping her level of breathlessness at a moderate level.

These results indicate that interval training proved to be successful in increasing exercise tolerance. Implementation of diaphragmatic and pursed lip breathing to reduce anxiety may have also played a role in positive patient outcomes.

Rose Chang and Jennifer Roos, PT, DPT, GCS
Monica Rivera
rosec90@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Physical Therapy For An Individual With Stroke In The Middle Cerebral Artery And Decreased Blood Flow To The Anterior Cerebral Artery: A Case Report

Stroke is a widespread condition that affects approximately 15 million people each year. In the United States, stroke is the leading cause of adult disability and the fifth leading cause of death. The purpose of this case report is to describe the interventions for a 65-year-old female patient with stroke in the left Middle Cerebral Artery (MCA) territory and decreased blood flow to the left Anterior Cerebral Artery (ACA) territory. Motor and sensory dysfunctions were seen on the opposite side of the sites of involvement. The patient presented with right-sided weakness and language disorder. Physical therapy interventions focused on strengthening exercises, balance and postural exercises, trunk control with sitting endurance, and functional activities with transfers from bed to chair. Improvements were made as seen by a general increase in strength and active range of motion on the less affected, left side of the body. In addition, the patient displayed an increase in sitting tolerance— from being unable to sit at the edge of the bed, to tolerating sitting in a wheelchair for 45 minutes. However, she was unable to make any major strides in terms of ambulation, which may be explained by the areas of the brain involved. Research is limited on the topics of involvement to both the MCA and ACA territories. Future work could target populations with defects at both territories and evaluate outcomes in order to better support individuals with similar complications.

Jack Chen and Jennifer Roos, PT, DPT, GCS
Monica Rivera
jackchen318@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Physical Therapy Status-Post Total Knee Arthroplasty Complications In A Patient With Parkinson'S Disease: A Case Report

Parkinson's disease (PD) is a common neurodegenerative disease and affects approximately four million people worldwide. As the longevity of patients with PD increases, they may require a total joint arthroplasty, such as a total knee arthroplasty (TKA). There is limited literature on effective types of physical therapy (PT) treatments to help regain functional mobility for an individual with PD experiencing post-surgical TKA complications. The purpose of this case report is to demonstrate PT treatment in an acute care setting in response to complications of status-post (S/P) TKA for a patient with stage four PD according to the modified Hoehn and Yahr scale. The patient was a 75-year-old male, who experienced hallucinations and acute kidney failure while at home one-week S/P left knee TKA. The patient was re-admitted to a separate hospital at this time. The patient's past medical history included gastroesophageal reflux disease, hypertension, osteoarthritis, and PD. Physical therapy interventions focused on educating patient on the importance of safety, increasing left knee mobility, and decreasing gait deviances. Additionally, proprioceptive neuromuscular facilitation was utilized over three treatments in an attempt to improve range of motion for increased gait functionality. Gait analysis revealed improved gait mechanics, however left knee mobility remained relatively the same. Further research is necessary regarding the rehabilitation potential and outcomes of patients with various stages of PD S/P TKA along with the risks and benefits of this surgical procedure.

Jaspreet Chhina and Kathleen Rindahl, Ph.D.
jaspreetchhina@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Identifying Areas In The Central Valley With Uncontrolled Diabetes

According to the CDC, more than 29 million individuals in the United States have diabetes. Approximately 1 in 4 individuals are unaware they have diabetes. A hemoglobin A1C (HbA1c) value of 5.7% or above is indicative of pre-diabetes and a HbA1c of 6.5% or above is diabetes. The mortality rates of diabetes are continuing to rise each year, whilst researchers struggle to understand what hinders the American population from awareness, lifestyle changes, seeking medical care, and compliance to pharmacological treatments for diabetes. Individuals with diabetes can experience different complications with mismanagement of diabetes such as cardiovascular heart disease, vision impairments, neuropathy, kidney failure, and stroke. This research project will be conducted in relevance to understanding possible gaps in health literacy as evidenced by uncontrolled HbA1c among different areas in the Central Valley populations. This study was completed through a retrospective chart review using the charts from the Fresno State Mobile Health Unit. The data includes any HbA1c value higher than 5.7% of each subject from January 1, 2015 to December 31, 2018. Each zip code that revealed at least 25% of the population with a HbA1c greater than 5.7% is reported in this study. The zip codes in 2015 include: 93648 (42%), 93657 (60%), and 93637 (30%). The zip codes in 2016 include: 93622 (61%), 93705 (31%), 93637 (38%), and 93702 (53%). The zip codes in 2017 include: 93706 (29%), 93612 (25%), and 93221 (33%). The zip codes in 2018 include: 93650 (29%), 93622 (31%), 93656 (29%), 93291 (25%), 93640 (29%), and 93703 (47%).This study suggests the importance of initiating health literacy programs in these zip codes to educate individuals and decrease the rate of uncontrolled HbA1c values; thus, leading to a decreased prevalence of diabetes in the Central Valley.

Esther Chiou and Jennifer Roos, PT, DPT, GCS
echiou@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Patellofemoral Pain Rehabilitation For A Patient With A Visual Impairment: A Case Report

Introduction:

Patellofemoral pain is one of the most common causes of knee pain. Chondromalacia patellae is often found in those with patellofemoral pain. Abnormal movement patterns such as medial knee collapse cause increased patellofemoral joint stress during joint loading, which may result in chondromalacia patellae. Strengthening hip musculature has been shown to decrease patellofemoral pain and improve lower-extremity kinematics. Currently, there is minimal research supporting the benefits of neuromuscular training to promote optimal movement patterns during functional activities. The purpose of this case report is to describe the use of strength and neuromuscular training in treating PFP in a visually impaired patient that displays medial knee collapse during weight-bearing activities.

Brief Summary of Methods: The patient was 40-year-old female with the chief complaint of right knee pain, whom demonstrated fair strength of posterolateral hip musculature and medial knee collapse with functional activities. She was seen for eight sessions over four treatment weeks to improve hip strength and lower extremity alignment with weight-bearing activities. Interventions focused on therapeutic exercises focusing on hip strengthening and neuromuscular training to promote optimal movement patterns with functional activities. Consideration for learning style included providing tactile, auditory, and visual cues that were appropriate for the patient, given her visual impairment.

Summary of Results: After eight physical therapy treatments, the patient demonstrated improvements in Lower Extremity Functional Scale, Numeric Pain Rating Scale, range of motion, and strength. She also demonstrated improved movement patterns with weight-bearing activities.

Conclusion: The results suggests the use of a combination of strength and neuromuscular training is efficacious in treating patellofemoral pain. Future research supporting the benefits of neuromuscular training to correct abnormal movement patterns of the knee is necessary to provide insight on its benefits and effectiveness, which could create changes in the evaluation and treatment for patients with PFP.

Christopher Conetta and Christopher Conetta, Ph.D.
David Schuster, Shawn Roller
christopher.conetta@sjsu.edu
San Jose State University - College of Social Sciences
Department of Psychology

Individual Differences In Cyber Security

A survey of IT professionals suggested that despite technological advancement and organizational procedures to prevent cyber-attacks, users are still the weakest link in cyber security (Crossler, 2013). This suggests it is important to discover what individual differences may cause a user to be more or less vulnerable to cyber security threats. Knowledge has been shown to lead to increased learning and proactive cyber security behavior (CSB). Self-efficacy has been shown to be a strong predictor of a user's intended behavior. Traits such as neuroticism have been shown to negatively influence cyber security knowledge and self-efficacy, which may hinder CSB. In discovering what individual traits may predict CSB, users and designers may be able to implement solutions to improve CSB. In this study, 183 undergraduate students at San José State University completed an online survey. Students completed surveys of self-efficacy in information security, and cyber security behavioral intention, as well as a personality inventory and a semantic cyber security knowledge quiz. Correlational analyses were conducted to test hypotheses related to individual traits expected to predict CSB. Results included a negative relationship between neuroticism and self-efficacy and a positive relationship between self-efficacy and CSB. Overall, the results support the conclusion that individual differences can predict self-efficacy and intention to engage in CSB. Future research is needed to investigate whether CSB is influenced by traits such as neuroticism, if CSB can be improved through video games, and which are the causal directions of these effects.

Nicole Cope and Jennifer Roos, PT, DPT, GCS
Monica Rivera
nicolecope@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

A Patient-Centered Physical Therapy Intervention For Balance Impairment For A Patient With Parkinson'S Disease: A Case Report

Parkinson's Disease (PD) is the second most common neurodegenerative disease in the US and the prevalence is expected to increase due to the aging of the US population. Though research demonstrates that patient-centered care leads to increased treatment adherence and improved physical health outcomes, physical therapy (PT) interventions do not yet incorporate this model. The purpose of this case report is to describe a patient-centered PT intervention and treatment outcomes of a patient with PD whose chief complaint was high fall frequency. The patient was a 77-year old man diagnosed with PD 14 years ago who had a high frequency of falls (10 falls per month), balance difficulty, lower extremity weakness, and shoulder pain. Outcome measures included: falls in the past 30 days, Functional Gait Assessment (FGA), and Numeric Pain Rating Scale. Due to the dynamic nature of PD, the intervention was guided by the patient's daily treatment needs. The intervention involved gait training, modalities for pain reduction, therapeutic exercises, and neuromuscular re-education. At discharge, the patient demonstrated a drastic decrease in falls (1 fall in a 7-week period), a 4-point increase in FGA score (minimal clinically important difference = 4), increased lower extremity strength, and decreased shoulder pain (from severe to mild). In summary, this patient-centered approach led to a drastic decrease in fall frequency. This is meaningful because decreased falls can lead to increased safety with mobility, which can lead to increased neuroprotective effects from exercise.

Serena Corrales and Alejandro Calderon Urrea, Ph.D.
Gursharnjit Aujla, Christopher Acosta, Yasmin Mendoza
sercorr22@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

The Effect Of Chalcone 17 On Young Zebrafish

Plant parasitic nematodes (PPN) have had a worldwide effect on crop production causing an annual loss in product as well as billions of dollars in revenue. Certain measures have been taken before to control nematodes, such as the use of methyl bromide as a nematicide. However, this chemical has been known to have deleterious effects in the environment such as the depletion of the ozone layer as well as having effects on the nervous and respiratory systems of the organisms that come into contact with it, and so the continued search for an eco-friendly nematicide continues. This experiment uses what are known as chalcones as a possible “friendly” nematicide that have been known to be deadly to PPNs but not the soil microbiota and they appear to not have an effect on humans or other laboratory animals. However, the question remains about whether chalcones have an effect on aquatic animals which is why zebrafish were used in this study. The experiment used a well plate with three zebrafish fries placed in each of the four wells going down the column. Three columns of the plate were used for positive and negative control and the chalcone test. For negative control only water was used, for the positive the frys were placed in 2.5% ethanol in water solution, and lastly for the chalcone test the fish were placed in chalcone 17 at 1.6 ppm concentration. The experiment placed the fish under chronic exposure that spanned one week and was repeated three times. Observations were conducted every day. The results suggest that the fish being exposed to chalcone 17 were dead or dying by the second day of exposure. However, not all the fry died after exposure. The results fail to support the hypothesis that chalcone 17 is not lethal to aquatic vertebrates.

Andrea Coto and Maria Cruz, Ph.D.
Michael Lepech, Mia Allende, and Isamar Rosa
andrea.coto@sjsu.edu
San Jose State University - Charles W Davidson College of Engineering at San Jose State University
Department of Civil and Environmental Engineering

The Effect Of Manufacturing Variables On The Mechanical Properties Of Biopolymer-Bound Soil Composites

The colonization of extraterrestrial environments such as the Moon and Mars will require a paradigm shift in mission planning to consider the construction of habitats and other infrastructure to shelter humans from hazards. Extraterrestrial construction presents a difficult challenge because familiar construction materials and energy resources are unavailable. Thus, new construction materials and methods that utilize local resources must be developed. One novel material proposed by NASA and Stanford University uses a small fraction of biopolymer to bind Lunar soil. This material, known as Biopolymer-bound Soil Composites (BSC), is comparable in strength to concrete. This work focuses on understanding the effect of higher bulk densities and higher biopolymer concentrations on the strength of BSC. Experimental studies of BSC are performed and the results are used to determine mechanical properties under quasi-static loading conditions.

Kerry Cromwell and Janine Spencer, Ph.D.
kerrycromwell@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Increasing Advance Directive Completion

Advance directives clarify medical treatment preferences for patients when they are unable to speak for themselves. Advance directive completion rates are low and conversations regarding care preferences often occur too late to benefit the patient or the family making end of life decisions for their family member. The purpose of this project is to assess the impact on advance directive completion rates with the intervention of a nurse led community event offering a presentation and education on advance directive benefits and completion process.

A quasi-experimental study was conducted and included social media advertising and flyers posted in the local community clinics. A presentation was completed to those in attendance and included Nurse led education focused on obstacles, purpose and value in advance directive completion. Advance directive forms were distributed to all attendees.

Questionnaires were used to capture data and evaluate the presentation. A demographic intake form including a Pre-Assessment of advance directive knowledge and receptivity was completed before the presentation. A post intervention assessment was conducted to evaluate the presentation and measure receptivity, willingness and likelihood of completing an advance directive in the future.

Research findings indicate that education led focus groups may be influential in increasing the number of advance directive completion within the community. Results reflected that 70% of attendees understood the use and benefit of AD, results increased over 20% post presentation. Although results indicate high understanding of AD, the most significant improvement was in the quantity of attendees feeling adequately educated in AD understanding and completion process. Results also revealed that women are more likely than men to complete an AD.

Megan Cunningham and Sara Shinn, Ph.D.
Meganxc1@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Food and Nutritional Sciences

Plant-Based Alternatives To Sodium Nitrite In Cured Bacon

Since the 1970s, consumers have been cautious about eating bacon due to the widespread concern over cancer-causing nitrosamines that arise from nitrates conventionally used in cured meats (Sebranek et al., 2012). Catering to clientele that insist on "all-natural" products, many companies began producing "uncured" bacon treated with only plant-derived ingredients, such as celery extract, that have naturally occurring nitrates. Labeling these products as "natural" eliminates the producer's ability to use other curing additives, such as sodium erythorbate, which combat microbial spoilage and increase shelf-life (Sebranek & Bacus, 2007). Thus, "uncured" bacon has a decreased shelf-life. More recently, other plant-derived additives have been commercialized that can be incorporated into the natural curing process to help control microbial growth, slow lipid oxidation, and maintain desirable flavors and color (Grasso et al., 2014). Yet, to date, few studies have tested the functionality of these ingredients on naturally cured bacon.

The objective of this study is to test a variety of natural additives for their functionality in the curing process of pork bellies. Conventionally dry-cured pork belly will act as a control for comparison of plant-derived dry-cured pork belly (sea salt, cane sugar, and celery extract) treated with various natural additives. Treatment samples will include one of four different ingredients added to the dry-cure mixture: 1) smoked sugar, 2) pomegranate peel extract, 3) green tea extract, or 4) vinegar powder. Color, lipid oxidation, and microbial stability of the samples will be determined in an accelerated shelf-life study. It is expected that the smoked sugar will slow lipid oxidation, pomegranate peel extract and vinegar powder will have antimicrobial effects, and green tea extract will help to prevent color deterioration and lipid oxidation.

This study will have implications for food manufacturers because it will suggest a formula for developing naturally cured meats with extended shelf-life.

Ben Davis and Kammi Sayaseng, Ph.D.
mcadvis001@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Knowledge And Perceptions Of Medical Marijuana In Nurse Practitioner Students

Abstract

Introduction: With more states passing medicinal and recreational policies for marijuana, the access to cannabis is becoming much larger. Research is showing that the knowledge base of health care practitioners is becoming a barrier to successful conversations regarding the topic (Balneaves et al., 2018 & Ziemianski et al., 2015). The aim of this study is to investigate if an educational presentation on medical marijuana can help decrease the knowledge deficit so successful conversations can happen.

Methods: This is a quantitative, quasi-experimental descriptive design study. A pre and post survey was given to second semester family nurse practitioner students at California State University, Fresno, School of Nursing with an educational presentation on medical marijuana. Convenience sampling was used for the participants in the study. The survey used by Balneaves et al., that assessed knowledge and perceptions of medical marijuana in nurse practitioners in Canada, was reproduced and adapted with written permission from Dr. Balneaves to assess knowledge and perceptions of nurse practitioner students. The survey assessed the family nurse practitioner student's knowledge, attitudes, and beliefs regarding medical marijuana.

Results: The sample consisted of 24 nurse practitioner students at California State University, Fresno, School of Nursing. Nearly all participants in this study showed an increase in medical marijuana knowledge from their base knowledge after the presentation. A majority of the subjects (87.5%) responded that with more education they would feel more comfortable talking with their patients about medical marijuana.

Conclusion: Nurse practitioner students at CSUF, School of Nursing, generally responded positively to the educational presentation on medical marijuana while also increasing their knowledge base. This shows that practitioners are receptive to further education regarding this controversial topic. More research focusing on tailored educational programs for health care providers could add to this growing body of evidence.

Karissa DeRousseau and Jennifer Roos, PT, DPT, GCS
Jennifer Roos, Bhupinder Singh, Cynthia Fuller
kmderousseau@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Spatiotemporal Parameters With Self-Selected Gait Speed In Lower Limb Amputation: A Guide To Evidence-Based Practice

Incidence of limb loss in 2006 was 1.6 million with expectation to double by year 2050. 65% of all limb loss cases are of lower-limb amputation status. Annual cost of amputation in 2009 was $8.3 billion. Differences are seen in amputee function relative to the causative etiology with advanced physical function seen in traumatic amputation compared to vascular amputation. Sequelae of lower limb amputation include increased gait impairments, increased metabolic demand, decreased overall mobility levels, and increased morbidity and mortality rates. The purpose of this research is to determine if individuals with unilateral lower limb amputation demonstrate 1)within-subject and 2)amputation level differences in spatiotemporal parameters during self-selected gait speed on the Prokinetics Zeno WalkwayTM gait analysis mat. The primary hypothesis is that mean step length and stride width will be significantly larger on the amputated versus intact limb. The secondary hypothesis is that mean step length and stride velocity will be significantly smaller in transfemoral subjects compared to transtibial subjects. 7 subjects of unilateral amputation status were recruited from the Fresno County area. Results indicate that significant differences between amputated and intact limbs are in step length and stride variables. These two variables are also seen to have significant differences between transfemoral and transtibial subject groups. Considerations for this study include numerous confounding variables including prior level of function, rehabilitation participation, etiology, time since amputation, prosthetic device, age, body mass index, and residual limb length. Clinical relevance of this research is to establish the most significant gait impairments to improve rehabilitation protocols with result of decreasing morbidity and mortality rates in the lower limb amputation population. Stressed importance of an individualized rehabilitation protocol with emphasis in step length and stride velocity symmetry are indicated for optimal care in this population.

Maria de los Angeles Desantos Quezada and Jason Laker, Ph.D.
angeles.desantos-quezada@sjsu.edu
San Jose State University - San Jose State University
Department of Political Science

Latinos And Education Policy

Our federal government allows states to pass and ratify new laws every year. In the last thirty years, America has experienced a polarized fight over the expansion or reduction of government involvement. In terms of education policy, local districts and governments can take an essential role in the implementation, evaluation and the development of equitable educational opportunities. Implementing a critical policy analysis, this paper examines district and state level policies in the context of English Learners' education opportunities. In particular, I focus on one high school in the Mount Diablo District: Mount Diablo High School. According to the California State Department of Education, the percentages of English Learners at this particular High School is 33.5% at the same time, Mount Diablo has an 84.98% of Latinx English Learner students which constitutes a large majority of the overall population of ELs in Mount Diablo District. The results of this critical analysis demonstrate that state and district level policies lack inclusivity, student awareness on the resources and accessibility of the career center programs, as well as parent and teacher participation. Due to these shortcomings, most of the time these policies feed into the undereducation and retention of EL students. By analyzing policies, Student Cite Council meetings, and state-level data sets, I argue that there is a higher need for accountability and support towards ELs students in Mount Diablo High School.

Simran Dhatt and Alejandro Calderon-Urrea, Ph.D.
Kenia Flores, Carolina Gomez, Navneet Gill
sdhatt@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Reduced Survival Of Zebrafish Embryos After Acute Exposure To A High Concentration Of Chalcone Combinations During Gastrulation.

Zebrafish have become an important biological model organism understanding the genetics and developmental processes within vertebrate organisms. With characteristics such as small size, fast reproducibility, flexibility within various environments, and the genetic resemblance they share with humans (Lawrence, 2007), zebrafish are ideal subjects when testing whether chemical exposure, such as chalcones, can have a harmful effect on vertebrate development. Chalcones are a type of aromatic ketone known to have anti-inflammatory and antibacterial properties; a group of these chalcones was identified as effective nematicides at concentrations of 8 ppm. In this project, we tested the effects that acute chalcone exposure can have on zebrafish embryo survival when introduced during three different stages of embryogenesis. The stages tested include cleavage, gastrulation, and organogenesis. A combination of Chalcone 30 and Chalcone 17 was used at a concentration of 16 ppm as a treatment. A treatment of ethanol was used as a positive control since its effects on embryos has already been determined, and water was used as a negative control. Embryos were exposed to the chalcone treatment at 3.3 hours (cleavage), 4.7 hours (gastrulation), and 18 hours (organogenesis) of development for 2 hours and observations were conducted every 24 hours for five days. The experiment was replicated three times. The obtained results showed that zebrafish exposed to a combination of Chalcone 30 and Chalcone 17 at concentration 16 ppm survive less than 24 hrs if exposed during cleavage, less than 48 hours during gastrulation, and beyond 48 hours during organogenesis but do seem to not survive past larvae stage. The chalcone treated embryos showed that the effects produced by this chemical will be more severe if introduced at earlier stages of development and less severe but still detrimental during later stages.

Antonio Diaz and David Lent, Ph.D.
Abu Taha
antonio126@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

The Effect Of Ginseng Root Extract Treatment On Motor Performance In A Drosophila Melanogaster Model Of Parkinson'S Disease.

Studies have shown that the aggregation of a mutant form of alpha-synuclein protein inhibits the transmission of dopamine neurotransmitter. This aggregation ultimately leads to the death of the dopaminergic neurons responsible for modulating movement. This loss of neurons manifest in the motor deficits associated with Parkinson's disease. Ginsenosides from ginseng root extracts have displayed neuroprotective properties in the dopaminergic neurons in several animal models. However, these studies were limited to using neurotoxins to cause the death of the dopaminergic neurons rather than look at death induced by protein aggregation. Thus, it has not been shown if ginsenosides can prevent the death of dopaminergic neurons when caused primarily by the aggregation of mutant alpha-synuclein protein. The fruit fly, Drosophila melanogaster, offers a model to examine this question. Flies that had been genetically altered to express alpha-synuclein in the dopaminergic neurons were examined in a behavioral assay that required them to travel a nonlinear path and the neuroprotective properties of ginsenosides on motor performance was characterized. The assay presented an obstacle in an arena where the fly uses innate negative geotaxis behavior to climb, but also rely on fine-tuned motor control to plan its movements around an obstacle. The results of 10-day and 30-day old Drosophila either expressing or not expressing the alpha-synuclein protein were compared. These groups were then compared to flies of the same age groups that received the ginseng root extract treatment. The variables measured were survival percentage, percentage of successful completion, and time in completing the assay. Motor control was analyzed by time taken to successfully complete the assay and the time take to overcome the obstacle. Differences in the behavioral measures were observed when comparing groups of control transgenic fly line and a transgenic fly line receiving treatment. This the first study to examine this effect.

Jacob Dotson and Joy J. Goto, Ph.D.
jacobdotson@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Effects Of D-Serine On Als-Parkinsonism Dementia Complex On Fruit Fly Model

Affecting approximately 22 out of 100,000 people, ALS-PDC (Amyotrophic lateral sclerosis – Parkinsonism dementia) greatly affects the lives of millions around the globe. D. suzzuki and D. melanogaster, two common species of fruit flies, are utilized in determining the effect that neuro-toxin BMAA (Beta-Methyl-Amino-Alanine) has on the motor processes once flies have ingested the amino acid. BMAA is an amino acid produced by cyanobacteria, or photosynthesizing prokaryotic bacterial cells. Because fruit flies have very distinct light and dark cycles, changes in their typical cycle can be attributed to the neuro-toxin. Flies that are fed the BMAA samples are said to develop the ALS-PDC complexes, resulting in a decrease of movement, motor disorders, and may even express the tou tangles associated with Alzheimer's. Exposing fruit flies to D-Serine may help lessen the effects of BMAA, serving as a potential therapeutic agent against ALS-PDC. Because the circadian rhythm of Drisophilla can be easily observed, flies are placed in individual glass tubes that have an IR beam in them the capture the activity of the fly. Thirty-two fruit flies can be placed in the model, where each tube is equipped with the IR reader that determines the activeness of each sample. The overall goal of this experiment to prove that BMAA does have severe neural effects on the fruit fly samples, but also study D-Serine and its effects on lessening the symptoms of the ALS-Parkinsonism dementia complex. Studying the effects that D-Serine has on neural processes has the potential to lead to discoveries that can better the lives of ALS-PDC patients. Having the opportunity of researching a cure for such diseases while developing a deeper understanding that ALS-PDC has on motor, neural, and the brain chemistry aspects of the fruit has real-world applications, and can better the name of science in the long run.

Dalia Dull and Steve Blumenshine, Ph.D.
Steve Blumenshine
ddull28@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Thermal Variation In Juvenile Chinook Habitats In Their Pacific Range

The San Joaquin River Restoration Program (SJRRP) aims to restore Chinook Salmon to the San Joaquin River (SJR) by connecting the river with the SF Bay-Delta through enhanced water flows. These enhanced flows could potentially alleviate concerns about high water temperatures for this species at the southern-most extent of their range. The SJRRP Fisheries Framework (2017) cites an upper temperature threshold of 18ºC (7 day daily max average) for juvenile Chinook Salmon (JCS). However, this threshold is derived from EPA standards for Region 10, which includes AK, ID, OR, WA. Achieving this target temperature through enhanced water releases from Friant Dam could increase competition for water from municipal and agricultural entities in California's Central Valley. Recent laboratory (e.g. Poletto et al. 2017) and hatchery-based research (e.g. Plumb & Moffitt 2015) suggest that optimal water temperatures for Chinook in the southern end of their range may differ from their cold-water populations in northern rivers. A combination of otolith analyses and bioenergetics simulations based on river-born JCS in the San Joaquin River showed that growth rates in the SJR are comparable, and in some cases, higher, than growth rates in northern rivers with colder water. Therefore, we compared the thermal optima for physiological parameters determined by laboratory and field studies with river temperatures experienced by juvenile Chinook populations in the Central Valley and northern regions, and assessed the implications of these data on the temperature targets for the SJRRP. We will attempt to determine if river temperatures and thermal tolerances vary across latitudinal region, and if so, demonstrate the need for population and habitat specific thermal criteria in future conservation efforts.

Marisol Duran and David Lent, Ph.D.
Dalia Gonzalez, David Lent
marisolduran@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Behavioral And Cognitive Declines As Tau Is Expressed At Different Times In The Adult Fly Brain

Alzheimer's Disease is a neurodegenerative disease affecting nearly 5.7 million Americans. This disease is characterized, in part, by aggregates of tau proteins which form neurofibrillary tangles in the brain leading to neurodegeneration. Using the fruit fly, Drosophila melanogaster, as a model and we hypothesized a progressive decline in behavior and cognition at different stages of the adult fly's life due to tau expression. To investigate tau mediated neurodegeneration, we inserted tau into two specific areas of the fruit fly's brain, the ellipsoid body and mushroom bodies. These areas have homologous structures in mammals that have been shown to be necessary for various cognitive behaviors. In addition to spatially constraining the expression of tau, we also expressed it at three different stages in the adult fruit fly life (young, middle, elderly). Previously work on tau expression has only investigated its effect on young adult fruit flies. We assessed behavior and cognition through a series of learning, memory, and planning behavioral assays. First, we assessed visual place learning, using a thermal visual place learning arena. Second, a negative geotaxis assay in which the flies are faced with task of negotiating around a high contrast visual barrier. Lastly, fluorescent microscopy was used to image the amount of tau expression seen at the neural level. Through the behavioral assays we found a difference between the three age groups. Furthermore, although no behavioral decline is seen in young flies, the imaging data shows a measurable increase of tau expression. There was also a large increase in tau expression in the elderly age group. This is the first study to examine how age and tau expression interact to lead to behavioral decline. This project can contribute to finding a model that allows us to test interventions prior to the onset of dementia.

Christian Dwyer and Kristi Closser, Ph.D.
dwyerchristian96@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Developing A Chemical Database To Store Molecular Excited State Information

The main objective of this project is to create a chemical database that can store excited state information. Current chemical databases consist of quantities such as physical properties, ground state geometries and sometimes NMR or IR spectra, however there is minimal or no information available about electronically excited states. Part of the reason for this is that excited state information tends to vary significantly between different types of molecules, and this makes it more difficult to store and process. For this project, a prototype of an excited state database was created using ten simple organic molecules. The excited state data was calculated using the commercially available Q-Chem software package and visualized using IQmol. The relevant data from the output files was extracted using a Python script. The computed data includes optimized molecular geometries, SCF energies, IR/Raman frequencies, and excitation energies. For prototyping, the calculations were done at the Hartree-Fock (HF) level of theory using configuration interaction singles (CIS) and a Gaussian basis set, 6-31G. The extracted information for each molecule includes its Cartesian coordinates, its SMILES nomenclature, the calculation method and basis, its molecular geometry, frequencies, orbital energies, HF, and CIS excitation energies. Ultimately, additional data from a large number of molecules will need to be generated in order to create a robust database that can be searched and used to better understand patterns and behavior of excited electronic states. Future calculations will include excitation energies calculated at the HF level of theory using the Tamm-Dancoff approximation (TDA), time-dependent density-functional theory (TDDFT), and a Gaussian basis set, 6-31G.

Jose Jaime Esquivel Patricio and Maria Elena Cruz, Ph.D.
Taylor-Dawn Francis
jose.esquivelpatricio@sjsu.edu
San Jose State University - Charles W. Davidson College of Engineering
Department of Aerospace Engineering

Effects And Solutions On The Human Body After Long-Duration Space Flights

During the Cold War, President John F. Kennedy made it a mission for the National Aeronautics and Space Administration (NASA) to accomplish a lunar landing and return to Earth. The final lunar landing and the last time humans left Low Earth Orbit (LEO) was in December 1972. However, 47 years have passed and the fascination with traveling into deep space remains alive and flourishing. A major problem with future human missions to Mars are the effects of microgravity and Mars' 0.38g environment. Unfortunately, space medicine is limited and little is known about the effects of microgravity on the human body after 1 year in space. Is it possible for astronauts to survive long spaceflight missions to Mars? To help address this question, my research focuses on the effects of microgravity on astronauts in order to find solutions for long-duration space flights to Mars. Bone and muscle loss are factors that could lead to severe, unknown consequences on an astronaut's health. My methods included doing an analytical interpretation of historical and contemporary research on long-distance spaceflight. In the future, longer missions are going to require more permanent solutions for humans to be an interplanetary species. The current solutions being used in the International Space Station (ISS) are only to treat individual symptoms separately. Only theoretical permanent solutions were found, such as artificial gravity; therefore, further research is needed. Centripetal acceleration has shown great promise to eliminate microgravity effects but more research is needed to understand the health consequences and the limitations of rotation that humans can sustain.

Danielle Evans and Jacob Wenger, Ph.D.
Houston Wilson, Jacob Wenger
deedleberry@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Plant Science

Gut-Content Analysis To Determine Previous Host Plants Of Leaffooted Bug (Leptoglossus Zonatus) Infesting California Orchards

Leaf footed bugs (LFB, Leptoglossus spp.) are generalist phytophagous insects known to feed on a wide range of weeds and crops across California. In the San Joaquin Valley LFB is recognized as a common pest of more than 20 crops, and is especially problematic in almonds, pistachios, pomegranates, and stone fruits. In these orchard crops LFB enters the orchard early in fruit development, and feeds on the young fruits directly. Feeding at this early stage results in blemishing and shriveling of the harvested product, a major issue for fresh market produce. Adequate management of the greatest challenges of managing LFB in orchards is predicting their initial infestation. LFB first enter the orchards in the late spring, migrating from an unknown overwintering host(s). Identifying LFB's overwintering host would allow pest control professionals and growers to monitor overwintering populations, and provide essential data for predicting infestation dates. Further by knowing where LFB have been prior to entering the orchard, growers may take better preventative measures to ensure a successful growing season. Here we describe the design and implementation of a DNA gut content analysis for LFB. Gut content analysis involves sequencing barcode genes from the plant DNA found in the guts of captured LFB. By doing so, we can retroactively identify the insect's previous hosts. This poster describes a proof of concept experiments that establish protocols for LFB dissection, gut content isolation, DNA extraction, and amplification of the barcode trn-F intergenic spacer region. Further, we include data on a starvation trial that investigates the impact of LFB gut physiology on plant DNA integrity over an extended period. Initial results suggest that gut content analysis is a viable tool for the identification of overwintering host plants. However, the rapidity of LFB digestion limits detection to plants that were fed upon in the past week. Further trials are required to identify the relative importance of feeding length and host identity on the test's efficacy.

Fatimah Fahimuddin and Christopher Downer, Ph.D.
Rebecca Murphy, Christopher Downer
ffahimuddin@fresno.ucsf.edu
UCSF - Fresno - UCSF Fresno Department of Obstetrics and Gynecology
Department of Department of Obstetrics and Gynecology

The Impact Of Resident Wellness Curriculum In An Obstetrics And Gynecology Residency Program

Emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment are hallmark signs of burnout in resident physicians. Program directors and the Accreditation Council for Graduate Medical Education continue to develop ways to address this issue while ensuring resident and patient safety. In accordance, the University of California, San Francisco – Fresno Medical Education Department of Obstetrics and Gynecology implemented a resident wellness curriculum in the 2017-2018 academic year to examine how it impacts resident burnout. Sixteen residents completed the Abbreviated Maslach Burnout Inventory prior to the start of the curriculum and at its conclusion. Frequency in endorsing disinterest in patient care and fatigue decreased at the end of the study, with no changes in emotional exhaustion and depersonalization, but an increase in personal accomplishment was found to be statistically significant. Continued efforts in understanding the causes and creating effective resources to decrease resident burnout and support residents endorsing these issues are needed.

Allison Faure and Todd Lone, Ph.D.
Todd Lone
allison_faure@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Agricultural Business

Guayule

California has many great attributes: wonderful weather, sandy beaches, and acre upon acre of agriculture. California also has droughts and throughout the state's history, there seems to be a cycle of going in and out of droughts. For a state recognized for its diverse and plentiful agriculture, this is a major issue. Water is always in high demand in the Golden State, so when surface water deficiency hits the state, farmers look to groundwater to ensure their crops get the required amount of water, which cause issues with permanent loss of stored ground water and the land to sink due to aquifer depletion and compaction. Research needs to be done to identify viable crops for areas where there is drought and poor water quality. Without a solution, many farms in affected areas may be deemed unusable for agriculture. A capital budgeting analysis was used to determine the feasibility of producing guayule under varying price and cost scenarios. Break-even prices and quantities under various assumptions will also be calculated. A budget was made to predict cost of production and revenues of guayule. A budget was created with similar expenses to cotton as the two crops can be grown in similar environmental conditions and has been grown together by farmers who state they require roughly the same needs. Total operating costs is on average $639.75/ha except for the transplant year which is $2229/ha due to the costs of transplanting. Although transplanting is expensive it is the most successful way to plant guayule. Cost of production is based off 2014 costs of guayule rubber processing. The costs to extract latex is $453.33. To extract rubber, resin, and the bagasse it costs $827.54.

Amy Fide and Kammi Sayaseng, Ph.D.
amy_fide@yahoo.com
California State University, Fresno - College of Health and Human Services
School of Nursing

Neonatal Abstinence Syndrome: Recognition & Improved Outcomes

Neonatal abstinence syndrome (NAS) is a growing concern with the increased rate of prescription and illicit drug use during pregnancy. Assessment of NAS requires nurses to have knowledge and complex skill sets in order to provide quality care to both mother and infant. The purpose of my study is to evaluate the impact of a NAS educational intervention and the use of a systematically approached NAS scoring tool upon the nursing staff's ability to accurately assess neonates with NAS. The educational intervention is to be guided by utilizing both adaptation and comfort theories when assessing infants at risk for NAS. Cognitive learning theory will be utilized to improve knowledge and skills of nursing staff in recognition and assessment of the infant experiencing NAS. The education will focus on the presentation of NAS symptoms and the principles of the modified Finnegan NAS scoring tool. Nurses will be taught how to utilize the tool to assess for NAS in the neonate and the importance of consistency amongst use with staff members. A pre-test post-test will demonstrate if knowledge is gained among nursing staff. Additionally, a retrospective chart review will evaluate the number of NAS cases that have been growing in number the past few years and determine if education modalities were effective in having nurses recognize NAS symptoms earlier and in turn seek treatment sooner for these infants. Although, educational interventions and testing of nurses has been completed, a chart review is still in process and results will be be determined pending project completion. The implications for this study can certainly alter the way nurses handle the care of at risk babies and offer the opportunity for earlier intervention, less stress to the infant as well as families and fewer costs associated with treatments and for healthcare facilities.

David Flores and Laurent Dejean, Ph.D.
Micah Olivas
dflore16@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Study Of The Chemical And Signaling Bases Of Ambient Particulate Matter-Induced Oxidative Stress In Alveolar Macrophages

In recent years, concerns have arisen over the negative health effects caused by exposure to high concentrations of small atmospheric particulate matter (PM) in heavily-polluted areas—innate defense mechanisms in the upper airway fail to capture particles with a diameter less than 2.5 microns (PM2.5), permitting the smallest pollutants to generate an acute inflammatory response at the distal ends of the respiratory tract. However, by focusing on particle size we accept a limited perspective as to the pathology of PM-borne illness, omitting the possibility that other particle characteristics play a role in disrupting the respiratory microenvironment. Atmospheric pollution sampling campaigns conducted by our team in Fresno and Claremont, California showed a high degree of variability in the chemical composition of PM across locations and periods of filter collection. This chemical analysis led us to select three commonly-occurring cyclic diones, specifically quinones 9,10 phenanthrenequinone, 1,2 naphthoquinone, and 1,4 naphthoquinones, and two commonly-occurring transition metals, Cu^{2+} and Fe^{3+}. Each of the chosen chemicals have been thought to mediate significant oxidative stress generation within a cellular context. Using a DCF fluorescence-based cell population assay of alveolar macrophages (AM), our team has demonstrated that exposure to each of the selected chemicals induces a unique trend in the upregulation of reactive oxygen species (ROS) formation. Using a flow cytometry approach, we will be able to investigate the relationship between chemical composition and intracellular reactivity of PM2.5 in alveolar macrophages. Our methodology has the potential to better characterize the subcellular pathology of common atmospheric pollutants, which may play a pivotal role in anticipating respiratory-borne cancers, asthma, and cardiopulmonary complications.

Troy Folmer and Jennifer Isom Schmidtke, Ph.D.
troyfol@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Psychology

The Impact Of The Individual; The Influence Of Personality On Closeness Generation In Dyads

In 1997 Aron and colleagues changed the study of interpersonal relationships by publishing an updated, abbreviated, and flexible rendition of their fast friends procedure (FFP), initially developed in 1991. The FFP is a series of three sets of tasks subject pairs complete over a 45-minute period, relying on "sustained, escalating, reciprocal, personalistic self-disclosure" as the primary utility in generating closeness. The FFP has previously been utilized to investigate the impact a myriad of different task and state characteristics have on closeness generation; however there have been few studies examining the influence of Big Five trait characteristics on the development of interpersonal closeness using the FFP.

The ability to predict an individual's capacity for developing relational closeness under ideal settings, based on a quantitative assessment of their personality traits, has theoretical and applied value. The present study will investigate correlations between two Big Five personality traits (agreeableness and extraversion) and the generation of interpersonal closeness through the FFP. Aron et al. illustrated that introversion/extraversion, as measured by the Meyers-Briggs Types Indicator (MBTI), was positively correlated with self-reported interpersonal closeness generated through the FFP. Because of the strong correlation between MBTI and Big Five constructs of extraversion (r = .58 - .74) (Altman & Taylor, 1973; Furnham, 1996; R. McCrae & Costa, 1989), this finding led to the present hypothesis that Big Five traits, particularly extraversion, will also demonstrate a statistically significant correlation with closeness generation. Trait agreeableness is being investigated due to previous research illustrating correlations between agreeableness and relational outcomes (Cuperman & Ickes, 2009).

The experiment will be conducted during scheduled lab hours, utilizing participants from the Fresno State Psych 10 pool.

Jonathan Fong and Jennifer Adame-Walker, DPT, OCS, Ph.D.
jonathanhfong@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Treatment Of A Mild Traumatic Brain Injury And The Cervical Spine

Concussions occur from head trauma and/or rapid head displacement and commonly involve damage to the cervical spine. Post-concussive symptoms include headaches, dizziness, sensitivity to light, and poor balance that can make it difficult to carry out activities of daily living and a return to work. The purpose of this case report is to address the effects of physical therapy interventions used to treat post-concussive symptoms and cervical spine impairments. The patient was a 25-year-old male labor worker, referred to outpatient worker's compensation physical therapy to be treated for post-concussive symptoms and strained cervical musculature. Impairments included pain, frequent headaches, dizziness, sensitivity to light, and restricted range of motion. Physical therapy interventions used to treat these impairments included manual therapy, neuromuscular reeducation, and therapeutic exercise. Outcome measures used were the Numeric Pain Rating Scale (NPRS), the Post-Concussive Symptom Scale (PCSS), the Balance Error Scoring System (BESS), and the Neck Disability Index (NDI). At discharge, the patient's pain decreased from 5 to 0 points on the Numeric Pain Rating Scale, minimal clinically important difference (MCID =2). Post-concussive symptom severity decreased using the PCSS from 65/132 to 7/132 (No MCID). Balance measured by the BESS improved from 49/60 to 46/60 (No MCID). Neck disability with the NDI improved from 5/50 to 2/50 (MCID=3.5-7.5), The patient was discharged for completing his goals and was safely returned to modified work. Physical therapists must address and treat post-concussive symptoms when treating the cervical spine. Interventions such as diaphragmatic breathing, soft tissue mobilization, manual therapy, and functional strengthening were beneficial in the rehabilitation of the patient. Post-treatment outcomes included a reduction in pain and post-concussive symptoms, and increased ROM and joint mobility.

Kevin Gomez and Maria Cruz, Ph.D.
kevin.gomez@sjsu.edu
San Jose State University - College of Engineering
Department of Computer Engineering

Machine Learning In Pro-Nosis Of Type-2 Diabetes

Diabetes is becoming a more prevalent issue in the United States with a majority not knowing they are in risk of having the disease. Though with early detection and more awareness, diabetes can be easily avoided with a better diet and exercise; however, individual risk of diabetes is not readily available information. Quality and ease of accessibility is one of the largest hurdles for healthcare especially as the United States population increases and becomes more concentrated in largely populated areas such as Los Angeles and the Bay Area. Due to an increasing demand and need for healthcare, there is a greater need in the number of skilled healthcare workers in the medical field; although the healthcare field has been restricted by this, the field is being heavily advanced by the transition from paper-record to electronical archives. Though it may be difficult to introduce technologies to these fields without disturbing the work pace, electronically-driven systems will eventually accelerate healthcare accessibility. These advancements will help alleviate current issues in large communities throughout the U.S. such as the high rate of heart disease and cases of diabetes. According to the 2014 National Diabetes Statistics Report by the Centers for Disease Control, 9.3% of the United States population has diabetes; furthermore, while 29.1 million people have diabetes, 86 million people have prediabetes. Using machine learning, software can be developed that inputs patient data from electronic hospital archives and give patients readily available information about diabetes risk. The purpose of this literature review is to analyze the different types of algorithms that could be viable solutions to sort and read large amounts of patient data to produce efficient health summaries that can replace meeting with healthcare professionals for general health services. The result of further research in this field will lead to accelerated service in many hospitals, reduce cost of operation, and ultimately make accessing personal health information and evaluations simpler.

Jimmy Gonzalez and Ettore Vitali, Ph.D.
Sciencefreak_42@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Physics

Numerical Calculations Of The Pair Structure In An Ultracold Fermi Atomic Gas In The Strongly Correlated Regime

We give numerical calculations of the density-density dynamical correlations of a two-dimensional Fermi gas of ultra-cold atoms in the strongly correlated regime, known in literature as the BEC-BCS crossover, using the state-of-the-art dynamical BCS theory, and apply a renormalization procedure to improve the ability of dynamical BCS theory to describe the atom pairing behaviour at the crossover. Renormalization provides an effective interaction strength between cold atoms that allows dynamical BCS theory to better capture local motions and pair structure. The validations of our density-density correlation calculations for the two-dimensional system were done by using recently available exact, imaginary time Quantum Monte Carlo results for the two-dimensional atomic gas, provided by Auxiliary Field Monte Carlo (AFQMC) methodologies.

Jennifer Goulart and Bhupinder Singh, Ph.D.
Melanie Niino, Bhupinder Singh
jg3397@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Practical Clinical Measures For Determining Cardiorespiratory Fitness And Adiposity In Obese Children

PURPOSE: The purpose is to explore relationships between clinical measures when assessing cardiorespiratory fitness and adiposity in obese children. The Progressive Aerobic Cardiovascular Endurance Run (PACER) and Nemeth protocols were used to estimate cardiorespiratory fitness (VO2max), and the Bod Pod and skinfold measurements were utilized to determine adiposity in obese children.

METHODS: Twenty-eight subjects aged 8-11 years with BMI measures above the 85th percentile for their age completed the study. During the Nemeth protocol, subjects walked briskly on a treadmill for four minutes at 0% and 5% grades. Walking speed and pre- and post-heart rate (HR) were documented. In contrary, the subjects ran between markers at maximal effort until they missed two consecutive laps or if self-perceived fatigue was reached during the PACER protocol. The number of laps completed, age, gender, and post-HR were documented. Adiposity was measured by air displacement plethysmography (Bod Pod). Subjects wore a fitted bathing suit and swim cap inside the Bod Pod while remaining still. In contrast, adiposity was assessed with skinfold measurements taken at the right triceps and gastrocnemius. The subject's skin was pulled away from the underlying muscle with calipers. A regression analysis was performed using general linear models.

RESULTS: Mean VO2max was 36.15 ± 7.1 mL/min/kg using the Nemeth equation and the PACER quadratic equation calculated mean VO2max to be 34.13 ± 6.0 mL/min/kg (R2= 0.66). A strong relationship was seen (R2 of 0.65) between estimated VO2max by Nemeth and PACER protocols. The mean adiposity with the Bod Pod was estimated at 32.32 ± 7.7%, while as the skinfold measurements was 31.55 ± 8.1%. R2 of 0.59 was seen between both measures.

CONCLUSIONS: A strong association was found between the Nemeth and PACER protocols in estimating cardiorespiratory fitness levels and between the Bod Pod and skinfold measurements in determining adiposity in children.

Vanessa Gowett and Marianne Jackson, Ph.D.
Marianne Jackson
vgowett@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Psychology - Applied Behavior Analysis

Examining The Function Of Feedback

The use of feedback as an informational tool to affect performance is widely accepted in behavior analysis; however, the effects of feedback have yet to be examined in terms of their functions. The function of feedback has long been an elusive topic in behavior analytic literature. Current research has noted a lack of clarity in how feedback is defined and used as well as a need to define it in terms of basic principles. Feedback has been loosely defined as information provided to individuals about the quantity or quality of their past performance. A conceptual blueprint is necessary to determine the behavioral function in which feedback can operate most effectively, possibly on an individual basis. This study aims to examine the functional variables that maintain performance for individuals and determine the function of feedback that is optimal for each participant. We will utilize the functional analysis methodology, widely used in other areas of behavior analysis, to determine the function of each individual's performance. Common types of feedback used are categorized as positive reinforcement, in the form of brief praise and/or money on gift cards, negative reinforcement in the form of escape from gentle reprimands, and automatic reinforcement. These will be examined across five conditions (alone, attention, control, demand, and tangible) and systematically manipulated, using a multielement design, to determine the most effective conditions to increase responding on a simple data entry task. Results will be examined with visual inspection.

Karen Grigoryev and Jennifer Roos, PT, DPT, GCS
Monica Rivera,
Kblekh@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Targeted Neuromuscular Approach On An Individual With A Hemorrhagic Stroke In The Basal Ganglia: A Case Report

Strokes are the 4th leading cause of death in the United States contributing 13% to intercranial hemorrhages. Of those hemorrhagic strokes, 35-70% are located in the basal ganglia. Due to the low survival rate for these individuals, there is a lack of research on physical therapy interventions. The purpose of this study is to identify impairments and functional limitations associated with basal ganglia hemorrhage, and implement a physical therapy rehabilitation program which incorporate proprioceptive facilitation methods, neurodevelopmental treatment, classic motor learning, and functional training in order to restore independence. This case follows a 66-year-old, female with left hemiplegia, left neglect, decreased muscle control, decreased proprioception, delayed response and apathy. Utilizing proprioceptive neuromuscular facilitation and Bobath's techniques, the goal was to improve the patient's inattention, bed mobility, transfers and ambulation to supervision levels in a physical therapy program over a three-week period, six days a week, 90 minutes a day. These techniques facilitated trunk and body alignment, use of extremities and motor learning techniques to work on left spatial attention. Increased attention to left extremities improved association of midline therefore progressing sitting and standing balance. Further allowing progression of gait mechanics for ambulation. Initially, the patient demonstrated need for moderate assistance with bed mobility and transfers with no capacity for ambulation. At discharge, the patient displayed increased use of left extremities, transitioned to supervision level assistance with bed mobility, along with ambulating 180 feet with a front wheel walker. A wheelchair was recommended as a primary mode of transportation due to safety concerns. The outcomes demonstrated the benefits of utilizing proprioceptive facilitation and neurodevelopmental treatment within the first thirty days post stroke for optimal functional return.

Katlyn Grootendorst and David Lent, Ph.D.
David Lent
kgrooten@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

The Effect Of Tau On The Sleep/Wake Cycle In Drosophila Melanogaster

Alzheimer's disease (AD) is the most frequently encountered form of dementia and currently the sixth leading cause of death in the United States, with numbers steadily increasing. The two common hallmarks of AD are senile plaques secondary to Beta-amyloid aggregation, and neurofibrillary tangles due to abnormal tau protein. There are suggestive correlations between accumulation of these proteins in the brain and the fragmented sleeping patterns often observed in patients with AD. Research in mammalian model systems indicate that elevated deposits of Beta-amyloid and tau protein play a detrimental role in disrupted sleep/wake cycles. While the effects of excessive deposits of Beta-amyloid have been extensively studied in the fruit fly, Drosophila melanogaster, the consequences of tau have been less so. The following research thus focuses on the effects of elevated expression of tau protein in different brain regions and neurons on the sleep/wake cycle of Drosophila. Three different Drosophila lines were generated to express tau. The first line expressed tau in all neurons. The other lines expressed tau in regions of the Drosophila brain that have homologies to the mammalian brain; the Mushroom bodies (MBs) analogous to cortical areas including the hippocampus and the Ellipsoid body (EB) analogous to basal ganglia. We measured and compared the deficits in sleep in Drosophila expressing elevated levels of insoluble tau to those that were not. A behavioral assay was used to record the locomotor activity of the flies over 4 days. Our findings demonstrate abnormalities in age progressed TauMB and TauEB flies, specifically with increased levels of activity during dark periods. This work could support the use of Drosophila as a high-throughput system to study underlying deficits in circadian rhythm associated with AD.

Edgar Gutierrez and Hwan Youn, Ph.D.
Christian Ramirez, Krishna Sonpal, Hwan Youn
edguma14@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Residues Important For The Inactive Form Of Crp

The Escherichia coli cAMP receptor protein (CRP) has two forms: cAMP-free inactive form and cAMP-bound active form. The basal CRP activity for the inactive form should be kept low otherwise it will lead to wasteful gene expression. Here we aim to identify CRP residues involved in stabilizing the inactive form. A total of 15 interactions (and 9 involved amino acids) which are present in the inactive form, but absent in the active were identified. All these residues were substituted by alanine, and the resultant mutants were tested for in vivo transcriptional activation activity. Four mutants showed high cAMP-free activity in the order of N133A > D53A > E78A ≈ R122A, suggesting that each of original amino acids is involved in stabilizing the inactive CRP form. The interaction partner of N133, a C-helix residue is E54, a β4/β5 loop residue, but the two residues are from different subunits of the dimeric protein, thus our result suggests that intersubunit bridge(s) between C-helix and β4/β5 loop may be important for preserving the inactive form. We are currently targeting N133 for further study which employs a codon randomization and in vivo transcriptional activation activity screening. The resultant pattern for amino acids conferring enhanced cAMP-free activity is expected to provide further insights into the functional importance of N133.

Angelica Gutierrez and Janine Spencer, Ph.D.

cristo01@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Complementary Alternative Medicine:Nurse Practitioner Students' Attitudes

Nurse practitioners commonly encounter patients that use Complementary Alternative Medicine (CAM) therapies or ask for professional advice when considering alternative medicine such as acupuncture, massage, yoga or megavitamins. Family Nurse Practitioners (FNPs) are faced with lack of training and lack of comprehension in understanding the risks and benefits of these practices. In addition, FNPs may also enter legal and safety issues if such therapies are recommended without prior efficacy. This study will assess the attitudes, use and beliefs of graduate FNP students and their willingness to consider complementary alternative medicine among their future primary care practices.

Methods: This is a quantitative study, using a descriptive non-experimental questionnaire survey. Tertiary FNP students were selected from California University State Fresno, School of Nursing, class of 2019, using the convenience sampling strategy. The instruments used in the study consisted of a consent and a survey used on first- and second-year medical students at Georgetown University School of Medicine assessing attitudes towards CAM. The survey was revised towards FNP tertiary students with approval by Aviad Haramati, Ph.D., Professor and Co-director, CAM Graduate Program, Georgetown University School of Medicine. Results: The survey outcome will reveal increased interest in CAM among FNP students and interest in further training.

Kellen Habib and Amanda McKeith, Ph.D.
kellenhabib@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Animal Sciences and Agricultural Education

Utilization Of Temperatures Lower Than 54.4°C To Evaluate The Reduction Of Escherichia Coli O157:H7 Surrogates In Beef Ribeye Rolls

The reduction of Escherichia coli (ATCC BAC 1427, 1428, 1429, and 1431) was evaluated in ribeye rolls at a local meat processing facility. Escherichia coli (ATCC BAC 1427, 1428, 1429, and 1431) is a surrogate for E. coli O157:H7 and Salmonella. This study evaluated the ability of a low-temperature cooking process to produce a 5-log reduction in coliform bacteria present. This study was completed in three replications with a sample size of n=25 per replication. Seventy-five ribeye rolls (IMPS 112-A) were removed from vacuum bags and sampled for initial microbial load, trimmed, inoculated utilizing a sponge on a stick, and allowed to dry for 30 minutes prior to sampling for inoculation load. Prior to inoculation, the inoculate media was sampled to determine the load before application. Ribeye rolls were then sampled 15 minutes after going through an antimicrobial spray. Next ribeye rolls were pumped with a brine solution to 15%. The pH of the whole muscle was taken at the raw, spray, and brine steps. The meat was vacuum-packaged, cooked according to Appendix A at 54.4°C, and chilled until the internal temperature was below 4.4 °C. Final samples were taken by cutting a 4 cm steak from the center of the roast. All samples were packaged and sent to Food Safety Net Services for culturing. The results were analyzed using the proc GLM procedure of SAS, determining the LSMean and StdError. The mean log reduction was 5.1 with a standard error of 0.04 from inoculation to post-cook. Utilizing a cook time of 54.4°C for 112 minutes produced a reduction greater than five logs in all three replications. The results suggest that this cook method is sufficient to reduce E. coli in whole-muscle beef ribeye rolls.

Nupur Hajela and Nupur Hajela, PT, Ph.D.
Athina Ajazi, Leala Baker, Ryan Collier, Michael Dexl, Reilly Vohasek, Vanessa Yee, Roberta Henderson
nhajela@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Is Wearing A Google Glass Similar To Listening To Music While Walking? A Pilot Study

Purpose: To investigate if performing a single or dual task while walking affects gait. Single tasks were either auditory (listening to an experimenter-selected song) or visual (watching a video on Google Glass). Dual tasks included both the auditory and visual tasks concurrently.

Methods: Thirty participants without marked gait deviations or prior injuries that would affect gait agreed to participate. A GAITRite mat was used to measure gait speed, gait velocity, step length, and stride length. First, each participant performed three trials on the GAITRite with no auditory or visual tasks to serve as a control condition. Second, for the single task participants walked with either the auditory task or visual task for five trials. Third, for the dual task, each participant walked with both the auditory task and the visual task for five trials.

Results: Thirty subjects (15 men, 15 women) with a mean age of 24.1 years (SD 3.2), satisfied the eligibility criteria and were randomized into either the visual or the auditory single task group. One-way repeated measures ANOVAs were used to assess differences in gait performance across the three conditions within the two groups. Results showed statistically significant changes between control, auditory and single task groups in velocity, step length, cadence, and stance time, and between single and dual task groups in velocity, step length, and stance ($P<0.05$). Statistically significant differences were noted between visual control and single task groups in velocity and right stance time and between single and dual task groups in step length, cadence, and right stance time ($P<0.05$).

Conclusion: Both visual and auditory single tasks can result in changes in gait. Therefore, this study can be used in clinical practice by physical therapists with individuals with certain balance, gait, and lower extremity pathologies to enhance function and safety in real world scenarios.

Jeffrey Hatai and Jennifer Roos, PT, DPT, GCS
Jennifer Adame-Walker
jhatai@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

The Efficacy Of Indirect Blood Flow Restriction Therapy (Bfr) In Conjunction With Traditional Pt Intervention For A 27-Year-Old Female Athlete Post-Slap Repair: A Case Report

The body of research demonstrating the positive effects of direct blood flow restriction (BFR) therapy has continued to grow, with applications in surgical and non-surgical populations. The effects of indirect BFR therapy has been studied much less, particularly in relation to post-SLAP repair rehabilitation of the shoulder. SLAP Type II lesions account for the majority (41%) of SLAP lesions. Although the literature indicates a variety of rehabilitation protocols for SLAP Type II repairs, the most recent indicates 5 phases. Phase II goals include restoring range of motion (ROM) and strength while preserving the integrity of the surgical repair. One way to effectively improve muscular strength under low mechanical loads to protect the surgical site is using BFR therapy, which utilizes a tourniquet system that can be used on the upper and/or lower extremities. The purpose of this case report is to examine the efficacy of indirect BFR therapy in conjunction with therapeutic exercise and manual therapy PT intervention in the treatment of a 27-year-old female athlete post-SLAP Type II repair. Interventions included therapeutic exercise and proprioceptive neuromuscular facilitation (PNF) while applying the BFR cuff to the affected upper arm, passive joint mobilizations of the glenohumeral joint (GHJ) and thoracic spine, passive range of motion (PROM), and instrument assisted soft tissue mobilization (IASTM). With 6 treatment sessions and compliance to her home exercise program (HEP), the patient had excellent outcomes, meeting all short term goals for ROM, strength as quantified by manual muscle tests (MMT), disability as quantified by the Upper Extremity Quick DASH), and pain reduction using the numerical pain rating scale (NPRS). Although indirect BFR therapy was efficacious for this patient, more study needs to be conducted in order to conclude that these outcomes can be expected in other patients post-SLAP lesion repair.

Tanner Hendrick and Jennifer Roos, PT, DPT, GCS
Jennifer Adame-Walker
tannerh1126@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Post-Operative Physical Therapy Interventions For Rtsa In An Eighty-Five-Year-Old Patient: A Case Report

In reverse total shoulder arthroplasty rehabilitation, patient improvement is variable and relies heavily on the patient's pre-operative shoulder status, surgical techniques, and type of implant used among other surgical considerations. For these reasons, an optimal plan of care does not exist for reverse total shoulder arthroplasty rehabilitation at this time. The purpose of this case study is to describe the interventions used to improve the functional limitations of an 85-year-old female patient post reverse total shoulder arthroplasty surgery in an outpatient orthopedic setting. The patient was an 85-year-old female with the chief complaint of being reliant on her daughter for most activities of daily living. The patient demonstrated decreased range of motion and strength and mild-moderate pain. The patient was seen for two visits per week for eight weeks to improve range of motion, restore strength, and decrease pain. A physical therapist evaluation-based method was used alongside surgeon protocol to rehabilitate the patient. Interventions to treat this patient included therapeutic exercises, manual therapy, modalities, and patient education. The patient demonstrated functional shoulder ranges of motion with proper scapulohumeral rhythm, fair manual muscle test grades for isolated shoulder movements, as well as reporting 0/10 pain on the numeric pain rating scale for all shoulder motions. The patient was able to achieve all therapy goals related to range of motion, functional strength, pain, and function. These improvements demonstrate the effectiveness of these physical therapy interventions for treating a patient return to functional independence post reverse total shoulder surgery.

Maria Hernandez and Peter John Garcia, Ph.D.
dmaria559@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Identification Of Heart Failure Patients That Are At Risk For Readmission: A Study In Visalia, California.

Background/objective: Heart failure readmissions are associated with an increase in mortality. The review of the literature provides information on variables related to heart failure hospital readmissions, and supports the need to identify inconsistencies in the identification of heart failure patients at risk for readmission. The purpose of this project was to identify and validate variables identified as high risk for readmission and to determine their association with heart failure patients readmitted at the local community hospital of Visalia, Ca.

Methodology: A retrospective chart review of 102 medical records was performed of hospital heart failure admissions at Kaweah Delta Medical Center in Visalia, California within July 1, 2018 to September 30, 2018. A descriptive and correlation analysis was done between demographic information, clinical variables of admission, and comorbidities associated with heart failure readmissions.

Results: The preliminary results indicate renal disease, diabetes, and hypertension are the have an increase association with heart failure readmission. Further data results and will be discussed with poster presentation.

Conclusion: The current research concludes an association of heart failure readmission at the local community hospital of Visalia, California with renal disease, diabetes, and hypertension. The association can be used to identify those at risk for readmission within the local community.

Randy Hill and Jennifer Roos, PT, DPT, GCS
Monica Rivera
randybhill@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Outcomes Of A Physical Therapist-Led Mobility Program For A Patient With Acute Traumatic Brain Injury: A Case Report

Traumatic brain injury is a significant public health problem in the United States often resulting in long-term disability. In patients with traumatic neuromusculoskeletal injuries physical therapist-led mobility programs can decrease hospital length of stay and improve discharge outcomes. The purpose of this case report is to describe the role of the physical therapist in acute management of a 19-year-old female with traumatic brain injury and complex musculoskeletal injuries following a motor vehicle collision as part of a multi-disciplinary mobility team. A physical therapist designed a comprehensive progressive mobility program focused on maximizing functional independence, promoting brain healing, and expediting transition to the next level of care. The plan of care relied heavily on an interprofessional approach led by the physical therapist through continual dynamic assessment of the patient's medical and functional status. Nursing staff and caregivers were educated and empowered to be active participants in mobilization and incorporating coordinated periods of rest throughout the day to encourage recovery. After seven visits over nine days the patient was discharged to an acute rehabilitation facility. She met or exceeded her goals, including significant improvement in cognition, activity tolerance, and independent functional mobility. The interventions, clinical reasoning, and interprofessional collaboration detailed within this case report provide a framework for clinical practice patterns and future research. A culture of progressive mobility can improve patient outcomes and satisfaction for all parties involved. Physical Therapists are prepared by their unique educational background with the preferred professional skills to collaborate with the medical team in developing evidence-based mobility programs for critically ill patients while acknowledging and skillfully addressing potential barriers. Outcomes of this case suggest that a ground-up approach with the physical therapist acting as both patient and nursing staff advocate can reduce barriers to early progressive mobilization and improve outcomes for critically ill patients.

Chase Hooper and Jennifer Roos, PT, DPT, GCS
Jennifer Roos
cmerzhooper@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Physical Therapy For An 83-Year-Old Male With Cognitive Impairments Following A Total Hip Arthroplasty Revision: A Case Report

In older adults, a history of falls increases risk for future falls, and falls are the leading cause of fatal and non-fatal injuries, including hip fractures. Hip fractures may lead to hip replacement or hip replacement dislocation. Older adults with dementia are eight times as likely to fall when compared to cognitively intact patients. In cases of recurrent hip replacement dislocation, surgical revisions of the replacement are indicated after two to three dislocations. The purpose of this case report is to discuss utilizing motor learning strategies in physical therapy interventions for an individual with cognitive impairments secondary to dementia following a hip replacement revision. The patient was an 83-year-old male retired construction engineer admitted to a skilled nursing facility 3 days following revision of right hip replacement after a fall from ground level. The patient had surgeon ordered precautions following revision surgery, and significant cognitive impairments with his diagnosis of dementia. The patient was discharged to home after four weeks. Increased independence with functional mobility and scoring changes on gait and balance outcome measures indicate a positive response to therapy. Rehabilitation was limited due to patient cognitive limitations and early discharge from the skilled nursing facility. Strategies for physical therapy interventions may be applicable for other patients in the same demographic.

Alexandra Hough and Tricia Van Laar, Ph.D.
Navleen Brar
alexandrahough4@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Evolution Of Antibiotic Resistance In Klebsiella Pneumoniae Biofilms

Klebsiella pneumoniae is a pathogenic bacterium responsible for numerous types of infections including urinary tract infections, pyogenic liver abscesses, pneumonia, septicemia, and meningitis. K. pneumoniae virulence results from its ability to form strong biofilms, in which typically adhere to surgical sites and open wounds. These biofilms are very difficult to clear. K. pneumoniae is commonly found in hospitals and these infections can be life threatening for immunocompromised patient, resulting in roughly 50% mortality rates for afflicted patients. Another aspect of K. pneumoniae infection that can be dangerous is the bacterium's ability to evolve antibiotic resistance. In order to characterize the ability of K. pneumoniae to acquire antibiotic resistance when in a biofilm, we first formed biofilms on glass discs. We then treated each biofilm with either 5 or 100 times the minimum inhibitory concentration (MIC) of kanamycin for 24 hours. After 24 hours of treatment, we allowed the biofilms to recover in media without antibiotics for 24 hours. We repeated these cycle for 14 days. Every 24 hours, the biofilm on one disc in each treatment condition was disrupted via sonication and plated on LB supplemented with kanamycin to determine if the cells within the biofilm were able to acquire resistance during their exposure to antibiotics. In biofilms treated with 5x MIC, the cells were able to develop resistance to this concentration of antibiotics following a single 24 hour period of antibiotic therapy. In biofilms treated with 100x MIC, the cells developed resistance as early as day 4 in the protocol. We next plan to extract whole genomic DNA for sequencing in order to determine which mutations the cells have acquired allowing them to be resistant to kanamycin. By identifying genes likely to mutate during antibiotic therapy, we may be able to develop better treatments to avoid acquisition of resistance and the subsequent impairment in healing.

Justin Houts and Kristi Closser, Ph.D.
justinhouts@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Development Of A Small Cluster Computational Model For Photosensitized Degradation Of Diuron On Titania Surfaces

Contamination of waterways by synthetic organic compounds is an ongoing issue in the Central Valley. This runoff, if not properly treated, results in buildup of many toxic materials in Fresno's tap water. According to the state of California, Fresno has the greatest annual pesticide use of any county in the state, measuring at over 35 million pounds of output a year. Photosensitization reactions using ultraviolet (UV) light, can be used to purify runoff groundwater containing such contaminants by electronically exciting the photosensitizer which in turn transfers energy to the organic molecule and results in it breaking down into simpler less harmful compounds. In order to better understand the degradation process that takes place, we investigated diuron, one of the most common herbicides in use worldwide, in the presence of anatase titania (TiO2), a well-studied photosensitizer, using quantum chemical methods. The chosen system was modeled using density functional theory with basis consisting of Gaussian functions via the Q-chem software package and results were visualized using IQmol. The first step in this process is to understand how diuron associates with the TiO2 surface, which requires screening a large number of potential configurations. The association should be a highly local process, so in order to make these calculations practical, we developed a small model for, what is in reality, a highly extended surface. During the course of this research we were able to develop a passivated surface model for TiO2 and found the lowest energy configurations of this with the ground state of diuron. These configurations typically consist of hydrogen-oxygen surface bonding and others involve proton transfers from diuron to the surface. Using these configurations, later steps can be investigated in the photosensitization process.

Alyson Huber and Jennifer Roos, PT, DPT, GCS
Monica Rivera
alysonphuber@gmail.com
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Task-Oriented Neuromuscular Re-Education For Ambulation For A 60 Y.O. Male Who Sustained A Pons Cerebrovascular Accident: A Case Report

Approximately 800,000 cerebrovascular accidents, or strokes, occur each year in the United States and cause immense chronic disability including an inability to ambulate independently. A stroke in the pons commonly occurs in the presence of chronic hypertension and diabetes and can be life-threatening. Physical therapy contributes to the regaining of motor skills and motor learning required to ambulate and perform activities of daily living independently in sufferers of pons strokes. A 60-year-old male with comorbidities of hypertension and type II diabetes presented to an in-patient rehabilitation facility with a subacute left pons infarct. Priorities for the examination involved assessing ambulation, bed mobility, and transfers, in addition to monitoring cardiopulmonary vitals. The physical therapy examination determined the patient required total assistance for 10 feet of ambulation secondary to right-sided hemiplegia and impaired proprioception, neuromuscular control, and balance consistent with the left pons stroke. Outcome measures used in treatment interventions included the Functional Independence Measure. The patient underwent three weeks of task-oriented neuromuscular re-education for ambulation. Results from discharge included improvements with ambulation from 10 feet at a total assist level to 150 feet with use of a front-wheeled walker at a supervised level. Task-oriented interventions improve motor control in gait related activities in stroke patients. The interventions described in this report proved to be successful for this patient and contributed to a safe discharge from the rehabilitation facility at a supervised level for ambulation. The interventions presented in this report contribute to further research for rehabilitation techniques for gait using task-based practice in patients with a pons stroke.

Alyson Huber and Peggy R. Trueblood, Ph.D.
Peggy R. Trueblood
alysonphuber@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Comparison Of Sway Scores On The Sot Vs Cobalt In Younger And Older Adults

The purpose of this project was to identify significant differences in sway scores for older vs. younger adults on the Concussion Balance Test (COBALT©) compared with the Sensory Organization Test (SOT). The COBALT was developed for younger athletes to assess postural control with active vestibular stimulation, specifically for concussions. The SOT is a form of dynamic posturography designed to quantifiably assess an individual's ability to use sensory cues to maintain postural stability in stance. While many studies have identified the moderately high specificity in identifying vestibulopathy of the SOT, no studies have examined the reliability for the COBALT to measure vestibular function in older adults. 38 subjects were tested on conditions 1-8 on the COBALT and all 6 conditions of the SOT. 20 younger subjects (mean age 22.7 + 1.9 sd years) and 17 older subjects (mean age 74.8 + 7.1 sd years) completed both tests. Inclusion criteria required the subjects to be free from musculoskeletal joint replacements and neurological comorbidities. Mean results of sway of both groups were compared for the COBALT and SOT using an independent T-Test. Results showed differences between young and old for conditions 3-8 in the COBALT, whereas only Condition 3 on the SOT. Therefore, the results indicate that the COBALT may be a more sensitive measure for analyzing sway scores for older adults than the SOT, particularly in COBALT conditions 6,7, and 8. While normative data for average sway scores using the COBALT in older adults is lacking, our sway scores were much larger when compared to those reported for younger adults. More research is required to identify the significance of the results as well as the correlation between variables of each test. The data presented from this study contributes to further research in utilizing sway scores to predict fall risk in older adults.

Dawn James and Cory Brooks, Ph.D.
djlovesjc19@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Recombinant Expression And Characterization Of Cell Penetrating Growth Factors For Skin Renewal

Improved synthesis methods of epidermal growth factor (EGF) and fibroblast growth factor (FGF) are of importance to the cosmetic and pharmaceutical industries by increasing their yields and lowering processing steps. These growth factors are valuable due to their cellular proliferation (EGF) and anti-aging properties (FGF). Commercial production of EGF and FGF proteins occur within inclusion bodies of bacteria. The methods to extract, solubilize, and process these proteins from bacteria require substantial effort, financial resources, and result in poor yields. Previous research has failed to identify an alternative expression system able to save on costs and processing time. The purpose of this project is to establish a novel expression system that secretes proteins such that the process of expression and purification is simpler while also increasing protein yields. Using a eukaryotic organism like Pichia pastoris results in post-translational processing of the protein which results in the production of solubilized and refolded protein, similar to that in humans, thus, enhancing its biological activity. Fusion protein techniques (Thioredoxin) and periplasmic expression systems are tested in bacteria; with yeast, a Voa1p fusion technique is used to overexpress the quantity of protein. The system showing the most expression is used to purify large quantities of protein. Biological assays will be employed to assess the functionality of the purified EGF and FGF. Specifically, this alternative expression system for EGF and FGF will be beneficial to the cosmetic and pharmaceutical industries as it will allow for increased yields, reduced production costs and processing. In addition, the methods described in this work will be of value to biotech companies working with low expressing proteins.

Ziran Jiang and Qiao-Hong Chen, Ph.D.
ZiranJiang@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Key Reactions Towards A Macrocyclic Ketone Mimic Of Zampanolide As Anti-Prostate Cancer Agent

(-)-Zampanolide is a twenty-membered macrolactone extracted from two species of marine sponge. It has been found to exhibit nanomolar level cytotoxicity against both drug-sensitive and multi-drug resistant cancer cell lines. As a microtubule stabilizing agents, the mechanism of action of zampanolide is similar to paclitaxel, but its unique irreversible covalent binding to β-tubulin displays a high potential to be an anti-cancer agent. Nevertheless, besides its low natural availability, the metabolically unstable ester moiety of zampanolide could be a disadvantage in clinical trials. Accordingly, the object of this study is to synthesize a ketone mimic of zampanolide with the removal of its tetrahydropyran ring and to evaluate its antiproliferative potency. Recently, a highly advanced intermediate containing all the key moieties towards the zampanolide mimic has been successfully achieved. Skeleton C13-C18 was synthesized through five-step transformation using commercially available 2-butyn-1-ol. The critical ether moiety C13-O-C11-C10-C9 was constructed by the tosylation of 12-OH followed by Williamson ether formation. Most importantly, the C17-CH2-C1=C2 bond for the macrocyclic ketone mimic of zampanolide has been built by a cross-coupling alkylation mediated by CuI/TMEDA/LiOMe. All key reactions that were used to construct this advanced intermediate will be present in this poster.

Chelsey Juarez and Chelsey A Juarez, Ph.D.
Robin Ramey , David T Flaherty , Belinda S. Akpa
chelseyjuarez@mail.fresnostate.edu
California State University, Fresno - College of Social Sciences
Department of Anthropology

Oxygen And Hydrogen Isotopes In Human Hair And Tap Water: Modeling Relationships In A Modern Mexican Population

This study investigates the relationship between O and H isotopes in samples of Mexican hair and drinking water. This study had two goals. First, we wanted to quantify the relationship between isotopes in Mexican hair and tap water to understand the impact of water stress and socioeconomic status on accurate predictions of drinking water. Second, we wanted to determine whether existing semi mechanistic models could accurately represent the relationship between hair and tap water. For this study, we used (N = 62) human hair and (N = 76) tap water samples.

Results: 18O and 2H isotope values in tap water were –11.4 ‰ to –4.3 ‰ and –79.1 ‰ to –22.5 ‰, respectively. 18O and 2H isotope values in hair were +9.5 ‰ to +16.1 ‰ and –90.8 ‰ to –53.7 ‰ respectively. Positive correlations between isotopes in hair and water were not significant, ($r = 0.61$; $p = 0.05$) and ($r = 0.60$; $p = 0.06$) for 18O and 2H respectively. Data from this population do not exhibit the strong relationships between values of 18O and 2H in tap water and hair characteristic of other populations studied to date. Given the poor correlation between hair and water samples, we chose to consider the possibility that l – the fraction of the diet derived from local sources –and fs – the fraction of non-exchangeable H in keratin that was fixed in vivo–are local, rather than global, parameters for this population. We estimated a different value of l and fs for each location.

Conclusions: O and H isotopes in tap water explain only a small part of the variation observed in hair samples. The Mexican estimates for non-local diet and local diet offsets created in this study, predict regional distributions of l and fs that cleanly segregate urban areas from rural towns.

Megan Kalomiris and Joseph Ross, Ph.D.
Joseph Ross
megkalomiris@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Expression Of Developmental Delay In Caenorhabditis Briggsae Hybrids

Accumulation of mutations in a population may create outbreeding depression in a mating event with a different population. This depression, or hybrid dysfunction, is a potential driver of speciation. Second-generation (F2) hybrid offspring resulting from a cross between AF16 and HK104 (two strains of Caenorhabditis briggsae worms) exhibit developmental delay. Developmental delay, which is characterized by maturation 24 hours later than normal, reduces fitness by delaying reproduction. Delay has been observed in approximately 20% of F2 offspring, and this phenotype correlates with homozygosity for AF16 alleles on chromosome III. According to the principles of Mendelian genetics, the expected frequency AF16 homozygosity should be 25% in the F2 generation. This difference in phenotype and genotype frequency suggests that the phenotype ratio is being skewed by an unidentified genetic locus. To more precisely determine the frequency of F2 delay, and to test for the presence of an additional genetic component, I collected all of the F2 offspring from a single F1 hybrid parent. As the F2 individuals grew, they were micrographed at 48 and 72 hours of age. From each micrograph, the developmental stage was assessed and the length was measured using ImageJ. The percentage of developmental delay in F2s surviving to adulthood was 27.51%, closer to the expected 25% than 20%. This suggests that the 20% delay ratio was potentially skewed by F2 lethality. In addition, we found that delayed and wild type worms had similar growth rates, so delayed worms started and remained small. In our future work, we anticipate the genotypes of worms reaching adulthood will also reflect a percentage of AF16 homozygosity close to 25%.

Ravinder Kang and Kalyani Maitra, Ph.D.
Isaac Adame, Yimeng Li, Jacob Bouchard, Kalyani Maitra, Aric Mine
ravinderkang@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Algae: Role In Wastewater Treatment And Lipid Accumulation

The groundwater basins and aquifers in the Central Valley have witnessed a continual rise of dissolved nitrates and phosphate levels over the decade, making it unsuitable for human consumption. High levels of nitrate pose the serious health risk of methemoglobinemia in infants and colon cancer in some adults. Algal blooms consume nitrates and phosphates for their growth, and wastewater sumps at Fresno State farm have these two chemicals in high abundance. Allowing algae to grow in wastewater will not only provide the required nutrients, but also clear the water of harmful chemicals. Algae also store lipids in their cells and hence can be a potential resource for alternate next generation biofuel.

Four different algal strains (Chlorella sorokiniana, Chlorella vulgaris, Neochloris oleoabundans, and Scenedesmus dimorphus) were grown in wastewater. These cultures lowered the nitrate and phosphate level as observed through pre- and post-algae growth analysis of the wastewater. The lipid content of these algal strains was observed with the boron-dipyrromethene (BODIPY) dye using fluorescence microscopy. The next crucial step involves the extraction of the lipid from the harvested algal mass and subjecting it to FAME (Fatty acid methyl ester) analysis to quantify its oil content.

This project will provide a two-prong green approach toward wastewater treatment and an opportunity to explore the potential use of algae as an alternate resource for biofuel and bioenergy.

Mandeep Kaur and Laurent Dejean, Ph.D.
Kosha Raval, David Flores, Micah Olivas, Anthony Waterston, Laurent Dejean
mkaur2275@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Understanding Pm 2.5-Induced Oxidative Stress In Alveolar Macrophages

Seven million people die each year from air pollution, according to the World Health Organization (WHO). When oxidative stress exceeds normal levels, the antioxidant system of any eukaryotic organism can become overwhelmed. This can lead to various adverse health effects in humans, including cardiovascular and pulmonary diseases. The risk for developing these conditions is heightened by increased exposure to particulate matter 2.5 (PM 2.5), composed of transition metals and organic compounds 2.5µm or less in diameter. These particles, which are heavily prevalent in the Valley air, reach the alveolar macrophages (AMs) in the respiratory tract, where they can induce an inflammatory response by producing excessive reactive oxygen species (ROS). Our group has tested a number of locally collected ambient PM 2.5 samples for their potential to induce ROS in the rat NR8383 AM cell line. Interestingly, the specific cellular ROS response was dependent on the sample origin; strongly suggesting that the chemical composition of PM 2.5 is a major determinant of its effects on AM ROS metabolism. Currently, key constituents of PM 2.5 are being tested for their individual potentials to induce cellular ROS using various concentration ranges of mock chemical samples. Our study also consists of optimizing a genetic modification protocol to investigate the biological mechanisms that allow PM 2.5 to produce excessive ROS. By silencing the gene that produces heme oxygenase-1 (HO-1), which has previously been shown to function in intracellular ROS regulation, we hypothesize enhanced ROS production in PM 2.5 treated genetically modified cells due to the lack of the protective enzyme, HO-1. Understanding the specific chemical components which have proved noxious to NR8383 and the biological mechanisms through which PM2.5 is able to induce ROS will help us understand exactly how pollution is pernicious and advocate for the local and global reduction of PM 2.5 emission.

Anita Khadka and Peter Garcia, Ph.D.
akhadka@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Role Of Empowerment And Sense Of Community On Online Social Health Support Group

Drawing on the taxonomy of patient empowerment and a sense of community, this study analyzes the factors that impact the intention of the individual to continue using online social health support community for their chronic disease management. A survey-design was used to collect data from multiple online social health support groups related to chronic disease management. The survey yielded a total of 246 usable responses. The primary findings from this study indicate that the informational support – not the nurturant support such as emotional, network, and esteem support – are the major types of support people are seeking from an online social health support community. This research also found that patient empowerment and sense of community would positively impact their intention to continue using the online health community. The findings can help the community managers or webmasters to design strategies for the promotion and diffusion of online social health group among patient of chronic disease. Those strategies should focus on patient's empowerment through action-facilitating and social support and through creating a sense of community.

Kati Kochevar and Karl Oswald, Ph.D.
kkann1797@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Psychology

Mainstreaming In Classrooms: Investigating Teachers' Attitudes

Mainstreaming, the process of incorporating students with special needs into a standard classroom, affects students, parents, and teachers. Whether the net effect of mainstreaming is positive ultimately relies on teachers. Teachers play a significant role in mainstreaming and ultimately, their attitudes impact the classroom environment and success of their students. Previous research has found that teachers with more positive attitudes towards mainstreaming provide a more positive classroom environment than those with negative attitudes. In the present study, primary school teachers participated in an online survey regarding mainstreaming and their attitudes towards it. Teachers completed the 'Opinions Relative to Integration of Students with Disabilities' (ORI), the 'My Class Inventory' (MCI) for classes with and without mainstreamed students, and a demographic questionnaire. Preliminary data show that 80% of our sample had experience with mainstreaming. Ongoing analyses will reveal how experience with mainstreaming relates to attitudes toward the process. It is hypothesized that teachers who have experience with a person with a disability outside of the classroom will have more positive attitudes towards mainstreaming. The goal here is to provide guidance for schools in adopting optimal mainstreaming policies that benefit students with special needs while minimizing classroom disruption and the demands on teachers.

Prarthana Kumar and Santanu Maitra, Ph.D.
Bhvandip Bajwa, Hande Karahan, Byungwook Kim, Jungsu Kim, Santanu Maitra
pkumar97@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Small Chiral & Achiral Organic Molecules To Modulate Apoe, Abca1, & Ldlr Proteins For Alzheimer'S Therapy

Alzheimer's disease is a detrimental neurological disease which can disrupt memory functions. Research has shown that A monomers, remnants of Amyloid Precursor Protein (APP), misfold and aggregate into plaque and disrupt the neuronal cell membrane. Subsequently, memory functions are affected and gradually gets worse. An isoform of transport lipoprotein Apolipoproitein-E4 (ApoE4), can intervene in intercellular communication from facilitating the A plaque buildup. The emphasis of this research project is to design and synthesize small organic molecules that can decrease levels of ApoE and its receptor site, low density lipoprotein receptor (LDLR). The inspiration of the molecules came from previous generations of lead molecule which demonstrated biological activity such as triaryl methyl amines and tertiary sulfonamides. Some of these molecules contain chiral centers which can be represented by an R or S stereo configuration. Biological assays are underway to identify the stereo configuration of the more potent, efficacious, and selective molecule(s).

Diane Kwon, SPT and Jennifer Roos, PT, DPT, GCS
dkkwon@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Acute Care Physical Therapy Interventions For An 80-Year-Old Male After A Coronary Artery Bypass Graft: A Case Report

Approximately 400,000 coronary artery bypass graft (CABG) procedures are performed annually in the United States. CABG procedures are commonly performed via median sternotomy. Patient education of sternal precautions (SP) is crucial following a CABG surgery to reduce the possibility of sternal dehiscence and subsequent complications. Traditional SP may result in decreased functional mobility, fear of movement, and greater dependence on family/caregiver assistance. In contrast, modified SP encourages early mobilization, which promotes greater patient independence with functional mobility and quicker return to function. The purpose of this case report is to discuss how modified SP improved functional mobility for an 80-year-old Caucasian male seen in an inpatient acute care hospital after a CABG. The patient was admitted for multiple-vessel coronary artery disease with significant stenosis, and his past medical history included 5 coronary stent placements, type 2 diabetes, chronic kidney disease stage 3, hypertension, and hyperlipidemia. The patient received seven consecutive physical therapy treatments postoperatively. Interventions included functional mobility with modified SP, diaphragmatic breathing to encourage normal breathing patterns, proper techniques for pulmonary hygiene, and aerobic endurance. By discharge, the patient performed bed mobility and transfers with a decreased level of assist and ambulated 75% of his preoperative six-minute walk test distance. Throughout treatment, the patient demonstrated kinesiophobia or fear of movement due to possibly eliciting pain. His kinesiophobia served as a possible limitation to his physical recovery. Further research is necessary to assess the relationship between kinesiophobia and sternotomy recovery; develop effective interventions for kinesiophobia for patients after a median sternotomy; and implement patient-specific SP that consider kinesiophobia, comorbidities, and other factors.

Ling Le and Neelam Rattan, Ph.D.
ling1773@gmail.com
San Jose State University - College of Social Sciences
Department of Anthropology

Unpacking The Imposter Syndrome And Mental Health As A Person Of Color And First Generation College Student Within Institutions Of Higher Education

Extant literature exists on Imposter syndrome primarily with reference to Asian Americans. This current review of literature seeks to make a comparison of Imposter syndrome between two marginalized communities of First Generation students namely the Asian Americans and African Americans. The imposter syndrome, also referred to as the imposter phenomenon refers to an individual who doubts their own skills, abilities, successes, and overall capabilities in their life. (Parkman, 2016).

Origins of this syndrome are rooted in the family context. Asian American students are stereotyped as the model minority and are believed to be intelligent, hardworking, high achieving, and academic and seen to be free from any emotional or adaptive problems. Although these stereotypes are perceived to be positive, they also place a great deal of pressure on Asian American students to excel in school and this can produce increased anxiety and distress in these students. Among African-Americans, shame-proneness manifests differently. It is directly related to a fear of intimacy and self-deprecation.(Austin, 2009).

Lutwak reports that ethnic minority women may be especially vulnerable to feelings of the impostor phenomenon. This review will also examine the prevalence of Imposter syndrome among Asian American and African American female first-generation students (Lutwak, 1998).

Researchers looking at the relationship between Imposter syndrome and mental health among student population have found it to be a predictor of mental health, it has been found to be positively correlated with anxiety, depression, psychological distress, and minority student status stress (Parkman, 2016). This review will seek to answer which of the two aforesaid stated student populations of first-generation students, Asian American and African American experience a greater decrement in mental health and if there are any specific patterns of mental symptoms of psychological distress that are found among each of these student populations.

Justin Lemoine and Jennifer Adame-Walker, DPT, OCS, Ph.D.
pacersilver@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Effects Of Therapeutic Interventions On An Individual Following Rtsa Surgery: A Case Report

The objective of this study was to examine the effectiveness of an individualized intervention program consisting of manual therapy, electrotherapeutic modalities, and therapeutic exercises with the goal of improving functional mobility, stability, and quality of life in a 71-year-old female client following rTSA. Future research is required to establish an evidence-based universal parameter for rehabilitation protocol after rTSA, and rehabilitation after rTSA is still lacking validated evidence-based guidelines as only expert opinions are available in the present literature. In this case report, we formulated an impairment-based patient-specific personalized rehabilitation protocol over a 6-week period that considerably improved clinical results and functional outcomes following rTSA without any complications. After 12 physical therapy treatments, the patient demonstrated significant improvements in SPADI, NRPS, ROM, muscle length, MMT, and functional mobility. This study supports current literature that rTSA through the deltopectoral approach with subscapularis repair allows early progression to initiate AROM and deltoid strengthening, which are key components to achieve optimal clinical outcomes.

Nicole Leon and Alejandro Calderon-Urrea, Ph.D.
Ofelia Lomeli Gasca, Jennifer Lee, Darren Moriyama
nicoleleon112@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

The Morphological Effects Of A Chronic Chalcone 17 Treatment On The Early Embryogenesis Of Danio Rerio

Plant parasitic nematodes (PPNs) cost approximately $173 billion in agricultural loss throughout the world every year. Many efforts have been made into identifying effective agents to kill these nematodes. One such agent is methyl bromide which was an effective nematocide but had adverse effects on human health. Recently, chalcones--aromatic ketones found in nature--were found to also be effective at killing nematodes. Before recommending the addition of chalcones to agricultural fields, the effects of these compounds on the embryonic development of vertebrates should be assessed to determine any potential adverse effects on human development. In this study, the zebrafish (Danio rerio) species was used to investigate the chronic effects of chalcone 17 on vertebrate embryonic development. A concentration of chalcone 17 (16ppm), which is twice the concentration used to kill nematodes, was used to test for possible detrimental effects on the development of the zebrafish. The effects of the chalcone treatment were assayed by comparing the treatment against the positive and negative control. The positive control being composed of ~2.5% ethanol and the negative control consisting of only water. We began the experiment by harvesting the embryos at the ~3-3.5 hour stage and exposed them to the treatment for a four day period. After 24 hours of the initial treatment, we took daily images and some videos of the embryos in all conditions using the Leica dissecting microscope. By the 72 hour time-point, it was observed that the zebrafish embryos exposed to the chalcone 17 treatment were dead when compared to the positive and negative control. Based on the data collected, we found that the chronic treatment with chalcone 17 at high concentrations had a detrimental effect on the embryogenesis of the zebrafish.

Dana Lichtenstein and Hubert Muchalski, Ph.D.
Quang Le, Bagieng Keophimphone
dana422@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Development Of Gold(I)-Catalyzed Synthesis Of Benzofurans Via Gold(I)-Catalyzed Cyclization Of 2-Alkynyl Ethers

Benzofurans are a class of heterocyclic organic molecules containing a benzannulated furan ring. Benzofuran derivatives may be used for a multitude of pharmaceutical applications, including treatment for cancer, anti-inflammatory drugs, and as antimicrobial agents. An established antiarrhythmic medication, Amiodarone, is an ion-channel blocker that contains a benzofuran structure in its core. Our group recently developed an efficient gold(I)-catalyzed cyclization of 2-alkynyl thioanisoles which produces benzo[b]thiophenes (sulfur analogs of benzofurans). The goal of this project is to apply this method to the synthesis of benzofurans, but preliminary experiments revealed that cyclization of 2-alkynyl anisoles is significantly slower. To develop an efficient reaction, we synthesized two analogs, benzyl and para-methoxybenzyl ethers, and subjected them to gold(I)-catalyzed cyclization. We found that these modifications allow for the formation of benzofurans. However, this reaction was not selective as it formed two benzofuran products in nearly equal amounts. Before we could explore the substrate scope of this method, we needed to optimize reaction conditions and investigate the mechanism of formation of the rearranged by-product. In this presentation, we will discuss our results for the optimization of reaction conditions. Our main methodology used proton nuclear magnetic resonance (NMR) to assay the yield of the reaction and product distribution depending on reaction conditions (catalyst, solvent, temperature, time, additives).

Steven Loa and Tricia Van Laar, Ph.D.
Cameron Osborne, Alya Wakeman-Hill, Paul Crosbie, Tricia Van Laar
sloa1213@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Rickettsia Spp. In Five Tick Species In Fresno County, California

Central California is often overlooked in regular tick-borne disease surveillance efforts despite the presence of many pathogen-vectoring species in the region. The bacterial genus Rickettsia contains both pathogenic species, such as those in the Spotted Fever Group, and non-pathogenic endosymbionts of numerous tick species. Little is known about the prevalence of Rickettsia in ticks from Fresno County. Five common tick species (Ixodes pacificus, Dermacentor occidentalis, D. variabilis, Rhipicephalus sanguineus, and Ornithodoros parkeri) of California were collected and screened for infection with Rickettsia spp. by PCR. All five tick species were positive for Rickettsia spp., including pathogenic Rickettsia 364D in D. occidentalis, the endosymbiont R. bellii in 3 hard-tick species, and a Rickettsia endosymbiont of O. parkeri. Many of these findings appear to be first detections, and though Rickettsia is a ubiquitous group in arthropods, this work provides an update about the prevalence of Rickettsia in an under-surveilled region of California.

Jazmin Lomeli Ramirez and Jennifer Roos, PT, DPT, GCS
Monica Rivera
jazminlramirez@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Physical Therapy Interventions Post Lumbar Discectomy In A 79-Year Old Patient With Parkinson'S Disease: A Case Report

Lumbar discectomies are the most common surgery to treat low back pain caused by spinal nerve root compression. Negative post-operative complications are greater in worker's compensation patients, patients with greater severity of baseline symptoms, and those who are over the age of 65. Specifically, patients with Parkinson's Disease have been shown to have a greater amount of pain, weakness, and numbness post-surgery. Currently, there is minimal data on outcomes following a lumbar discectomy in this patient population. The purpose of this case report is to describe physical therapy interventions and outcomes in a patient with Parkinson's Disease post lumbar discectomy. The patient demonstrated pain and the inability to lift the front part of her right foot. The patient's interventions were all based on the patient's goal of returning home alone. Interventions for this patient included bed mobility, gait training, stair training, and therapeutic exercises. An ankle foot orthotic was also included during interventions and was found to improve the patients gait mechanics. Although the patient made improvements with gait, her interventions were limited by increases in pain and orthostatic hypotension. Therefore, the patient was unable to meet her goals necessary to return home safely. Due to her safety risk, the patient was transferred to a skilled nursing facility to further her therapy needs. Based on this case, physical therapy outcomes can be limited by pain and orthostatic hypotension. Also, an ankle foot orthotic can be beneficial for patients who are unable to lift the front part of the foot early post-operative.

Hailey Long and Joshua Reece, Ph.D.
Amber Hayter
hailsddg@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Bat Biodiversity In Happy Isles, Yosemite

Bats are a diverse group of mammals that perform important ecosystem functions. Bats echolocate by producing sound waves for navigation. Echolocations are unique to each species and recordings can be used to survey bat biodiversity. Bat calls were recorded from Happy Isles, Yosemite from July 2017 until October 2018 with some gaps in coverage due to equipment failure. Our sampling included 210 days total. We compiled and organized the data to assess temporal coverage and to identify each of more than 300,000 recordings to bat species. Our results demonstrate a clear phenological pattern with highest bat activity in August with a steady decline in activity and almost complete cessation of activity by December and continuing through the following March. Some species vary from this general pattern, but overall show highly similar patterns of phenology. Future work will investigate patterns across multiple years and correlations with bat activity on a daily basis and local weather patterns.

Itzel Lopez and Laurent Dejean, Ph.D.
Nathaniel Luna, Joel Castillo
itzlopez5121@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Investigating The Effects Of Bcl-2 Overexpression On Lactate Metabolism In S. Cerevisiae

Several cancers, such as non-Hodgkin's lymphoma, are characterized by cells that do not undergo apoptosis. This means that the affected cells will not undergo programmed cell death. It has been shown that Bcl-2 family proteins are a major contributor to this due to their central role in the regulation of apoptosis. Previous work has also shown that overexpression of Bcl-2 proteins might also affect cell metabolism. In yeast cells, it is possible to overexpress Bcl-2 in a context devoid of the other Bcl-2 family proteins. This overcomes the redundancy effect that is seen in mammalian cells. Additionally, yeast cells can function exclusively in either a fully fermentative or oxidative state (mammalian cells cannot). An oxidative metabolic pathway we can study in yeast is the conversion of lactic acid to pyruvate by lactate dehydrogenase (LDH). By growing yeast cells in 13-C labeled lactic acid, a purely oxidative metabolic state can be isolated and metabolic rates of lactate consumption and pyruvate production can be evaluated by extracting supernatant samples at regular time intervals (i.e. every two hours) and scanning under 13C-NMR spectroscopy. Peak integrations can be related to solute concentration by a standardization curve. Additionally, we can also grow the yeast in C13-labeled glucose to track the normal levels of glucose consumed and subsequent levels of pyruvate, acetaldehyde, and/or acetate produced. Taking growth curves into consideration, one can investigate a possible relationship between Bcl-2 overexpression and regular metabolic rates of glucose consumption and lactate production. The techniques of this project include bacteria and yeast cell culturing, cell transformation, plasmid amplification, DNA restriction analysis, cell growth curve generation/analysis, and 13C-NMR acquisition/interpretation. The contents presented in this poster illustrate the proposed plan for this research project.

Adrian Lopez-Marquez and Denise Chavira, Ph.D.
Desiree Delgadillo, Giovanni Ramos, Denise Chavira
arlopezm5@g.ucla.edu
University of California, Los Angeles - College of Letters and Science (UCLA)
Department of Psychology

Effects Of Acculturative Stress And Family Variables On Attentional Problems In Rural Latinx Youth

Youth with attentional problems display inattentiveness, hyperactivity, and impulsive behavior (Polderman et al., 2010). Psychosocial stressors, family conflict, and low family cohesion have been shown to increase attentional problems (Basáñez et al., 2013; Lucia &; Breslau, 2006; Quinlan et al., 2017). Acculturative stress is a psychosocial stressor associated with increases in family conflict and decreases in family cohesion in Latinx youth, yet little is known about its relationship with attentional problems in rural populations. A subsample of Rural Latinx youth (n= 543, M age = 16, SD = 1.2) completed standardized measures of acculturative stress, family conflict, family cohesion, and attentional problems severity respectively. A serial mediation analysis via the PROCESS macro was conducted as this methodology allows for statistical inferences of the indirect effects using percentile bootstrap confidence intervals (Hayes, 2017). This model suggests that acculturative stress increases family conflict, which decreases levels of family cohesion, which in turn increases attentional problems severity ($R^2 = .209$, $F(7, 535) = 20.21$, $p < .001$; total indirect effect = 0.215, 95% CI = [0.092, 0.377]). This study identified potential mechanisms by which acculturative stress leads to attentional problems in rural Latinx youth. Psychosocial interventions that directly decrease family conflict and increase family cohesion may be especially effective in reducing the deleterious effects of acculturative stress in this population.

Allison Low and Jennifer Roos, PT, DPT, GCS
Jennifer Adame-Walker
Allisonlow@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

A New Technique For Repairing A Full Thickness Rotator Cuff Tear And Its Effect On Postoperative Rehabilitation And Outcomes: A Case Report

Rotator cuff tears are common musculoskeletal injuries that are often treated surgically. Due to high re-tear rates, surgeons are developing biological augmentation techniques. Biological augmentation is a strategy used to alter the healing process of a rotator cuff repair with hopes of more promising outcomes. For this specific case report, the surgeon repairs the rotator cable, drills into the medullary of the humerus, and augments the repair site with a graft. This new strategy is seeing promising results for quicker postoperative recovery time and improved patient satisfaction. The purpose of this case study is to understand how his surgical procedure affects postoperative rehabilitation. This is important for future clinicians to appropriately establish a prognosis and plan of care. The patient was a 64-year-old Hispanic, right-hand dominant male, who worked as a hotel dishwasher whose right shoulder was injured at work. A year later the patient underwent arthroscopic rotator cuff repair and began physical therapy. The plan of care included 22 session over a 20-week period. The following outcomes were used: QuickDASH, numerical pain rating scale, range of motion, manual muscle testing, and functional tests. After 20 physical therapy treatments, the patient showed significant improvement in all outcome measures. His post-operative treatment protocol was quicker than a traditional full thickness rotator cuff protocol in respects to progressing to the next phase in postoperative rehabilitation. Interventions such as modalities, neuromuscular re-education, strengthening, stabilization, and functional exercises were included. The results show promising postoperative rehabilitation outcomes for this new rotator cuff repair technique. Having an understanding that new techniques are changing rehabilitation, physical therapists can design more appropriate prognosis, plan of care, and goals for their patients.

Romy Lum and Katherine Waselkov, Ph.D.
Chance Riggins, Katherine Waselkvov
romyclum@gmail.com
California State University, Fresno - College of Science and Mathematics
Department of Biology

Using Evolutionary Genomics To Probe Agricultural Invasiveness In Amaranthus Palmeri

Palmer amaranth is a weedy plant species native to the Southwestern U.S. that invades agricultural areas, severely impacts crop yields, and has evolved resistance to several major herbicide classes. While several mechanisms of herbicide resistance have been characterized, little work has been done on the ecological and genetic mechanisms behind the invasions. We hypothesize that the invasive populations of Palmer amaranth in the Southwestern U.S. and Central California originated from their closest spatial relatives. In order to understand how these invasions occurred and where the invaders originated, we sampled representative populations of Palmer amaranth from the invaded areas and included controls from non-invasive populations in their original environment in the native range. We extracted DNA from these populations, and are currently using restriction site-associated DNA sequencing (RADseq) to generate genetic data. These data will be aligned using a UNEAK pipeline and filtered for depth and clarity, then analyzed in STRUCTURE 2.3.4 to qualify and quantify population structure. We will also use R-based packages for principal component analysis (PCA), pairwise fixation index (FST), inbreeding coefficient (Fis), expected (HE) and observed (HO) heterozygosity, total alleles and allelic richness per locus, and AMOVA to examine the partitioning of genetic diversity between and within populations. We expect the various analyses to show invasive species are most closely related to their closest spatial, non-invasive relatives. We would also expect invasive populations to show as much genetic diversity as non-invasive populations. These results would suggest that to establish an invasive population, there must be multiple establishment events and a population of non-native Palmer nearby. It is important to understand these invasions; the data gathered from our experiments can be used in further research on invasive species and the evolution of invasiveness, and will have important implications for agricultural growers and herbicide resistance management.

Monica Martinez and Magdalena Barrera, Ph.D.
monicam415@yahoo.com
San Jose State University - College of Social Sciences
Department of Sociology

Toxic Masculinity: An Outcome Of Colonialism And Its Effects On The Latinx/Chicanx Lgbtq+ Community

This research examines masculinity in the Latinx community within the U.S. Much of the theory behind masculinity involves discussing toxic masculinity and machismo. To do this, I look at film, poetry, and literature to discuss how toxic masculinity affects Queer Latinxs. Although this research focuses on fictional characters and the analysis of fictional works, these characters' stories do not fall far from current LGBTQ+ Latinxs who may be experiencing the same issues. I examine La Mission, Mosquita y Mari, Gun Hill Road, "I am Joaquin", "La Loca de la Raza Cosmica", Rain God, and What Night Brings. These pieces work well with one another to show how gay Latino men, Latina lesbian women, and transgender Latina women are affected by toxic masculinity, internalized homophobia and transphobia. With this research I hope to show how the way we construct masculinity as a society, should be reconfigured to something more positive; I also hope to eliminate homophobia and transphobia, as well as violence and hate crimes towards the LGBTQ+ community.

Francisco Mata and Keith Putrika, Ph.D.
fmata@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Earth and Environmental Sciences

Petrogenesis Of The Guadalupe Igneous Complex, Sierra Nevada

Granitoids are derived through fractionation and partial melting, although the full extent of the processes is uncertain. The Guadalupe Igneous Complex (GIC) is a small bimodal pluton emplaced ~151 Ma within a shallow continental reservoir in the Sierra Nevada, California, that may provide guidance. The GIC is important due to its opportunistic tilt exposing compositional layers which are typically buried magmatic records. Putrika (2014) devised a four-step process for the construction of the GIC utilizing a discontinuous crystal/liquid separation (Bachmann and Bergantz, 2004) for granitic production. Collaborative microprobe data from previous studies from across the GIC units for bulk rock and amphibole geothermobarometry will be used to detect transient crystallization to reveal magmatic processes and a mafic-felsic relationship. Implications for understanding the petrogenesis of the GIC include plutonic emplacement processes, origin of compositional heterogeneity, origin of granitic material, and relating these processes to the Sierra Nevada Batholith (SNB) and continental growth overall.

Manae Matsubara and Rachael French, Ph.D.
Rachel Vasquez
manae.matsubara@sjsu.edu
San Jose State University - College of Biological Sciences
Department of College of Biological Sciences

The Role Of Insulin Signaling In Developmental Alcohol Toxicity

Animal feeding behaviors are governed by conserved physiological mechanisms that promote sufficient feeding for developmental progression and survival. Exposure to ethanol during development alters feeding behavior through multiple mechanisms, including suppressed feeding motivation and feeding abnormalities. These changes likely contribute to the reduced viability and growth deficiencies associated with fetal alcohol spectrum disorder (FASD).

We have established Drosophila as a genetic and developmental model for FASD, and have demonstrated that developmental alcohol exposure (DAE) results in reduced feeding at every developmental stage in flies.

The neuropeptide F (NPF/NPY) pathway regulates rewarding behaviors, including feeding, sex, and drug use. NPF/NPY expression is positively associated with increased feeding across all taxa. We have shown that loss of NPF signaling enhances DAE-induced feeding abnormalities, and that NPF signaling is necessary for larval survival in the presence of DAE. We have also demonstrated that developmental ethanol exposure results in increased release of NPF in Drosophila larval brains. These data suggest that NPF is increased to compensate for reduced feeding caused by an as-yet-unidentified ethanol-dependent mechanism.

Insulin negatively regulates NPF/NPY release, resulting in reduced feeding. We have previously demonstrated that insulin signaling is reduced by DAE, and we hypothesized that this reduction is part of the mechanism by which DAE-exposed larvae increase NPF release. We will present data in support of this hypothesis, showing that mutations disrupting insulin signaling suppress ethanol-induced anorexia.

Finally, both dopamine and octopamine signaling enhance feeding, and others have shown that these neurotransmitters are regulated by insulin. Both dopamine and octopamine receptors are reduced in DAE-exposed animals, and we hypothesize that one or both of these signals is the target for DAE-induced anorexia. We will also test for results of genetic and molecular epistasis experiments to test the signaling relationships between insulin, NPF/NPY, octopamine, and dopamine.

Justin Menchaca and Justin Allen Menchaca, Ph.D.
Miranda Worthen
justin.menchaca@sjsu.edu
San Jose State University - College of Health and Human Sciences
Department of Health Science and Recreation

Association Between First-Generation Hispanic Students And Depression At San Jose State University

ABSTRACT: There are multiple risk factors associated with depression in college students including socioeconomic status, education attainment, and race. Yet, there is limited information on the correlation between being both, a First-Generation college student and a minority, and depression. The aim of this study was to explore whether First-Generation status among Hispanic students is associated with depression. This information is vital to the California State University System (CSUS). In the past 10-years the Hispanic high school dropout rate has been diminishing from 20.8% to 10.8% 1,2. It is foreseeable that more Hispanic students will enter the CSUS, becoming the first in their family to do so. Validation of this prediction can be seen by the 15.2% increase of Mexican American students enrolling in the CSUS in the past decade3. With the projected influx of Hispanic students, many of whom are First generation, into the CSUS, it is imperative for CSUS universities to properly understand the potential challenges this population faces. METHODS: This study was conducted at San Jose State University. We conducted an anonymous cross-sectional survey and assessed demographic characteristics, family educational attainment, socio-economic status using the MacArthur Scale of Subjective Social Status, and depression levels using the PHQ-9among upper division public health majors RESULTS: Of the Hispanic students in the study (N=105) 86 were First-Generation, while 19 were Non-First-Generation. 54 of the 86 (62.7%) First-Generation Hispanic students were affected by mild to severe depression, compared to 16 of the 19 (84.2%) Non-First-Generation Hispanics. There was no statistical significance in depression between First-Generation and Non-First-Generation (P >.05) CONCLUSION: Our finding concluded the prevalence of depression is high among both groups. Underrepresented minority status is common factor between the groups suggesting that underrepresented minority status may be a more prominent factor in depression than First generation status. Further research is needed.

Samantha Mendoza and Jennifer Roos, PT, DPT, GCS
giants28@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Physical Therapy Rehabilitation For An 84-Year-Old Female With Physical Impairments From Acute Pyelonephritis: A Case Report

Unlike a lower urinary tract infection (UTI), acute pyelonephritis is more severe due to the infection affecting the kidney(s). Acute Pyelonephritis is a common bacterial infection that causes scaring and inflammation of the renal pelvis. It has the highest prevalence in women, infants, and elderly respectively and is responsible for 200,000 hospital admissions per year. Although pelvic floor training is important to help enhance musculature to improve essential bladder function to decrease the incidence of recurrent UTIs. The purpose of this case is to describe physical therapy interventions focused on strength and balance training to improve functional mobility in a patient experiencing movement-related problems secondary to acute pyelonephritis. The patient was an 84-year-old Caucasian female with a medical diagnosis of acute pyelonephritis. Upon admission to the subacute short-term rehabilitation facility, she presented with an indwelling Foley catheter and self-reported generalized weakness and fatigue. She had multiple co-morbidities in which some included Diabetes Mellitus (II), Iron Deficiency Anemia, and Asthma. Interventions included therapeutic exercises, therapeutic activities, neuromuscular re-education, and gait training. The plan of care focused on functional mobility training (i.e. bed mobility, transfers, and gait), lower extremity progressive strengthening, balance training, and patient education. The patient demonstrated moderate gains in lower extremity strength and static/dynamic standing balance. The patient increased walking distance by 825 feet since initial evaluation. The resolution of her medical recovery and the gradual decrease in rest intervals resulted in improved endurance to allow for prolonged activity without fatigue. All goals were met related to functional mobility; however, was unable to achieve the targeted score for the Tinetti Poma outcome measure. After two weeks of interventions, the patient self-discharged to return home. Future research should target subacute rehabilitation of elderly female patients (70 years old and above) that experience functional decline after an acute illness of pyelonephritis.

Amy Moffet and Jennifer Roos, PT, DPT, GCS
Jennifer Roos
amymoffet@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Physical Therapy Interventions For A 29-Year Old Veteran With Chronic Low Back Pain: A Case Report

More than 70% of adults experience low back pain at some point during their lifetime. Of those, 5%-10% progress to chronic low back pain, which occurs when continuous pain is present for longer than three months, exceeding the normal healing time. People over the age of 50 are three to four times more likely to obtain chronic low back pain compared to 18-30 year olds, and males have a lower prevalence than females. Current literature lacks physical therapy treatment for young male veterans, since a majority of research participants are women over the age of 50. The purpose of this case report is to describe physical therapy treatment for a 29-year old male, father, and veteran with chronic low back pain, affecting his everyday activities. The patient attended physical therapy twice a week for six weeks to improve daily function. Interventions included stretching, manual therapy, therapeutic exercises, neuromuscular reeducation, modalities, and a home exercise program. Following skilled physical therapy, the patient demonstrated significant progress in Lower Extremity Functional Scale and Numeric Pain Rating Scale by more than the clinically significant difference and improved his squatting biomechanics. He was unable to reach statistically significant advancement in other objectives due to uncontrollable limitations, such as being the primary caretaker of his toddler and extensive past medical history. This treatment approach provided interventions for a young male with chronic low back pain, incorporating functional mobility exercises to successfully care for his child. Future research should include the most appropriate interventions for chronic low back pain in young male veterans, as well as specific functional movement alterations of patients with multiple chronic injuries. Study implications include how to treat multiple chronic injuries, focus on functional mobility earlier in treatment and treatment alterations due to unavoidable life limitations.

Marian Montes and Kammi Sayaseng, Ph.D.
mariane@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Stroke Management At The Veteran'S Administration Health Care System Of Central California Emergency Department: A Retrospective Chart Review Study

Background: With an increasing numbers of stroke patients getting admitted to the Emergency Department (ED) at the Veterans Administration Health Care System of Central California (VAHCSCC), with an enhancement of stroke management in place, it will provide an improvement to core measures which allow them an access to a stroke neurologist via tele-stroke, veteran access to alteplase treatment via tele-stroke, door to tele-stroke, door to tele-stroke activation time, and door to needle time. The purpose of this project is to conduct a retrospective chart review study at VAHCSCC's ED on all acute ischemic stroke (AIS) patients before and after the stroke policy and procedure revision and National Tele-Stroke Program (NTSP) implementation to determine the timeliness of National Institute of Health Stroke Scale (NIHSS) documentation and alteplase administration.

Method: Investigation techniques will include various sets of data collection using a retrospective research that utilized an AIS patients before and after the stroke policy and procedure and NTSP implementation from February 1, 2017 to November 18, 2018 and another from November 19, 2018 to February 28, 2019.

Results: Results of timely alteplase administration is inconclusive due to limited time frame. On the other hand, of 84 all eligible AIS patients regardless of time onset, 52% had timely NIHSS documentation before compared to 86% after stroke policy and procedure revision and NTSP implementation. The chi-square goodness of fit test was performed, and the result showed that there was a significantly statistical difference of nurses utilizing NIHSS after NTSP implementation as compared to before, $\chi 2$ (1, N = 46) = 25.130, p = .000.

Conclusions: The major finding that emerged was that the stroke policy and procedure revision and NTSP implementation clearly enhances timely NIHSS documentation. Training front line staff in prompt recognition, timely NIHSS documentation and allowing the use of tele-stroke will deliver early management of acute stroke care.

Sarah Montgomery and Lynn Jakobs, Ph.D.
smontgomery41@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Opiates For Acute Pain: What Are Nurses Teaching And Are They Confident Patients Understand?

The opioid crisis has reached epidemic levels in the United States. The rate of opioid prescribing for nonsurgical patients in the U.S. has been as high as 50% of all hospital admissions (Herzig, 2014). The Centers for Disease Control and Prevention has published educational materials for patients who are prescribed opioids for chronic pain but has offered no similar guidelines for opioid prescription for acute pain. This study utilized a Likert scale to examine the patient discharge teaching regarding opioid use for acute pain of 124 acute care nurses. It also assessed the nurses' confidence in patient understanding of specific key patient education points recommended by the CDC. Results show that a large percentage of nurses discussed concepts such as safe storage, disposal, withdrawal symptoms, and tapering off opiates less than 50% of the time although 64% discussed common and serious side effects 75% of the time. Nurses' were confident that patients understood the information only when it was discussed with them verbally.

Christian Montiel and Hwan Youn, Ph.D.
Pegah Mosharaf, Amanda Rea, Hwan Youn
cmontiel@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

An F-Helix Residue Of Crp, Val183, Has Indirect, Yet High Impact On Rna Polymerase Recruitment

The Escherichia coli cAMP receptor protein (CRP) requires both DNA binding and RNA polymerase recruitment for its transcriptional activation function. In CRP, the protein's regions responsible for DNA binding and RNA polymerase recruitment are the F-helix and activating regions which are spatially separate. However, our recent data suggested that the ability of CRP to recruit RNA polymerase was sensitive to an amino acid substitution in the F-helix. The CRP mutant, T182M/V183A, had no change in DNA binding when compared to wild type CRP, but displayed a significantly higher transcriptional activation activity. To identify which substitution in the T182M/V183A mutant is more important for the activity increase, we created two single mutants, T182M and V183A via site-directed mutagenesis and then measured their in vivo DNA-binding and transcriptional activation activities. While T182M displayed phenotypically similar to wild type CRP, V183A behaved like the T182M/V183A mutant. This result suggests that the substituted alanine in V183A positively influences RNA polymerase recruitment, thereby leading to increased transcriptional activation activity. Since alanine is smaller than the original amino acid valine, we hypothesize that smaller amino acid at position 183 allows more flexibility in the region such that activating regions position themselves better for RNA polymerase recruitment. If this "size" hypothesis is correct, an inverse correlation is expected between amino acid size at position 183 and transcriptional activation activity. We are currently testing this hypothesis by creating and characterizing V183G, V183I, V183M, and V183F mutants. This project provides mutagenic evidence of a new role of the F-helix in RNA polymerase recruitment.

Yevgeniy Mordvinov and Ulrike Müller, Ph.D.
Ulrike Müller
genemordvinov@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

An Assay To Determine The Effect Of Body Size On Swimming Activity Of Zooplankton

The chance of prey being caught by a sit-and-wait predator is determined largely by the prey's size and activity levels. We study such a predator-prey system comprising the carnivorous plant bladderwort (genus Utricularia) as predator and zooplankters as prey. To this end, we need to determine encounter probability. Prey activity levels have not previously been published for zooplankton as a function of prey size, so we developed this assay that uses a maze to determine activity levels as a function of body size. We hypothesize that size-dependent differences in swimming activity will result in size-dependent differences in the position along the maze. We also hypothesize that zooplankter position is a function of the length of the maze and the time point of the observation (i.e. time since the release into the maze). Our aim is to find a suitable maze length and time points to record the position of the zooplankton.

To test these hypotheses we developed a 17 cm long spiral maze and use zooplankton of body length 0.25mm to 1.0 mm. We measure body size and distance traveled from the start of the maze for each zooplankter at set time points using a flatbed scanner (every 10 min for 90 minutes).

We found that some zooplankters reach the end of the maze within 10 minutes, demonstrating that this maze is not too long. The preliminary protocol needs further optimization to determine what is a suitable animal sample size, maze length, and observation period. These procedural changes will allow us to find the time point where the animal distributions sperate from a dense starting line and become multimodal before flattening to an equilibrium. This modality would then show animal activity level as a function of size and approximate encounter probability with bladderworts traps.

Emily Mu and Rachael French, Ph.D.
Cac Tran
emily.m.mu@gmail.com
San Jose State University - College of Science
Department of Biology

A Neurobehavioral Analysis Of The Trapped In Endoderm-1 Gpcr Pathway In Drosophila Melanogaster

Understanding how genes direct neurodevelopment is one of the main goals of neuroscience. Elucidating the role of a gene with regard to a particular behavior has the potential to be a powerful set of tools to map out the molecular pathways that direct the wiring of the central nervous system. Drosophila melanogaster, otherwise known as the common fruit fly, is an excellent model for behavioral research. Male Drosophila perform an elaborate courtship ritual that consists of a series of stereotyped behaviors that must be performed correctly and in the right order in order to ensure female receptivity. These behaviors, while complex, are innate – male flies are born knowing how to perform them. In addition, all steps of the ritual are established and regulated by the behavioral sex determination gene fruitless (fru), making this set of behaviors an ideal model for studying the genetic and neural programming of behaviors. We previously identified a novel function for the gene Trapped in endoderm-1 (Tre1) in courtship. Tre1 encodes an orphan G-protein coupled receptor (GPCR) that we now know is regulated by fru and is required for normal courtship behavior. Loss-of-function in Tre1 results in mutants that initiate courtship twice as fast as control (wild-type) males, on average. Here, we characterize the signaling cascade downstream of Tre1 by testing mutations in the Drosophila G-proteins. We perform assays comparing the courtship initiation latencies of control and G-protein mutants to identify which mutants bear courtship defects similar to those seen in Tre1. Our results demonstrate that Gαi is a candidate downstream effector for Tre1, while also implicating Gγ30A in courtship behavior. Future goals will be to complete the characterization of the G-protein mutations, and to perform experiments to explore the complex interaction between G-protein signaling and courtship initiation.

John Mua and Jamie Levitt, Ph.D.
Sara Shinn
john_mua209@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Food Science and Nutrition

Halo Effect Of Local Craft Mead

The local, craft beverage industry is booming in California. Research done by Hirsh (2016) shows that California alone has 600 local, craft breweries which are making an annual revenue of $6.5 billion. This suggests that today local, craft beverages are consumed by a large portion of the population.

Generally, consumers have indicated that local, craft beverages taste better. Yet, there could be some form of the halo effect influencing customers' perceptions. Related studies suggest that this may be the case. For example, Carpenter and Humphreys (2019) suggest that wines sell better when they are displayed next to signs with higher scores. However, since there is a lack of research assessing the halo effect on local, craft beverages, this study will address this gap.

This study will test the halo effect using mead, as it is growing in popularity in the beverage industry (Newhart, 2018). Ten participants will sample a local and a commercial mead. Half will be told which mead is local/ commercial, while half will not be told and will serve as a control. Each will then rate their enjoyment of the meads and indicate their favorite mead. A t-test will be conducted to compare enjoyment scores between respondents told and the control for both the local and commercial mead. A chi-squared test will compare favorite beverage sampled between respondents told and the control.

Results of the t-test show that there were no significant changes in enjoyment for either the local or commercial mead at the p=.05 level. With the chi-Squared test, results showed that there was no significant changes in favorites between those told and the control.

This data can help the beverage industry by showing them that beverages marketed as "local" and "craft" may not be as popular as once thought.

References available upon request.

Aishwarya Mukunda and Matin Pirouz, Ph.D.
aishwaryamukunda@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Computer Science

Social Network Analysis

Social network analysis is used to analyze large raw datasets to retrieve and mine insightful information using graph theory. The scope of this analysis is to find communities, i.e. a group of closely-related entities, and rank the entities in the dataset. Such analyses can be applied to survey data to make marketing decisions and they are useful in analyzing sales and planning ahead. The proposed analysis is trained on a few benchmark network datasets namely Zachary's Karate Club, Dolphins Social Network, the Les Misérables play and the American College Football League. A Leader-follower algorithm is proposed to detect the communities of varying sizes. Leaders are determined using distance centrality and followers are associated with their leaders using cosine similarity method. The entities are ranked by a combination of their local (PageRank) and global (Betweenness Centrality) importance in the network. The communities formed are admissible if the calculated modularity is 0.3 or higher. The Leader-follower approach achieved better modularity values when compared to similarity-based clustering methods. From the ranking algorithm, the top-ranked entities were interpreted as entities with membership across communities and low-ranked entities were interpreted as outliers (using Gephi as the visualization tool). The Leader-follower approach saves a lot of space when compared to the hierarchical clustering approach because hierarchical clustering builds many possible sets of communities (a tree-like structure) which is a memory and space-intensive procedure. The Leader-follower approach produces one set of communities formed in the dataset and therefore, saves memory and space. The ranking method gives a new interpretation of the dataset that is not derived from the existing centrality measures. Handling outliers is also critical in the data pre-processing step as it significantly affects training the dataset. The proposed Leader-follower approach and the respective ranking algorithm achieve promising results when tested on various datasets and open up new opportunities in the field of data science.

Claudia Nayares and David Lent, Ph.D.
Sylvia Chen
cnayares@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Assessment Of Locomotion, Learning And Memory Post-Seizure Recovery In Drosophila Melanogaster

Numerous individuals are affected by seizures, however, there is no cure and currently available anticonvulsants are not universally effective. Drosophila melanogaster are excellent disease model systems due to powerful genetic tools available. This study aims to induce single and multiple seizures and monitor locomotion, learning, and memory. Seizure sensitive flies were generated by expressing temperature sensitive or mechanosensitive (bang) channels in the nervous system. This permitted us to easily induce seizures in flies at any time. In the first experiment, a single seizure was induced in temperature-sensitive flies for 10 seconds using a hot water bath at 39C. Flies receiving multiple seizures had the same treatment once every hour for 24 hours. Flies were then examined in a negative geotaxis assay, which takes advantage of D. melanogaster innate climbing behavior, and allowed for the characterization of changes in locomotion after a recovery period from the seizure(s). In the second experiment, a seizure was induced in bang-sensitive flies using a vortex at maximum speed for 10 seconds. Again, flies receiving multiple seizures were treated every hour for 24 hours. The negative geotaxis assays results showed a slight decline the flies' locomotion after a single seizure. However, multiple seizures produced a greater decline in the flies. In the third experiment, a visual place learning assay examined the cognitive abilities of bang-sensitive flies after seizure episodes to monitor whether or not the flies can recall the location of the cool spot in an arena with the help of visual cues. The visual place learning assay results showed that flies that received single seizures were still able to locate the cool spot with ease while flies that received multiple induced seizures exhibited greater decline in their cognitive abilities. Findings from this research will be useful to develop improved experimentations to investigate epilepsy.

Angel Negrete Jr. and Kristi Closser, Ph.D.
angelnegrete2@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Predicting Photodegradation Products Of Permethrin In Aqueous Environments

Having a productive and reliable agriculture system is a necessity to sustain human life. Insecticides can help increase crop quality and yield, , however, some of the molecules used as insecticides, such as permethrin, have proved especially harmful to aquatic life such as fish and amphibians. Permethrin is a synthetic molecule that is one of a class of molecules known as pyrethroids. These pyrethroid molecules are man-made to mimic pyrethrin, a molecule that comes from chrysanthemum flowers, and acts as a natural repellent to insects. As a result of using permethrin, some harmful side effects to the environment may occur. The molecule itself has a triangular carbon ring that has four stereoisomers. Using quantum mechanical methods via commercially available computational programs, allows for a better understanding of the electronic structure of the molecule and can help predict the potential degradation products under different conditions. In this project we used Q-Chem for the calculations, which were based on density functional theory, and IQmol to visualize the results. Although it has low solubility, Permethrin is known to be highly toxic to aquatic organisms, so our calculations were done in the aqueous phase by using a polarizable continuum (PCM) method to account for solvent affects. The excitation energies and ground states for various conformations were computed and used to generate an absorption spectrum for permethrin. After determining the major absorption peaks, we were able to determine the character of the contributing excited states and use the forces in these states to generate preliminary predictions of which bonds are most likely break. Future work will build upon these results by relaxing the excited states and using molecular dynamics to determine the actual fate of the excited state molecule.

Hoang Nguyen and Jamie Levitt, Ph.D.
Sara Shinn
hnguyen7895@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Food Science and Nutrition

The Development Of An Alkaline Noodle With Durum Flour

At U.S. restaurants, the trend of fusion cuisine, where ingredients or techniques from different cultural origins are mixed in hopes of a synergistic effect on the final dish, continues to grow (Labensky et al., 2019). Noodle dishes, originating from different countries in Asia, including China, Japan, Vietnam, and Korea are exceptionally popular with some notable dishes that includes lamian, ramen, and udon (Ang, 2018). Interestingly, these noodles have recipes that differ from the more ubiquitous pasta. Western pasta, which is typically made from eggs and durum flour, is different from Eastern noodles which are often made with wheat flour and an alkaline solution. Thus, the purpose of this study is to address this gap in fusion cuisine by developing an alkaline noodle which contains durum flour. This study will create a formula which will use durum to replace wheat flour in the processing of alkaline noodles. The developed recipe will be compared against both traditional pasta and noodle doughs. The developed dough's texture will be analyzed using a texture analyzer; a colorimeter will be used to measure color differences; and consumer testing will be performed to determine perceived differences and levels of consumer acceptance and preference between the three noodle types.

This research will result in the creation of a noodle that incorporates the characteristics of both western and eastern cuisine; an alkaline noodle with a higher protein content. The durum alkaline noodles will have a strong yellow color, similar to pasta and also the chewy texture often found in Asian noodles. Both of these characteristics are generally desirable to consumers (Fu, 2006).

This study has implications for consumers because it will allow for the purchase of one item, instead of two (both noodles and pasta), thereby providing a novel fusion ingredient to the marketplace.

Quang Nguyen and Joy J. Goto, Ph.D.
quang_nguyen1519@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Effects Of Kynurenic Acid On Neurodegenerative Impacts Of Bmaa In Drosophila Melanogaster (Fruit Flies)

Many studies have linked Beta-Methylamino-L-Alanine (BMAA), a non-protein amino acid, to the development of Amyotrophic Lateral Sclerosis-Parkinsonism Dementia Complex (ALS-PDC). BMAA is an environmental toxin that is produced from blue-green algae and be found in human food chains. The symptoms of ALS-PDS are described by loss of motor function, tremors, and dementia due to degradation of neuron. In buffer environment, BMAA has a structure that is much alike to glutamate, this increasing the chance BMAA blocks glutamate and stimulates to the receptor N-methyl-D-aspartate (NMDA) at glutamate binding site which lead to neuron degeneration. Kynurenic acid (KYNA) is a neuroprotective byproduct of Tryptophan in the Kynurenine pathway. KYNA is a non-specific NMDA receptor antagonist at glycine binding interferes with the degeneration of neurons caused by NMDA receptor overstimulation in vitro. Wild-type Drosophila melanogaster (fruit fly) was essential to this experiment because of its short generation time, and neuron is similar to that of humans. The interaction of BMAA and KYNA was analyzed through locomotion activity of pre-feeding fruit flies. The treated groups were fed with agars that include BMAA, KYNA (Sigma), and KYNA + BMAA, and the control group was fed with standard fly food agar. After 24 hours, locomotion activity was measured by the ability of the flies climbed up on the side of the vial in 10 seconds after the vial was tapped down. The results showed that BMAA alone treatment had slow activity comparing to the control treatment. At the same time, KYNA slowed down flies to climb up vial's side, but improved locomotion of flies when co-fed with BMAA. This project investigated the interaction between Kynurenic acid and BMAA in vivo and the therapeutic potential of KYNA in ALS-PDC model.

Cherella Nicholson and Christopher Sullivan, Ph.D.
cherellaj310@mail.fresnostate.edu
California State University, Fresno - College of Social Sciences
Department of Political Science

The Math Problem: Pun Intended

High school mathematics education has been acknowledged to be essential in advancing students' overall academic achievement, college readiness and higher education success. School districts are distributing high school diplomas at increasing rates, although many high school seniors are not college-ready or college-eligible. The purpose of this study was to determine if a relationship existed between high school mathematics standardized test scores, demographic variables (socio-economic status/SES), school contextual variables (school investment) and math-related variables (self-efficacy) to mathematics achievement among students from High School Longitudinal Study of 2009 (HSLS:09). Some researchers have drawn a link in family, school, and peer support as resources for improving academic achievement. Other researchers have stressed that school outcomes are strongly affected by the neighborhoods in which students live, their family life, the schools they attend, and the resources that are available to students personally and through the school (Hofman, Hofman, & Guldemond, 2003). Given the increasing changes that can occur in the social life of high school students, an in-depth understanding of factors that influence academic achievement is needed.

The quantitative data were screened and analyzed using SPSS: 25 software. ANOVA, correlation and linear regression were conducted to investigate the research question. Descriptive statistics indicated high values for mathematics self-efficacy correlated with high mathematics achievement, and low values of mathematics self-efficacy correlated with low mathematics achievement.

Understanding the root cause of poor mathematic outcomes will provide educational leaders and policy makers with the tools to close the mathematics gap. Improving mathematical outcomes is good for society because students will have the tools to reach their maximum potential and the workforce can fill the demand for science, technology, engineering and mathematics (STEM) careers.

Jake Ogas and Alejandro Calderon-Urrea, Ph.D.
Micah Olivas, Joselyn Navarrette, Daisy Pacheco
micaholivas@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Modeling The Effects Of Chalcone Exposure On Embryonic Vascular Development In Danio Rerio

Previous work in C.elegans has suggested that a class of novel organic chalcones identified by Attar et al. may have distinct nematocidal effects on nematode species in central California's agricultural enterprises (Attar, et al. 2011). Despite having been shown to have negligible effects on the viability of humans and symbiotic soil microbiota, the relative effects of chalcone exposure on other biotic environmental factors has yet to be determined. Especially within other environmentally-vulnerable vertebrates, chalcones' anti-angiogenic properties may have distinct effects on the embryonic vascular development (Sulpizio et al., 2018). The proposed methodology will provide an experimental approach to 1) observe embryonic vascular development in D. rerio and 2) characterize any modulation of vascular morphogenesis that should arise. In order to generate a model for the observation of embryonic vascular development, populations of transgenic (fli1:GFP) D. Rerio will be cultivated as described by Lawson et al. (Lawson, 2002). This model for expressing GFP in the endothelial lining of the developing vascular architecture allows for observation of embryonic developmental patterning without synthetic induction of circulation or sacrifice of specimens. Treatment with a known vascular disruptor compound (VDC) (bisphenol-a) at a concentration known to produce a disrupted phenotype will be administered to three embryos in triplicate (n=9) at 0 hours post-fertilization (hpf) to serve as a positive control. Chalcone 30 exposure will be conducted in populations consisting of three transgenic embryos, wherein embryonic morphology will be assessed through fluorescent confocal microscopy at successive timepoints following exposure. Observations of morphogenic progression in the chalcone-treated embryos revealed an impedance to gastrulation and diminished fluorescence profile. Given the high sensitivity of embryonic vascular development to chemical perturbation, we propose that these phenomena may directly result from chalcone-mediated disruption of dynamic endothelial signaling activity and a consequent interruption of vascular morphogenesis.

Yogeshwari Oka and Qiao-Hong Chen, Ph.D.
Ziran Jiang, Arman Sekhon, Qiao-Hong Chen
anu_oka@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Silibinin

Silibinin is a naturally occurring compound isolated from the milk thistle plant. It has been found to have anticancer potential on prostate cancer models through various mechanisms such as antiangiogenesis and induction of cell cycle arrest. However, its relatively low potency and bioavailability should be improved in order to move it towards clinical application. This study attempts to synthesize silibinin derivatives with enhanced medicinal properties from commercially available and cheap starting materials-quercetin and vanillin. Twenty-four 5-O-substituted silibinin derivatives have been designed. So far, one target compound has been synthesized from 3,7,20-O-trimethyl-2,3-dehydrosilibinin by two sequencing alkyation reactions. 3,7,20-O-Trimethyl-2,3-dehydrosilibinin has been synthesized through a biomimetic synthesis of quercetin and coniferyl alcohol followed by selective trimethylation at C-3, C-7, and C-20 of 2,3-dehydrosilibinin. Coniferyl alcohol was synthesized by treating vanillin with (carbethoxymethylene)triphenylphosphorane followed by reduction with diisobutylaluminum hydride under -78 degrees Celsius condition. All synthesized compounds have been characterized by interpreting the 1H and 13C NMR spectra.

Nicholas olveda and Qiao-Hong Chen, Ph.D.
Kevin Muthima, Guangling Chen, Qiao-Hong Chen
nicolveda08@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Synthesis Of 7-O-Aminoalkylluteolin Derivatives

Prostate cancer incidence is a global issue and is prevalent in the U.S., South America, Central and South Africa, and Australia. Treatment of advanced prostate cancer often leads to resistance in most cases. Various studies on multiple flavonoids, including the flavone luteolin, showed inhibition and antiproliferative properties in Prostate Cancer cell lines (PC-3)(DU-145). The therapeutic potential of luteolin is limited by a moderate potency and a poor bioavailability. For this fact, our main goal is to synthesize analogs of luteolin that have aminoalkyl groups substituted at the 7 position and are methylated at the 5,3',4' positions to improve potency and bioavailability respectively. Thus far, 3 intermediate structures have been synthesized accomplishing the goal of methylating the 5,3',4' positions. All structures have been confirmed by NMR and IR. Currently, we are carrying out the final 2 steps to incorporate the aminoalkyl groups at the 7 position to isolate the target luteolin derivatives.

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Jonas Onuoha and Jason Bush, Ph.D.
Jason Bush, Delwar Hussain
jonascarez@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Developing Combinatorial Nanoparticles To Target Chemoresistant Pancreatic Cancer Cell Models.

INTRODUCTION: Pancreatic ductal adenocarcinoma (PDAC) is the fourth leading cause of cancer deaths in the United States with an estimated 45,700 deaths in 2019. Regrettably, over 80% of patients at the point of diagnosis present with locoregional or metastatic disease. This late presentation results in dismal 5-year survival rates which is further complicated by chemo resistant nature of PDAC. The objective of this study is to evaluate the chemotherapeutic potential of mixed polymeric nanoparticles with a plant flavonoid, Curcumin, and the chemotherapy drug, Gemcitabine, as a combinatorial therapy in treating resistant pancreatic cancer.

BRIEF SUMMARY OF METHODS: We developed a Mixed polymeric micelle prepared from poloxamer 407 & TPGS using thin film solvent hydration method and performed physicochemical analyses to optimize these formulations. We will conduct an in vitro (cytotoxicity) assay to evaluate the cell killing efficiency on pancreatic cancer cell models.

SUMMARY OF RESULT: Building on the Previous studies from the Hussain group which demonstrated an increased efficiency of Curcumin-loaded poloxamer 407/TPGS once it was delivered in a Nano-formulation in ovarian cancer. The result from the in vitro release studies showed that mixed micelles sustained the release of CUR for more than 9 days and cellular uptake studies indicate that CUR-loaded poloxamer 407/TPGS increase cellular uptake by 3-fold compared to free CUR after 48 hours of incubation in ovarian cancer cell model.

CONCLUSION: Taken together, our study proposed that CUR-loaded poloxamer 407/TPGS might be a suitable nanocarrier for curcumin and may potentiate the chemotherapeutic effect of Gemcitabine as a combinatorial therapy in treating multidrug resistant pancreatic cancer.

Karina Ortega and Heather Horsley, Ph.D.
karina409718@mail.fresnostate.edu
California State University, Fresno - Kremen School of Education and Human Development
Department of Literacy, Early, Bilingual and Special Education

Supportive Literature For Children Who Are Grieving

The purpose of this study was explore what types of children's book are available for grieving children and to assess the context of the books for being developmentally appropriate. This study analyzed 30 children's books for children 3 to 6 years old. A research based checklist was developed with different criteria to determine if the grief children books revealed any developmentally appropriate qualities.Two individual interviews with popular children's authors were also conducted in order to gain better insight into how to become a children's author. As a result of the book analysis, some books have more text than others, the majority of books tell the stories of a range of dying subjects, and there was a mix of bilingual text in the books analyzed. This review was necessary to see how an educator can promote trauma-informed care and solutions to help families that are grieving. The findings of this study will inform the development of a children's book that could be published and the creation of a professional development unit for young teachers that draws on Sesame Street's programming of grief: what can we do for parents?

Luis Ortega and Woonki Na, Ph.D.
Jasmine Lopez, Jared Sarajian
jasmine17.lopez@gmail.com
California State University, Fresno - Lyles College of Engineering
Department of Electrical and Computer Engineering

Solar Harvesting For Wireless Sensors

Wireless sensor technology has advanced in the past several years to allow for efficient and reliable data acquisition. However, one of the major limiting factors is that they require a reliable power source if they are to continuously gather and transmit data. A group of sensors can then be implemented into a network to gather environmental data and relay it to a central hub for further analysis. Typically wireless sensors use batteries to allow for portability; however, batteries have a finite lifespan which means the sensor would require additional maintenance. Luckily, solar technology has also advanced to allow for more power efficiency and a decrease in size in solar modules meaning that the issue of powering wireless sensors in remote locations becomes much easier to deal with. Using rechargeable Li-Ion batteries in tandem with a renewable energy source, a network of sensors can be implemented and properly scaled up. As long as each sensor can independently harvest its own power, it is not necessary to constantly monitor the overall energy requirements of the sensor network.

A microcontroller is to be used to implement both a charging and maximum power point tracking (MPPT) algorithm to maximize system efficiency and boost battery lifespan. The algorithms were implemented and tested on a two-switch buck boost converter using simulation software and were shown to successfully control the charging method and maximize power transfer from the solar panel to the system. To verify simulation results it is necessary to perform a final field test on a physical circuit and configure the sensors to communicate in a reliable manner.

Kidnattha(Foy) Papawinnorakun and Sara Shinn, Ph.D.
kidnattha@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Food Science and Nutrition

The Study Of The Influences Providing By Healthy Sweeteners (Allulose, Oligofructose, And Tagatose) On The Characteristics Of Orange Marmalade

In 2017-2018 the United States produced 6.13 million tons of citrus, and California produces 59%. Most of this citrus enters juice production which has a byproduct waste or peel. However, orange marmalade is a sugar added product which is produced by using the whole fruit. Since society has recently grown an interest in healthy and wholesome food, the demand for nutrient-dense food has increased. According to the CDC in 2017, more than 100 million U.S. adult were diagnosed either diabetes or prediabetes. These individual makes up a group of consumers that are looking for alternative sweeteners. Some healthy sweeteners such as stevia and xylitol has been used extensively and have replaced traditional sugar in much of the food industry. More recently, many alternative sweeteners, such as allulose, oligofructose, and tagatose have been discovered and are able to be extracted naturally for commercialization and use in the food industry. Therefore, the purpose of this study is to determine the influences of these three healthy sweeteners in developing a sugar-free orange marmalade that is appealing to consume. The °Brix, pH, water activity, moisture content, texture, optical properties and microbiological analyses were carried out to determine the quality and characteristics of the product. The initial results show that oligofructose reduced the luminosity and darkened the color of the orange marmalade. In addition, tagatose and oligofructose significantly increased the elasticity over time. The anticipated results are that the oligofructose will improve the antioxidant capacity. Allulose will enhance the gelling properties of the marmalade. Additionally, consumer testing will be conducted to determine consumer preference of the sugar-free orange marmalade, relative to the control orange marmalade.

Keywords: Orange marmalade, Allulose, Tagatose, Oligofructose

Titus Patton and Brian Tsukimura, Ph.D.
Brian Tsukimura
tpatton@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Development Of A Complete Lesson On Ocean Acidification For High School Science Classes

The California Department of Education currently divides science education into three areas: Science and Engineering practices, Disciplinary Core Ideas, and Crosscutting Concepts. In order to effectively meet each of these areas in the classrooms the need for physical demonstrations of current scientific problems has arose.

An example is increased uptake of anthropogenically produced CO2 in the ocean creating ocean acidification (OA). This project demonstrates a complete look at OA by allowing students to study the development of Artemia in a classroom environment. Artemia were hatched and grown in three different pH's: 8.1, 7.5, 7.1, for a week using modified 2L soda bottles. OA was simulated by regulating pH through utilizing a series of aquarium valves, which allows compressed CO2 gas to be systematically diluted by compressed air to naturally adjust the pH of each tank. This recreates the chemical reaction observed to cause OA demonstrating the next generation science standard HS-ESS2-6 and develops a quantitative model to describe the cycling of carbon. The chemical reaction can be observed through decreasing pH as the concentration of CO2 gas in the water increases. This creates further discussion in the classroom of how the ocean acts a carbon sink for CO2, and why increased production of greenhouse gasses is harmful.

After five days students can discuss the effect prolonged exposure to acidic conditions on Artemia development by weighing the dry mass of a sample of each growth population. Students should see a correlation between lower pH treatments and lower dry mass. This was due to Artemia in the lower pH environments being unable to efficiently produce a carapace through the lack of free CO3- molecules. This creates discussion in the education standard area of HS-LS2: Ecosystems Interaction, Energy, and Dynamics. Students can also count the number of surviving members in each population. Lower pH environments have been observed to hinder the hatching ability of Artemia cysts. This creates discussion of learning objective HS-LS4 Biological Evolution: Unity and Diversity.

Jeewaka Perera and Shih-Hsi Liu, Ph.D.
jeewaka@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Department Of Computer Science

Analysis Of Bot-Based Learning Behavior Using Deep Learning

This study focuses on analyzing the behavioral patterns of students based on the data collected from the Virtual Learning Assistant tool. We plan to introduce several Deep Learning (DL) algorithms to process the sequences of student logs to learn the correlation between student activities and the outcome of the course. When trained with a sufficient number of training data, DL algorithms would be capable of predicting the final outcome of the course for a student, allowing the instructors time to focus on helping students who are predicted to perform below average. We will implement generic classification algorithms (e.g., Random Forest and Decision Tree Classification) and Recurrent Neural Network (RNN)-based algorithms (e.g., LSTM and RCNN) to achieve this goal.

Two data pre-processing techniques will be used on the data set to transform it into feed able data set for the respective algorithms. The first processed data set would be a summary, that contains a summary of the student events over the semester concatenated into a single entry, which is mapped to the final outcome of the the course for that student. The second data set would be a collection of a series of student activities related to each subtopic explored in the course. This data set will be used to train the RNNs to capture data from student behavior throughout the semester in more details including time.

We expect to generate a clear comparison of the developed algorithms based on performances, and prediction accuracy at the end of the study, to identify the best algorithm for our purpose which can be further improved in the future.

Sergio Perez Jr. and Kristen Snyman, Ph.D.
Daulton Lawrence, Emily Burbulys, Kristen Snyman
sergio_perez400@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Kinesiology

An Investigation Into Leg Asymmetry And Muscle Activation During A Pneumatic Resistance Task To Failure

To investigate if electromyography (EMG) may reflect leg asymmetries related to force, power, and velocity in healthy adults, seventeen participants performed an incremental pneumatic leg press task to estimate their 1 repetition max. Force (lb), power (W), velocity (In/sec), EMG amplitude (RMS), and EMG frequency (MPF) were measured from the dominant and non-dominant leg during each repetition. EMG RMS and MPF were measured using bipolar surface electrodes from the vastus lateralis. Each participant's repetitions to failure were expressed as a percent of total reps and those at 10-100% of reps to failure were used for analysis. Force, power, and velocity values were normalized for % of lean mass. EMG RMS and MPF were normalized to peak value from the pneumatic task. Test-retest reliability analysis for force, power, and velocity were conducted immediately prior to the study. Five separate 2 (leg: right vs left) x 10 (% reps to failure: 10 – 100%) repeated measures ANOVAS were used to identify leg asymmetry between limbs and across repetitions. Significant main effects were followed with pairwise comparisons using Bonferonni corrections. An a priori alpha was set at 0.05 for significance. Results of the ANOVAs indicated that there were no significant ($p>0.05$) leg*%rep to failure interactions for any of the dependent variables. There were significant main effects for %rep to failure for force ($p<0.01$), power ($p<0.01$), EMG RMS ($p<0.01$), and EMG MPF ($p<0.01$). There was only one significant main effect for leg for EMG MPF ($p<0.05$). The results indicate that in this sample, leg asymmetry did not manifest in force, power, velocity, or EMG RMS measures. Leg asymmetry did appear in EMG MPF, which may indicate that to match force, power, and velocity production in the dominant limb, the non-dominant limb utilized neural modulation related to the mechanisms underlying velocity of an action potential as compensation.

Jacob Perez-Stringer and Alejandro Calderon-Urrea, Ph.D.
Aarathi Kondam, Daisy Xiong, and Alejandro Calderón-Urrea
stringer@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Effects Of Chalcones On Fungal Growth

Plant-parasitic nematodes are threatening the world's agriculture. With a growing world population, an increase in agricultural productivity will be necessary. Previously used methods of nematode eradication, such as ethylene dibromide and methyl bromide, are now banned by FDA after determining they are lethal to nearly all micro- and macro-organisms exposed and detrimental to earth's ozone layer. A new approach to control nematodes and their spread to clean land is to use organic molecules called chalcones; particularly chalcone 17 and chalcone 30 (at concentrations of 8 ppm), developed in Dr. Calderón-Urrea's lab at Fresno State. Serendipitously, it was discovered that chalcones may also inhibit growth of pathogenic fungus. To investigate further, this project's goal is to look at the effects of varying concentrations (160 ppm, 16 ppm, and 1.6 ppm) of chalcones 17, 30, and 17+30 on growth of 12 different fungal species. It was determined that each chalcone treatment affected the growth of each fungal species in a dose-dependent manner – some species affected more than others. Preliminary data also shows the combinatorial treatment of chalcone 17+30 is, on average, a stronger fungal inhibitor than chalcone 17 or chalcone 30 alone. Phomopsis, one of the fungal species tested, is a pathogenic fungus responsible for plant disease and showed the most inhibition from chalcone exposure. At 1.6 ppm chalcone 17+30, Phomopsis had a relative growth of 21% when compared to a control plate. Fusarium oxysporum, another plant pathogen, showed the least inhibition with a relative growth of 78% when exposed to 160 ppm of chalcone 17. Overall, if chalcones 17, 30, or 17+30 are used as nematicides, they may inhibit the growth of pathogenic and non-pathogenic fungal species at varying degrees.

Alan Pham and Karine Gousset, Ph.D.
Zoua Xiong, Abigail Ajanel, Karine Gousset
apham130@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Do Physiological Concentration Of Hydrogen Peroxide And Glutamate Affect The Expression Of Myosin X In Cancer Cells?

Tunneling nanotubes (TNTs) are actin baes cellular protrusions which main function is direct cell-to-cell transport. TNTs have been observed in a myriad of cell cultures including cancer cells. Recent studies have shown that cancer cells transfer organelles such as mitochondria and dilute chemotherapy drugs between other cancer cells through TNTs. However, little is known about how exogenous molecules may affect the expression of proteins such as myosin X, which are important in TNT formation. Previous work done in our lab has shown that the exogenous molecules hydrogen peroxide (H2O2) and glutamate increases TNT formation under normal physiological conditions in HeLa cells. Therefore, the aim of our project is to establish if glutamate and H2O2 affects the expression of Myosin X in HeLa cells as well as CAD cells through western blot. The expression of proteins Rab4 and CD38 will also be evaluated as they have been identified in TNTs formed by CAD cells. Establishing if expression of myosin X is affected by H2O2 and glutamate will shed light in possible TNT formation pathways in cancer cells.

Alison Phasakda and Hubert Muchalski, Ph.D.
aphasakda99@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Studies Of Directed Gold (I) -Catalyzed Hydrocarboxylation Of Unsymmetrical Alkynes

Peyssonenyne A is one of three natural products isolated from Peyssonelia caulifera, which has potential use as an anticancer agent. However, amounts isolated were insufficient to fully test biological activity. Past syntheses were not efficient because the Z-enol ester fragment present in the structure of peyssonenyne is very challenging to synthesize using the acylation of enolates. Acylation of enolates typically produces both E and Z isomers and the E isomer is preferred. Transition metal-catalyzed addition of carboxylic acids to alkynes is a powerful alternative to enolate acylation. The goal of this project is to investigate gold (I)-catalyzed regioselective addition of carboxylic acids to unsymmetrical alkynes as a more selective route to enol esters which will allow us to synthesize peyssonenyne more efficiently. We selected two model substrates containing ether functional groups (benzyl and TBS) to serve as a guiding group for the catalyst. The model substrates were synthesized by a palladium catalyzed Sonagashira cross coupling of alkynes with iodobenzene. Here we report the results of gold(I)-catalyzed addition of 2,6-dimethoxybenzoic acid and acetic acid to the model substrates. We found that the reaction is more than 90% selective and produces the enol ester in a high yield. We will present the results of the synthesis of the model substrates and spectroscopic analysis of the regioselectivity and stereoselectivity.

Jeremy Pisor and Hubert Muchalski, Ph.D.
Daisy Avalos, Melissa Sanchez
jeremywp@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Development In The Syntheses Of Isoquinolinones Via Gold(I)-Catalyzed Cyclization Of 2-Alkynyl Weinreb Amides

Abstract: Isoquinolinones are fused-heterocyclic systems containing an amide functional group and are present in several important natural products and biologically active molecules. For example, the isoquinolinone-based drug candidate AZD 2281 is a potential mimic of PARP-1, an enzyme involved in the regulation of cellular processes such as DNA repair and apoptosis. Recently, our group developed an efficient method for the synthesis of benzo[b]thiophenes and analogous benzo[b]furans. This methodology is also applicable to the cyclization of 2-alkynyl esters to isocoumarins. However, preliminary attempts at applying this approach to the synthesis of isoquinolines from 2-alkynyl amides were unsuccessful. The goal of this project is to explore the reactivity of Weinreb amides in gold(I)-catalyzed processes. Weinreb amides offer a more nucleophilic nitrogen center compared to traditional amides, and literature suggests that they are more reactive in cyclization reactions than N,N-dialkylamides. Here we report the synthesis of a model substrate, N-methoxy-N-methyl-2-(phenylethynyl)benzamide, in two steps. 2-Iodobenzoyl chloride functional group was converted to a Weinreb amide and then coupled with phenylacetylene using the Sonogashira cross-coupling reaction. We evaluated reactivity of the model substrate in a gold(I)-catalyzed cyclization reaction. In a typical experiment, the model substrate is reacted in the presence of a gold(I) catalyst and a Brønsted-acid additive (acetic acid). NMR spectroscopy was used to monitor the reaction progress during the optimization of experimental parameters (solvent, temperature, time, catalyst loading).

Maria Pita and Amber Hammons, Ph.D.
Alma Mejia
ahammons@csufresno.edu
California State University, Fresno - College of Science and Mathematics
Department of Psychology and Child and Family Science

Physical Activity Opportunities And College Students

Introduction:

Students need physical activity in order to maintain a healthy lifestyle. Some of the benefits of incorporating physical activity into one's life include reduced depression and anxiety and maintenance of a normal weight. College students are a vulnerable population that fall short of the daily recommended amount of physical activity. California State University, Fresno is trying to create more physical activity opportunities to increase physical activity amongst students and promote a healthy lifestyle.

Objective: To examine student interest in potential new campus physical activity opportunities (i.e. campus walking trails with mile markers and an outdoor fitness station).

Method: A 4-item survey with closed-ended questions was sent out to a random sample of 2500 students.

Results: Approximately 15% (n= 379) of students responded to the survey. Seventy-nine percent of students reported that they had never heard of the trails, and only 4% reported being familiar with them and using them. Of the 4% that reported using them, 43% reported using them at least 1-3x per week. Ninety-five percent of the students responded that they would definitely or maybe use the bulldog trails if mile markers were included. The survey findings also revealed that 34% of the students stated that they would use the workout stations 1-3x per week.

Conclusions: Although students have busy schedules and are often reluctant to go to a gymnasium due to social pressures, the majority said they would participate in physical activity opportunities if they were provided on campus. Overall using these additional resources would increase the accessibility and use of campus physical activity opportunities.

Mark Prado and Jennifer Adame-Walker, DPT, OCS, Ph.D.
markaprado@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Physical Therapy Interventions For A 22-Year-Old Male Following Arthroscopic Shoulder Surgery After A Workplace Injury: A Case Report

Shoulder disorders are common among workers in occupations that may expose them to physical strains such as heavy lifting, repetitive movements and working in poor postures. While shoulder disorders can be treated successfully with rest, medication, and physical therapy, those with persistent pain and limited function after conservative treatment may require surgery. Although research has shown that there is a strong association between workers' compensation status and poorer outcomes after shoulder surgery, post-surgical physical therapy may help in regaining function for a successful return to work. The patient in this case report is a 22-year-old right-handed male who injured his right shoulder while working as a package handler for a delivery company. After four months of conservative treatment failed to resolve his symptoms of pain, he opted for surgical intervention. Physical therapy was initiated ten days after his surgery to help decrease pain and regain function. Interventions included the combined use of manual therapy such as joint and soft tissue mobilizations, therapeutic exercises to promote movement and strength, and patient education of proper posture and compliance to the rehabilitation process. Although the patient regained adequate range of motion and strength after eight weeks of physical therapy, his progression was not linear. There are various psychosocial factors that physical therapists must account for in order to treat patients holistically. Research has shown that therapists who exhibit empathy, active listening, and positive nonverbal behaviors with their patients are able to enhance the therapeutic interaction which lead to improved outcomes. The results of this case show that physical therapy can be beneficial for patients after shoulder surgery following a workplace injury. Therefore, the purpose of this case report is to provide insight on the physical and psychosocial factors behind the physical therapy interventions that lead to a positive outcome.

Sorawan Prasertthanabut and Alejandro Calderon-Urrea, Ph.D.
Jacob Perez-Stringer, Rachel Parry, Cheryl Potts
psorawan@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Effects Of Chalcone 30 On Zebrafish Development

Agriculture is an essential industry of the San Joaquin Valley, also known as “the food basket of the world”, responsible for 12.8% of the United States agricultural production – as measured in dollar value (California Agricultural Resource Directory, 2008). Root-knot nematodes, plant-parasitic worms, are responsible for approximately 5% of annual crop losses (Sasser, 1985). Previously used methods of nematode eradication, such as Ethylene Dibromide and Methyl Bromide, are known to be harmful and/or lethal to nearly all organisms exposed as well as detrimental to the environment. It is clear that new methods of pest control need to be explored. Chalcones, are thought to be a viable candidate as a commercial nematicide. Further information, however, is needed to understand chalcone effects on the environment. If used as a nematicide, chalcones may runoff into nearby water systems – it is unknown how chalcones will affect aquatic animals. Therefore, we investigated the effects of chalcone exposure on the model organism Danio rerio, more commonly known as zebrafish. We exposed late gastrula zebrafish (about 10 hours into embryonic development) to a 24 hour chalcone 30 treatment; chalcone 30 is an effective nematicide at 8 ppm. Specific zebrafish phenotypic traits were observed such as juvenile motor function, length, stripes, and color. The initial chalcone treatment concentration of 16 ppm resulted in the death of all exposed embryos. We then tested a concentration of 1.6 ppm; preliminary data shows this concentration is non-lethal over a 24 exposure. Overall, we have learned that chalcone 30 at high concentrations are lethal to developing zebrafish, but not necessarily at concentrations expected to be in runoff water.

Sagar Pyreddy and Jason Bush, Ph.D.
Jayasuriya Senthilvelan, Mihai Gherase
redsagar@gmail.com
California State University, Fresno - College of Science and Mathematics
Department of Biology

Analyses Of Trace Element Composition In A Metastatic Breast Cancer Model Using X-Ray Fluorescence

Previous studies have demonstrated the utility of trace element analyses as an accurate indicator of cancer cell proliferation. To test the relationship between differences in trace element composition and metastatic behavior for breast cancer cells, we utilized X-ray Fluorescence (XRF). Metastatic variants of the common breast cancer cell line, MDA-MB-231, were used in a 3D culture system as a surrogate environment for in vivo growth. XRF spectra were analyzed with MATLAB and a combination of operations were performed including low pass Butterworth filter, Gaussian models fit to each elemental peak, Bremsstrahlung intensity corrections, and two sample Student t-tests to calculate statistical significance. All trials found that the osteotropic (bone-metastatic) variant cells consistently accumulated more iron (Fe) and lead (Pb) (p-value of < 0.0001) relative to the parental cell line. This proof-of-concept approach demonstrates that XRF is quantitatively objective, relatively inexpensive, and extremely fast for identifying potential differences among cancer cells.

Charles Quintal and Shabnam Pooya, Ph.D.
cquintal@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Food Science and Nutrition

Evaluation Of Enhanced Recovery After Surgery (Eras) Protocols On Length Of Stay In Hospitals

The Enhanced Recovery After Surgery (ERAS) protocol is an evidence-based, multidisciplinary peri-operative care model that has been shown to reduce complications and hospital length of stay (LOS), improve cardiopulmonary function, and lead to earlier return of bowel function. The objective of this project is to compare two groups of patients: group 1 received Ensure supplement 5 days (two bottle/day for non-diabetic individuals and 4-times/half bottle/day for diabetic patients) and 50g CHO (clear supplement) before surgery and group two did not. The goal for ERAS is to ensure proper nutrition pre and post-surgery, focus the patient mobility/activity after the surgery LOS, surgical side infections, readmission and pain management. The use of the lab test, 24-hour food recall, measurement of muscle mass, weight-loss or gain, length of stay and discharge date will be used to assess the effects of the ERAS. In this retrospective cohort study, adult patients undergoing major abdominal surgeries who received ERAS supplements will be compare to similar patients with routine hospital care. Patients will be compared in terms of hospital LOS, post-operative complications (surgical side infections) and 30-day readmission and mortality. Preliminary data suggest ERAS protocol reduces complication and length of stay.

Pravien Rajaram Rajaram and Qiao-Hong Chen, Ph.D.
Jennifer Phan, Vana Wassilian
jenniferphan383@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

The Synthesis And Enzymatic Resolution Of Hydnocarpin D As Prostate Cancer Chemotherapeutics

Flavonolignans are a relatively new and small class of naturally occurring hybrid molecules biogenetically originated from ubiquitous flavonoids and lignans known as Phenylpropanoids. As the first member of flavonolignans, silybin has received extensive studies because of its well-known medicinal properties. Hydnocarpin D is far more potent than silybin in one prostate cancer cell model but has received very little attention so far. Hydnocarpin D exists as a racemic mixture in natural sources. A racemate and its corresponding enantiomers are considered as three different entities that may elicit differentiated pharmacological responses due to non-identical 3D structures of enantiomers. So far there has not been anti-cancer activity of optical pure Hydnocarpin D that has been evaluated due to the limit of availability. It is thus imperative to explore a manageable approach to two enantiomers of Hydnocarpin D for the evaluation of their antiproliferative potency. To obtain the racemic Hydnocarpin D, the process of hydrolysis, demethylation, and the radical coupling of a ligand was carried out. Currently, appropriate enzymes for resolving racemic Hydnocarpin D is being identified. All the intermediates Hesperetin, 4'-Methylluteolin, and Luteolin have been characterized using with 1HNMR. Racemic Hydnocarpin D with its trace amount of Regio isomer has been characterized using 1HNMR and its purity was tested at 82% with HPLC.

Anindita Rajasekaran and David Lent, Ph.D.
Bryce Granata
aniraj123@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Spatial Memory Degeneration Effects Of Beta-Amyloid Protein When Induced In Drosophila Melanogaster Models.

Alzheimer's Disease (AD) is a well-known neurodegenerative disease associated with abnormal protein aggregation. Two of these proteins are tau protein and beta-amyloid protein, both of which have been shown to both work independently and simultaneously in the development of AD. The purpose of this study is to determine how beta-amyloid protein affects spatial learning and memory in a Drosophila melanogaster model. To develop flies that express AD, the Gal4-UAS system, a common genetic driver system, was used to express beta-amyloid protein in selective tissues of the brain. Three different tissues were targeted due to their shared properties with the mammalian brain. These included the ellipsoid body which is homologous to basal ganglia, the mushroom bodies which is homologous to the hippocampus, and finally the entire brain. To study behavior, a visual thermal maze assay was used. The assay involved training flies to learn the location of a hidden "cool spot" on a hot floor in relationship to surrounding visual cues. Five learning trials were performed where the flies were trained to find the location of the cool spot. After training, the flies were tested in the absence of the cool spot and the time flies spend looking in the location predicted by the visual cues was examined. This protocol was used to conduct trials on the three crosses of flies. Results show that beta-amyloid expression in the ellipsoid body, correlates with a slower recognition time of the "cool spot." This suggests that beta-amyloid protein causes greater spatial memory degeneration when affecting a region homologous to the basal ganglia and may reflect issues with visual motor planning. These results are similar to results in comparable studies testing the effects of differential levels of tau protein expression on spatial memory; however, flies expressing altered levels of beta-amyloid are comparatively more fragile.

Hannah Ramirez and Jennifer Roos, PT, DPT, GCS
Jennifer Roos
hannahramirez714@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Physical Therapy Multifactorial Rehabilitation To Restore Full Function In An Active Adult S/P Cheilectomy: A Case Report

Background and Purpose: Hallux rigidus is a degenerative condition primarily in adults that causes decreased hallux range of motion (ROM) and pain contributing to limited mobility. Decreased hallux ROM affects the gait pattern, potentially leading to gait deviations. The purpose of this case report is to discuss a biomechanical approach to the management hallux rigidus status post (s/p). Case Description: The patient was a 51-year-old high school teacher, who coached cross country and swimming. She attended outpatient physical therapy 3 months s/p cheilectomy with an implant. Due to the high demands of the patient's lifestyle, along with pain, limitations were noted in walking, running, hiking, climbing stairs, and swimming. The plan of care included 12 treatments over the course of nine weeks. The numerical rating scale (NRS), Foot and Ankle Ability Measure (FAAM), Outpatient Physical Therapy Improvement in Movement Assessment Log (OPTIMAL), ROM, manual muscle test (MMT), and single limb stance (SLS) were performed during the examination. Outcomes: Interventions focused on foot intrinsic and extrinsic muscle strengthening, hip strengthening, neuromuscular education, hallux soft tissue mobilization (STM) and joint mobilization. After nine physical therapy treatments, FAAM score improved by 50%, OPTIMAL disability score decreased by 27%, overall strength improved, and ROM increased by 20 degrees allowing for a decrease in difficulty during daily activities. Discussion: There is limited research supporting the most effective management for hallux rigidus. This case discusses the importance of a whole-body approach to rehabilitation to achieve a prior level of function (PLOF) in an active individual. Interventions allowed the patient to increase neuromuscular control while improving the current level of activity to include pre-surgery activities such as swimming, hiking, and coaching.

Emily Ramirez and Steve Blumenshine, Ph.D.
Steve Blumenshine
em_ramirez@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

The Role Of Disturbance On San Joaquin River Macroinvertebrate Assemblages; Implications For Chinook Salmon Survival And Growth

The San Joaquin River Restoration Program (SJRRP) was implemented in 2009 to restore a self-sustaining population of Chinook Salmon to the highly managed San Joaquin River (SJR). Since its implementation, the river has experienced years of irregular water releases due to conflicting water demands and extremes in water availability. SJR hydrology is defined by dramatic fluctuations in water flow that occasionally result in some downriver stretches going dry over the summer when juvenile salmon are not present. However, the winter storms of 2016/2017 resulted in flood releases thirty times greater than previous drought releases. These fluctuations in water flow represent sources of disturbance at both hydrologic extremes. In this study, we investigated if hydrologic disturbance is related to spatial and temporal variation in the abundance and composition of aquatic macroinvertebrate assemblages, which are the primary source of prey for juvenile Chinook Salmon.

The study design included macroinvertebrate sampling at four sites along the SJR. These sites represent a gradient of 'consistent' to 'variable' hydrology downriver of Friant Dam. Monthly sampling was conducted from June to December 2016 to characterize assemblages under ongoing drought conditions, while sampling in October 2017 characterized assemblages under post-flood conditions. Drought conditions resulted in a decline of macroinvertebrate abundances downriver. Post-flood data revealed substantial increases in relative abundance, with the most disturbed downriver site showing the largest proportional increase. Discriminant analysis by month revealed that samples were compositionally similar throughout the drought period but varied distinctly following flood releases. Additionally, composition discriminated upriver from downriver sites, with a high degree of similarity existing between the two downriver sites. These patterns of spatial and temporal variation in prey supply have important implications for understanding the carrying capacity of the SJRRP reaches and establishing realistic restoration goals for this imperiled species.

Brenda Ramos and Alejandro Calderon-Urrea, Ph.D.
Loveleen Tokhi, Patricia Terriquez, Varie Walker
bramos216@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Effects Of Chalcones 17 & 30 On The Development Of Mesoderm In Danio Rerio

Chalcones belong to the flavonoid family of organic compounds and possess enormous pharmacological potential. Recently, research at Fresno State has identified a group of chalcones as effective nematicides, at concentrations of 8 ppm, to control plant parasitic nematodes (PPNs). Chalcone nematicide derivatives were evaluated using zebrafish embryos at early stages of development (5-6 hours post-fertilization) to monitor their effect on gastrulation, particularly mesoderm formation and development. The aim of this experiment was to investigate the toxicities of synthetic chalcones by exposing the embryos to a chronic treatment of seven days. Three trials were performed, each consisted of three embryos placed in each treatment containing three replicates (n=9 per experiment). The concentration of chalcones used was 0.6 ppm of each Chalcone 17, chalcone 30, combination Chalcone 17+30, and the controls (positive and negative) for 7 days. The negative control contained DMSO and Tween 20, the known mixture used to dissolve the chalcones. Embryos were monitored daily and water in the wells were replaced daily.

It was observed that chalcone 30 has a higher detrimental rate as compared to combination chalcone 17+30, and chalcone 17. The set of embryos that were exposed to Chalcone 30 had a decreased duration of development resulting in unhatched and ultimately dead embryos. Combination Chalcone 17+30 also resulted in unhatched embryos, developing to somites (18 hours post-fertilization). Both the control, containing DMSO and Tween 20, and Chalcone 17 had the least detrimental effect to the embryos, each having hatched fry that were maintained until the seventh day post-fertilization. Staining was performed, and no known developmental impairments were observed in mesodermal tissues.

Kosha Raval and Laurent Dejean, Ph.D.
Mandeep Kaur
kraval@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Understanding The Biological Mechanisms Behind Ros Production Caused By Pm 2.5 Using Sirna Gene Silencing

Seven million people die each year from air pollution, according to the World Health Organization (WHO). When oxidative stress exceeds normal levels, the antioxidant system of any eukaryotic organism can become overwhelmed. This can lead to various adverse health effects in humans, including cardiovascular and pulmonary diseases. The risk for developing these deleterious conditions is heightened by increased exposure to particulate matter 2.5 (PM2.5), which is composed of solid particles and liquid droplets of transition metals and organic compounds 2.5µm or less in diameter. Having established a cytotoxic link between PM2.5 and reactive oxygen species (ROS), a form of oxidative stress, we now seek to understand the underlying biological mechanisms through which PM2.5 interacts with alveolar macrophage cells and produces excessive ROS. Studies have suggested that the up regulation of heme oxygenase-1 (HO-1) during oxidative stress plays an essential role in the regulation of intracellular ROS levels. Our study consists in optimizing a gene knockdown protocol for HO-1 in a rat alveolar macrophage cell model, NR8383, to investigate the potential involvement of this heme oxygenase in a PM2.5-induced ROS response. Having established an optimal protein concentration of 50µg to see distinct HO-1 bands in western blots, we are using a range of small-interfering RNA (siRNA) concentrations, from 10nM to 30nM, in conjunction with our positive control, zymosan, to understand their cytotoxicity effects. Zymosan, extracted from the cell wall of saccharomyces cerevisiae, is a known inflammatory agent which stimulates ROS production in NR8383. Repeated trials of western blotting have confirmed that 4 hour zymosan treatments increase the HO-1 protein levels in NR8383. Our aim is to confirm HO-1 knockdown through quantitative reverse transcription polymerase chain reaction (qrt-PCR) and western blotting. The cells with the HO-1 knockdown will finally be subjected to a DCF fluorescence microplate-based assay to monitor their PM2.5-induced ROS response. We hypothesize that we will observe enhanced ROS production in PM2.5 treated HO1-knockdown cells due to the lack of the protective enzyme, HO-1. Understanding this biological mechanism through which PM2.5 is able to induce ROS will help us understand exactly how pollution is pernicious and advocate for global reduction of PM2.5 exposure to the world's current 95% population that is overexposed to it.

Mason Rivera and Jennifer Roos, PT, DPT, GCS
Jennifer Roos
mrivera36@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

Physical Therapy Interventions For Functional Mobility In A Patient With An Acute Incomplete Spinal Cord Injury (Isci): A Case Report

Abstract

Over 11,000 individuals suffer from spinal cord injuries (SCI) each year in the United States. SCIs can be classified as complete or incomplete (iSCI) depending on the severity of resultant impairments. Sensorimotor impairments and functional mobility deficits are the hallmarks of SCIs and are dependent on the level and severity of the injury. Incomplete SCIs represent over half of all diagnoses and offer some preservation of sensorimotor function. The purpose of this case report is to describe physical therapy (PT) interventions focused on improving strength and increasing functional mobility for a patient who suffered an iSCI from a traumatic fall.

The patient was a 66-year-old Hispanic male who was treated in the acute care hospital following a traumatic fall from a 9-foot ladder resulting in an acute T12 iSCI, multiple spinal fractures, and risk for autonomic dysreflexia. Examination techniques focused on functional mobility and patient safety. The plan of care emphasized functional mobility training such as bed mobility, transfer tasks, wheelchair mobility; lower extremity strength; and patient education. The patient met goals related to functional mobility and demonstrated safety with spinal precautions and improvements in lower extremity motor function. The patient discharged to an acute rehabilitation facility to continue with functional gains. This case report outlines the early phase of rehabilitation which focused on improving functional mobility while minimizing the adverse effects of neurotrauma and immobilization. Gait training was removed as a treatment goal due to re-examination of patient priorities, time constraints, and the appropriateness of the intervention in the acute rehabilitation setting.

Keywords: incomplete spinal cord injury, acute care setting, autonomic dysreflexia, gait

Word Count Abstract: 273

Andrea Roach and Andrea Roach, Ph.D.
Hannah McCullough
aroach@csufresno.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Child and Family Science

Exposure To Parental Partner Violence In Childhood: Implications For Adult Child-Parent Relationships

Parental partner-violence (PPV) is any type of physical, emotional/psychological, or sexual violence perpetrated by at least one parent against a partner in an intimate relationship. The purpose of this study was to examine adult children's relationship quality with their parents in relation to their histories of exposure to PPV. A nationally-drawn sample of 452 emerging adults (ages 18-25) completed an online survey regarding their exposure to PPV as children and their current relationships with their parents. A cluster analysis indicated eight types of PPV dyads existed: (1) no violence (n=88), (2) rare conflict/violence (n=105), (3) both parents are yellers/controllers (n=147, (4) both parents use moderate conflict/violence (n=39), (5) both parents use high conflict/violence (n=31), (6) mom is coercive-controlling violent (n=12), (7) dad uses non-severe violence (n=15), (8) dad is coercive-controlling violent (n=15). Multi-group comparison ANOVAs were used to compare the adult child-parent relationship scores for both mothers and fathers between PPV dyad types. Results indicated that the mean scores for the adult child-father relationship of each PPV dyad type, except cluster six, were significantly lower than the no violence group. In addition, the mean scores for the adult child-mother relationship of clusters three, four, five, and six were significantly lower than the no violence group. These results indicate that adult child-parent relationships are worse after a child was exposed to violence perpetrated by that partner, either as the sole-perpetrator or in a mutually-violent relationship. However, adult child-parent relationships did not appear to suffer when one parent was the victim in one-sided PPV dyad types. These results highlight the importance of educating parents about effective conflict resolution and avoidance of violence. These results also add to the literature on outcomes in adulthood for children exposed to PPV.

Carly Robinson and Kalyani Maitra, Ph.D.
Alina Xiong, Isaiah Fuson, Kalyani Maitra
carlyrobinson@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Aggregation Study Of Peptides: Toward The Development Of Potential Peptidomimetic Agents

A protein's function is reliant on the structure it develops through a process called protein folding, which itself relies on the protein's amino acid sequence. When a protein misfolds, its function alters and can cause detrimental effects in the body, such as the onset of Alzheimer's disease (AD). The aggregation of β-amyloid peptide plaques in the brain plays an important role in AD and studies have shown that a specific peptide with the sequence of KLVFF (lysine, leucine, valine, phenylalanine, phenylalanine) has a vital role in β-amyloid formation.

In this research, the pentapeptide KLVFF and other tripeptides containing nonpolar, hydrophobic amino acids were synthesized and characterized by 1H-NMR spectroscopic studies. NMR-based aggregation studies of the tripeptides are underway as potential model systems since the makeup of the tripeptides are borrowed from KLVFF. The study will be expanded to tetra- and penta-peptide libraries for a collective and comprehensive knowledge base. The ultimate goal of this project is to use an organic or organometallic scaffold to support two peptide strands, one of which will be KLVFF as a protein recognition strand.

Ferrocene carboxylic acid is used as a precursor of one such scaffold due to its appropriate geometry, disposition of functional groups, and anticipated non-toxic nature. Ferrocene scaffolds also promise facilitation of hydrogen bonding of the tethered peptide strands, resulting into β-sheet conformations. Analyzing the structures that result when the peptides are attached to the ferrocene scaffold will allow a better understanding of the protein sequence-structure relationship. This information, along with future studies, could collectively provide knowledge and insight to peptidomimetic agents for use as therapeutics against protein-misfolding diseases such as Alzheimer's.

Elizabeth Rodriguez and Albert Valencia, Ph.D.
lizzyrodpena@mail.fresnostate.edu
California State University, Fresno - Kremen School of Education and Human Development
Department of Student Affairs and College Counseling (SACC)

Resources For Educators To Help First-Generation Students Navigate The Higher Education System

A large number of the students enrolling in college in the twenty-first century are first-generation college students (Murphy & Hicks, 2006). During the first semester of college, first-generation students have a higher risk of dropping out and not returning for the second year (Murphy & Hicks, 2006). The Educational system in America is one of the most diverse systems in the world (Murphy & Hicks, 2006). Accessing higher education for first-generation college students comes with many challenges which may hinder their motivation to continue their education. Majority of students who apply to and enter college encounter challenges and stress because of social, emotional and academic changes (Moschetti & Hudley, 2008). For example, students that are first-generation college students may not be aware of the on campus resources their desired university may offer. Research suggests, that it may lead students to feel lost, and confused of their status in the university. The purpose of this project is to inform incoming freshmen, first-generation and underrepresented college students' that there are on-campus resources, and how these support systems can help students achieve higher education. This proposed poster presentation is intended to be used at California State University, Fresno, a four-year university with a large Latino student enrollment. This study will also provide counselors with effective support systems that can be utilized to assist first-generation students throughout college. Research suggest that on-campus support includes support from counselors, advisors, mentors and/or campus ambassadors.

The purpose of the project is to provide a poster presentation with strategies to guide first-generation, and underrepresented college students succeed in college. The research questions that served to guide this project are:

1. What are the barriers identified by researchers affecting first-generation students?

2. What are the program resources available at a California State University to help first-generation students navigate higher education?

Fay Roepcke and Iris Price, Ph.D.
Susan Hughes, Shruti Joseph
FRoepcke@fresno.ucsf.edu
UCSF - Fresno - UCSF Fresno Family and Community Medicine
Department of UCSF Fresno Family and Community Medicine

Patient Attitudes About And Barriers To Post-Partum Long-Acting Reversible Contraception

Pregnancies conceived after a short interpregnancy interval (<18 months) are associated with health risks for both mothers and infants. Patients may be unaware of the risks or not provided the tools to prevent a short interpregnancy interval. We assessed patients' contraception knowledge, interest in receiving contraception information, desire to receive postpartum contraception, and ability to obtain postpartum contraception, including patient-perceived barriers in one rural community that currently does not provide any postpartum contraception.

Participants: All post-partum patients, >16 years of age, at Adventist Hospital Reedley willing to participate in the study.

Study: Student researchers had training to obtain informed consent, work with a translator, and conduct the survey. During the in-hospital survey patients were asked if we could contact them again in eight weeks, those that agreed provided a phone number. Research team members conducted the follow-up 8-week phone calls.

Results: A total of 213 patients were eligible for the study and 78 participated in the in-hospital survey. The average age was 27 years old and 86% of participants self-identified as Hispanic. The majority of respondents (88%) desired contraception and 93% wanted their preferred contraceptive prior to hospital discharge. Patients primarily wanted pills (15%), implant (12%), and IUD (12%). A multinomial logistic regression with several independent variables did not significantly predict desired birth control. Only 55% of participants completed the 8-week follow up survey, of those 81% attended their post-partum appointment and 80% received contraception.

Conclusions: This was a random convenience sample and the research assistants were not consistently available, limiting our sample size. There was significant loss to follow up for the 8-week calls. Most women want contraception prior to hospital discharge. Fewer women wanted LARC, compared to similar studies and national data, which may reflect cultural differences and/or low health literacy among the study participants.

Melisa Rotondi and Kathleen Rindahl, Ph.D.
melisa05@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Mental Health And Barriers To Seeking Mental Health Treatment Among Undergraduate College Students

College students experience mental health issues at higher rates than those who are not enrolled in college due increased stressors. These prominent mental health issues, including anxiety and depression, are often pushed aside or not addressed. While many universities provide mental health and counseling services on campus, students who experience mental health issues do not seek mental health treatment. There are various barriers that interfere with students seeking services for these issues; identifying these barriers are imperative to improving utilization of mental health services. An anonymous electronic survey was administered to undergraduate students in Fresno State's School of Nursing and Department of Public Health. Included in this survey was a short demographic survey and Northwestern University's Perceived Barriers to Care survey. This survey is a 27-item questionnaire that uses a Likert scale to determine how difficult certain barriers would make it to participate in mental health treatment. Data gathered from the survey was then analyzed to determine perceived barriers to seeking mental health treatment. Results from the study showed that both time constraints and uncertainty of finding quality services would make it extremely difficult for students to seek treatment for mental health services. As a product of this study, interventions to combat the mentioned barriers should be implemented. Focus of outreach should be increasing awareness of the available, free services offered by the Student Health and Counseling Center on campus (or available community resources) and increasing availability to meet demanding school schedules and responsibilities.

Simran Saini and Joseph Ross, Ph.D.
Joseph Ross
simransaini@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Monitoring The Fitness Recovery Of Cybrids In Caenorhabditis Briggsae

Relatively little is known regarding the process of species formation: how two very similar organisms begin to produce hybrid offspring that are either sterile or unviable because they contain incompatible alleles of genes contributed by both parents at fertilization. Such reduced hybrid fitness is one of the major forces leading to speciation. Studies conducted on a nematode species, Caenorhabditis briggsae, have shown that hybrids formed from two different wild populations exhibit reduction in the fitness (fecundity) of the F1 generation itself. In many cases, this decrease has been observed in the eleventh generation, suggesting that this genetic incompatibility might be of the type that would facilitate speciation. However, an increase in fitness has rarely been seen in the 11 generation. This finding raised the intriguing possibility that hybrid incompatibilities can be compensated in subsequent generations; this process would be expected to reverse the speciation process. In order to understand the frequency and tempo of hybrid fitness recovery, I created and monitored the fitness of new hybrid lines every generation for fifteen generations. Some of the lines exhibited a sudden fitness decrease and then gradual fitness recovery. The long-term goals of this project are to determine whether de novo mutations are causing fitness recovery and then to identify the molecular details of the fitness recovery process. Achieving this goal will help us better understand the process of speciation by studying mechanisms that oppose it.

Melissa Salgado and Denise Chavira, Ph.D.
Carolyn Ponting, Denise Chavira
smeli97@g.ucla.edu
University of California, Los Angeles - College of Letters and Science
Department of Psychology

Relationship Between Income, Insurance, Anxiety Subtype & Service Utilization In Latinx Rural Youth

Latinx youth (LY) with anxiety disorders are less likely to seek treatment and have lower concordance rates with their parents on mental health symptoms than their White counterparts (Ries et al., 2001; Roberts et al., 2005). Also, certain subtypes of anxiety (e.g., generalized anxiety disorder; GAD) are associated with greater service utilization (SU) (Essau, 2005). To examine factors related to past SU in a rural context, data were collected from a clinical sample of 78 Latino Youth (Mage= 12.21, SD=2.69). A logistic regression model examined income and insurance (step 1), anxiety subtype (e.g., GAD), and parent-child concordance on anxiety symptoms (step 2) as predictors of past year SU. There were no significant associations among demographic or clinical variables with past SU. LY most often endorsed symptoms consistent with panic disorder (59.9%) and separation anxiety disorder (59.5%) and parent-child concordance on anxiety was moderate (59.5%). Past SU was higher than previous studies (65.4%), and often involved mental health specialty services (48.6%). Findings help characterize rural anxious youth and have implications for the dissemination of mental health services.

Angelica Sanchez and Denise Chavira, Ph.D.
Desiree Delgadillo, Denise Chavira
angelicagsan@g.ucla.edu
University of California, Los Angeles - College of Letters and Science
Department of Psychology

Peer Victimization And Depression Mediate Acculturative Stress And Suicidal Ideation In Rural Latinx Youth

Latinx youth consistently report the highest rates of depression and suicidal ideation when compared to non-Latinx White youth (Kann et al., 2015). Among Latinx youth, acculturative stress (i.e. the psychosocial stress that arises as a result of contact between two or more cultural groups) is a well-documented risk factor associated with greater depression and suicidal ideation (Smokowski et al., 2010). Additionally, higher levels of acculturative stress have been associated with an increased risk of experiencing peer problems such as peer victimization (e.g. bullying). Given that peer victimization can also increase youth's depression, we tested a serial mediation model to assess whether peer victimization and depression may serve as sequential mediators linking acculturative stress to greater suicidal ideation. Questionnaires measuring acculturative stress, peer victimization, depression, and suicidal ideation were administered to a sample of 176 rural Latinx youth (Mage=16, SD=1.15). The overall model was significant $R^2=.31$, $F(7,168)=10.82$, $p<.01$, such that acculturative stress predicted greater peer victimization, which increased depression and predicted greater suicidal ideation (total indirect effect = .08, 95% CI=[0.02, 0.17]). These results may have important implications for policy and school-based prevention interventions to help reduce peer victimization and depression symptoms among Latinx youth.

Alvir Sangha and Dermot F. Donnelly, Ph.D.
Dermot F. Donnelly, Frederick Nelson, David Andrews
alvirsangha@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Impact Of Guided-Inquiry Approaches In Physical Science Laboratory Curriculum For K-8 Teachers

Pre-service teachers struggle to support science instruction due to the absence of authentic science practices in traditional physical science courses. In light of the Next Generation Science Standards (NGSS) science education programs must redesign science instruction in order to support students' investigations of real-world phenomena. This study investigates the impact of a redesigned guided-inquiry physical science laboratory on future pre-service teachers' explanations of scientific phenomena. Research methods entail a mixed-methods approach analyzing quantitative changes in students' understanding of disciplinary and integrated topics along with qualitative analysis concerning future pre-service teachers' views on how the redesigned laboratory instruction supports future teaching practices. Quantitative data was collected through pre/post assessments consisting of nine total items representing three physics items, three chemistry items, and three integrated items. Qualitative data was collected during the post assessment through open response and Likert Scale questions. Study participants (n=129) predominantly represent female students (90%) along with a varied representation of ethnic groups including Hispanics (50%), Asian (25%), Caucasian (15%), African American (10%), and other (5%). Data analysis indicates that pre-service teachers enter physical science courses with a significant amount of non- normative ideas. Comparison across pre/post data indicates that future pre-service teachers have significant conceptual gains across physics, chemistry, and integrated phenomena. Findings from this study will provide insight into students' conceptual difficulties and how guided-inquiry laboratory instruction aides in tackling such difficulties. This study provides important aspects for teacher education programs to consider in developing future pre-service teachers' conceptual knowledge of scientific phenomena.

Nathan Sayavong and Brian Tsukimura, Ph.D.
Miguel Estrada, Brian Tsukimura
nsayavong@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Effects Of Interspecific Interactions, Increased Population Density, And Thermal Stress On Vitellogenesis On Intertidal Crabs Petrolisthes Cinctipes And Petrolisthes Manimaculus.

Increased temperatures from global warming can lead to lethal temperatures for the intertidal crab Petrolisthes cinctipes (Decapoda: Anomura). Physiological stress from increased temperature may force redistribution into cooler environments (Stillman and Somero 1996). As a result, interspecific interactions and increased population density may occur that threaten the fitness of its congener, P. manimaculus, through behavioral encounters. To investigate the effects of interspecific interactions, increased population density, and thermal stress, P. cinctipes and P. manimaculus were collected from November 2017 through July 2018 and exposed to thermal stress and placed at high and low densities with conspecifics and congeners. Hemolymph samples were taken from each crab before and after seven-day density and thermal stress treatments. To quantify the effects of treatments, an ELISA was used to quantify Vg levels in hemolymph before and after treatment (Delmanowski et al. 2017). During summer months, P. cinctipes showed decreased vitellogenesis, likely due to annual thermal stress (Salas 2017). Increased interspecific and intraspecific species interactions in high densities increased vitellogenesis in P. manimaculus. Furthermore, thermal stress increased vitellogenesis in P. manimaculus. These data suggest that the relocation of P. cinctipes into the lower intertidal can cause interspecific species interactions that are stressful for P. manimaculus at high densities, leading to resorption of oocytes. Thus, an increase in thermal stress to P. cinctipes that causes a migration into P. manimaculus habitat can also cause a decline in the latter's reproductive output and would be an example of the transduction of climate change.

Hillary Scordalakes and Jennifer Adame PT, DPT, OCS, PMA-CPT, Ph.D.
Dr. Jennifer Adame
hscordalakes@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

The Use Of Conservative Physical Therapy For 63-Year Old Male Candidate For Total Hip Arthroplasty: A Case Report

Background: As technology has advanced in the past 50 years, the identification of hip pathologies have improved from diagnoses based on general reported symptoms to those supported by diagnostic imaging. Overall, a majority of these patients opt for surgical intervention although conservative treatment as shown similar outcomes. With the shift of healthcare promoting shorter hospital stays post surgical, patients are currently at higher risk for post-operative complications. The patient described in this case report was a 63-year old male, ranch man and candidate for a total hip replacement. Chief complaints of left hip pain and instability prevented him from performing duties around his property. Having had experienced total hip replacement on the right side, the patient personally sought physical therapy to address his current left-sided symptoms. The purpose of this case report is to describe the use of conservative physical therapy intervention to address a generalized diagnosis of hip pain and avoid surgical intervention.

Brief Summary of Methods: The patient was seen for 12 visits; twice a week for 6 weeks. During this time, he received a combination of manual therapy for pain reduction, muscular strengthening to improve stability with static and dynamic postures as well as education of proper gait and balance kinematics.

Summary of Results: This conservative treatment was found to be successful with the patient as seen with increase in hip range of motion and strength. After only 3 weeks of treatment, the patient reported being able to mount his horse and perform duties on the ranch with minimal pain.

Conclusion: The results from this case report suggest the benefits of conservative treatment for patients. With ongoing shifts in healthcare, additional research into physical therapy intervention and the efficacy of hip and core strengthening programs influence on symptom reduction should be considered.

Krizma Singh and Ulrike Muller, Ph.D.
Hidalgo F, Berg O, Müller UK
krizmasingh@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Biomechanical Model Based On The Traps Of The Carnivorous Plant Utricularia To Study Feeding Strike Kinematics In Small Suction Feeders

Mechanical models have led to new insights in fluid dynamics of organism-generated flows, especially for small animals. Here we present Bladderbot, a mechanical model of a suction feeder based on the traps of the aquatic carnivorous plant Utricularia, commonly known as bladderwort. These traps consist of a hollow sealed bladder that is loaded elastically by generating a subambient pressure inside the bladder. The miniscule traps catch zooplankton

prey by sucking in prey through a mouth opening that is roughly 200 microns in diameter. Capture takes less than a millisecond after the prey triggers the trap. This combination of small trap size and high capture speed makes it difficult to study the mechanics of the suction event. Therefore, we used hydrodynamic scaling laws to build a mechanical model which allows us to slow down the suction feeding event and to increase size while preserving similar flow

conditions (flow speed, pressure) as observed in small suction feeders. Bladderbot comprises an armature driving a piston, which creates a suction flow through an aperture into a transparent chamber (test section); the piston and chamber are submerged in fluid. The set-up is optimized for particle image velocimetry to quantify flow and pressure fields. We show that the Bladderbot accurately replicates kinematic dynamics of a real bladderwort by comparing

their peak flow speeds. Moreover, we can use this model to simulate behaviors that real organism would not display, in order to separate individual parameters, i.e. pressure and time to peak pressure, with the ultimate goal to understand how these parameters affect suction feeding performance.

Sarwat Sipra and Janine Spencer, Ph.D.
jehan@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Diabetes Mellitus And Knowledge Deficiency In South Asian Population: An Educational Tool.

Background

Individuals from South Asian population has increased prevalence of diabetes mellitus despite of low body weight and an increased risk of cardiovascular disease, kidney disease, blindness and limb amputation. This research explored the correlates of high prevalence, and assess the knowledge related to diabetes among South Asian population in Fresno community.

Method:

An extensive literature review from four electronic database CINAHL, EBSCOHOST, Academic research and American Diabetic Association were conducted and a quantitative quasi-experimental study with a convenient sample was performed which include people from South Asian descent and was based on an educational tool with pre and post-test questionnaires, to identify and measure the independent variables of knowledge, diet, physical activity, and cultural practices contributing to the high prevalence of diabetes.

Results:

A total of 24 participants (N=24) from ages older than 18 years were included in the study; a pre- test and post-test preceding educational tool was conducted; the overall knowledge, physical activity, diet and cultural practices were assessed. All data gathered was interpreted using SPSS software with ONEWAY and ANOVA test. The participant scored significantly higher on overall diabetes knowledge, diet, physical activity and diet post educational tool. Mean score for knowledge in pre-test (M=5.58, SD=2.18) and post-test (M=9.00, SD=1.18), $F(1,46) = 45.432$, $p<.005$. The Cronbach alpha test was conducted to check the reliability of questions, for knowledge= 0.720, activity= 0.327, diet= 0.508, and cultural practices= 0.52. There was an increase of 62% in knowledge, 66% in diet, 34% in activity and 57% in cultural practices post intervention.

Conclusion: South Asian population in the U.S. may be more likely to have diabetes than other U.S. ethnic groups, and cultural factors may play a role, suggesting that this is a promising area of research.

Marikit Smith and Janine Spencer, Ph.D.
mbs26@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Improving Future Primary Care Providers' Knowledge On Traumatic Brain Injury

Patients who have suffered from a traumatic brain injury (TBI), along with their family members, rely on nurses to provide accurate knowledge and competent care in order to achieve positive patient outcomes. Prior studies have revealed that nurses' beliefs regarding TBIs are inaccurate. Studies have also found that nurses' knowledge in the management of TBI patients are inadequate, resulting in poor patient outcomes. The goal of this project will be to provide education to Nurse Practitioner students regarding best practice for the management of patients diagnosed with TBI. The effectiveness of the educational presentation will be evaluated through the distribution of a pre and post-test (results pending project completion). Continuing education is essential to a complete knowledge base. This educational module emphasizes understanding the characteristics related to TBI and the signs and symptoms that differentiate levels of TBI. It also outlines the continuing education necessary to provide a solid foundation in the assessment and management of TBI.

Michael Smith and Jason Bush, Ph.D.
Rojina Nekoonam, Sundararajan Srikanth, John Ambrose
mikey1s@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Comparison Of The Genetic Expression And Protein Secretion Profiles Of Unique Adipose Tissue Depots In Patients With Coronary Artery Disease

Coronary artery disease (CAD) is the leading cause of mortality and morbidity in the western world, being responsible for nearly 370,000 annual deaths in the United States. Coronary artery disease occurs when the artery that supplies blood to left ventricle of the heart becomes blocked or narrowed following the accumulation of plaque on its inner wall; leading to fatigue, chest pains, irregular heart rhythms, or a heart attack. It has been established that internal mammary arteries are resistant to fat build-up, whereas left anterior descending arteries are prone. Yet, the mechanism for this resistance is not well understood. This project investigates the genetic expression and protein secretion profiles of unique adipose tissue depots in patients with coronary artery disease. Our hypothesis is that fat tissue adjacent to these arteries plays a role in their susceptibility or resistance to CAD through an inflammatory signaling mechanism. To compare expression levels of putative-atherosclerotic adipokine mRNA transcripts and regulatory microRNAs, total RNA is being extracted from fat tissue samples from consenting patients undergoing coronary artery bypass grafting surgery and analyzed via RT-qPCR. Protein secretion profiles of adipokines of interest is being measured via ELISA array. Currently, we have extracted total RNA from adipose of seven consented-patients and are optimizing using semi-quantitative RT-PCR to evaluate extraction procedures. Our broad objective is to better understand adipose tissue behavior in patients with coronary artery disease and possibly lend support to an adipokine, or a set of adipokines, to serve as a candidate biomarker to improve disease outcomes.

Rocio Solis Hernandez and Lori Clune, Ph.D.
rhsolis@mail.fresnostate.edu
California State University, Fresno - College of Social Sciences
Department of History

Refocusing Chicana Activism: The Case Of Fresno State College, 1965-1975

The 1960s and 1970s marked great political and social transformation within the United States. Student activism erupted at unprecedented levels as the country's youth questioned authority and asserted their rights as students and citizens. As part of a global trend of mass-based mobilization, Chicanas/os rallied and demanded social justice, civil rights, and self-determination, marking what scholars now call the Chicano movement. As the Chicano movement gained momentum throughout the 1960s, it adopted subaltern masculine characteristics to combat an oppressive, dominant white culture. Ultimately, this devalued Chicanas' roles within el movimiento—roles that, until recently, have been overlooked in the historical record.

Recent scholarship has made tremendous strides in uncovering Chicanas' critical roles within the Chicano movement as it moves beyond binary narratives and the conventional revolutionary, masculine language to highlight how Chicanas worked to shape social movements. The work set forth by leading scholars transforms traditional Chicano movement historiography and elucidates the ways in which Chicanas contested conventional notions of opposition and created their own, specifically Chicana, praxis of resistance.

The study at hand fits within this new framework. By shifting the theoretical lens, this work departs from masculine renderings of history that obscure or erase Chicanas' involvement in the Chicano movement. It seeks to uncover Fresno State Chicanas', and Chicanas' within the larger Fresno community, critical intellectual and organizational contributions to el movimiento. Chicanas at Fresno State College organized and published work detailing their activism on campus and within the community. By focusing on Chicanas' labor within the Chicano movement—labor that traditional historiography characterizes as "volunteer work" or an extension of men's work—we can identify how integral Chicanas were to the movement and bringing about societal change.

Yesenia Sosa and Hong Ni, Ph.D.
jessiesosa@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of School Psychology

Hocus Focus: Decreasing Student Inattentive Off-Task Behaviors Through Self-Evaluation

Students engaged in constant inattentive off-task behaviors often disrupt teachers' teaching and the learning of themselves and others. Their relationships with teachers tend to be hindered as a result of teachers' unsuccessful attempts of redirections. Research suggests that self-monitoring for students with attention difficulties is effective in decreasing problem behaviors. Self-monitoring can raise student awareness of their inattention and provide an opportunity for the student to take a proactive action to prevent their off-task behaviors (Dunlap, Clarke, Jackson, Ramos, & Brinson, 1995; Dunlap et al., 1995).

This poster will focus on a consultation case for decreasing inattentive off-task behaviors for an elementary student. The behavior case used a self-monitoring strategy which was effective in decreasing the student's inattentive off-task behaviors in the classroom.

The consultee explained that the student becomes distracted in the class and is constantly redirected throughout the day. She indicated that the student has Attention Deficit and Hyperactivity Disorder (ADHD) but is not medicated. She needed a more effective intervention to focus on his inattentive behaviors. The consultee and consultant agreed to focus on the three most occurring behaviors including out of seat, talking, and body turned.

A problem analysis interview revealed that the main function of the inattentive off-task behaviors is self-stimulation. The intervention included an appropriate opportunity for self-stimulation and a self-monitoring plan. A rubber band was placed at the bottom of his chair by his feet so that he could use his feet to kick and stretch for self-stimulation that does not interfere with his and others' learning. The self-monitoring plan includes a Wobl Watch on his wrist that vibrates every 10 minutes and a self-monitoring sheet that he uses to check if he is talking, turning his body, and out of his seat.

Uyen Sou and Sean Swei, Ph.D.
uyensou@gmail.com
San Jose State University - Charles W. Davidson College of Engineering
Department of Aerospace Engineering

Investigation Into Rotor Blade Noise And What It Means For Urban Air Mobility

The advancement of the urban air mobility concept is heavily dependent on the public acceptance of the aircraft vehicles used in the fleet of urban air taxis. The importance of the perception of noise by humans is crucial in the passing of legislation and proposals to implement the new transport system. Noise pollution has been linked to depression, high blood pressure, heart disease, chronic migraines and heightened aggression. The investigation into how the noise perception can be reduced is vital to the success of personal air travel industry. The design of the blades used on unmanned air vehicles is the root cause of the broadband noise that is of concern in the operation of the fleet of aircraft for urban air traffic management. The blade vortex interaction (BVI) noise is the frequency in which humans perceive as the most annoying and disruptive type of noise produced by aircraft. The BVI noise is caused by the interaction between the noise product by the tips of each propeller blade. The investigation into the twist of the rotor blades that are primarily found in the design of the urban air mobility aircrafts will aid in the determination of the progress in developing the acceptance of the urban air mobility movement. This investigation is carried out through the use of the aeroacoustics modeling software called Comprehensive Hierarchical Aeromechanics Rotorcraft Model (CHARM). The parameters under investigation is number of blades implemented onto each rotor and the angle of twist towards the tips of the rotor blades. This modeling software generates the files with that determines the thrust and the noise frequency that is produced by each configuration.

Matthew St. Martin and Debra Bekerian, Ph.D.
Mishael Ozed-Williams, Stephanie Liuba
mstmartin@alliant.edu
Alliant International University - Clinical Psychology
Department of Clinical Psychology

Factors Of Predicting Student Attrition In Doctoral Populations

Factors of Predicting Student Attrition in Doctoral Populations Abstract

Graduate programs are extensive and require intense academic obligations. The pressure to perform well, and the financial insecurities students face create difficulties in completing their attended program. Prematurely leaving the program is defined as attrition: the percentage of individuals who leave an academic career plan, such as a program of study prior to completion. In the doctoral education setting, student attrition causes potential damage to institutional credibility. In order to determine the influence and cause of student attrition, it would be important to explore the issues and/or concerns students deal with leading to attrition. The Doctor of Philosophy in Clinical Psychology program at the California School of Professional Psychology (CSPP) at Alliant International University (Fresno Campus) has been very interested in reducing rates of student attrition. The probable causes associated with student attrition may be due to personal difficulties of the student; health concerns, lack of financing to complete the program, family obligations, and work-related purposes (Christo & Olu Oyinlade, 2015). The proposed study examines a variety of factors that might contribute to student attrition including: student evaluation, curriculum factors, changes in training, and professional competency requirements. Results show personal factors leading to attrition are age, lag time between degrees, and student GPA. Results are discussed in terms of institutional interventions that can be used to reduce student attrition.

References

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Pujitha Reddy Surapareddy and Matin Pirouz Nia, Ph.D.
pujithareddys@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Computer Science

Novel Community Detection And Ranking Algorithms For Social Network Analysis.

Enterprises are collecting, procuring, storing, curating and processing increasing quantities of Big Data. This is occurring to find new insights that can drive more efficient and effective operations and provide management with the ability to steer the business proactively. Since the dataset types are growing exponentially in popularity, various Community Detection and Community Ranking algorithms are developed for target marketing. Such analyses utilize the concepts of shortest path, closeness centrality, and clustering coefficient.

In this study, we developed a community detection algorithm based on centrality and node closeness. We performed Visual Analysis, to depict an interconnected collection of entities- among people, groups, or products. We also performed Network Analysis (Community Detection and Ranking Algorithms) to analyze the relationships among the entities. Among the benchmark datasets, the algorithms were implemented on the American College Football and Karate Club datasets. We were able to predict the next matches, the most popular person in the club, and their relevant connections with a high accuracy as compared to the ground truth. In addition to the high accuracy, it encompasses all the features and predicts the importance of the community leader, which is a key differentiating factor for the propose algorithms. Modularity was used as the metric to compare the effectiveness of the proposed methods with state-of-the-art frameworks. The max modularity of the Jaccard, Cosine, Pearson, Edge Betweenness, and Closeness centrality for the Karate Club with two detected communities were measured as 0.21, 0.23, 0.30, 0.40, and 0.35 respectively. Meanwhile, these values were in the range of 0.58-0.59 for the Football dataset with 12 detected communities.

The proposed Community Detection and Community Ranking algorithms outperformed the existing frameworks on scale-free networks. We were also able to identify the hidden patterns of friendships on social media, frequent item sets purchased together, which can be used to develop recommendation systems to e-commerce portals.

Abu Taha and David Lent, Ph.D.
David Lent
tkh525@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Characterization Of Motor Deficits From Expression Of Mutant Alpha-Synuclein In Parkinson'S Disease Model Drosophila Melanogaster

Parkinson's disease (PD) is one of the most common neurodegenerative diseases in the world. A common factor found in brains of individual affected by PD is the overabundance or presence of a protein named alpha-synuclein. The version of alpha-synuclein protein in PD is mutated and forms insoluble aggregates known as Lewy Bodies which are toxic to the function of dopamine producing neurons. In the present study, two mutant versions of alpha-synuclein protein were expressed in the entire nervous system of Drosophila Melanogaster using the Gal4-UAS genetic system. This study looked to examine how the misfolded alpha-synuclein affected the motor control and visual motor planning of the fruit fly using an obstacle avoidance assay. The behavioral assay consisted of a visually guided high-contrast obstacle, exploiting the negative geotaxis behavior of the fly. For each mutation type, a group of 10-day old and 30-day old flies were tested in the behavioral assay. The performance of 10- and 30-day old transgenic flies was then compared to the control lines. Several variables were measured: successful attempts, time taken to complete the overall obstacle and edge following behavior. It was observed that the transgenic flies expressing alpha-synuclein had higher number of failures compared to the control lines. Moreover, as the flies aged, they took longer to negotiate the obstacle and complete the task. The edge following behavior was not different between control and transgenic lines however, a general result observed was that the mutant flies were, on average, characterized by slower movements than their control counterparts

Sukhmeet Takhar and Joseph Ross, Ph.D.
sukhmeettakhar@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Mitochondrial-Nuclear Epistasis Causes Developmental Change In C. Briggsae Hybrids

To understand how genetic variation impacts development, one can study a model organism such as the nematode Caenorhabditis briggsae. This microscopic organism has a short generation time and produces hundreds of offspring, allowing us to study the development of a large sample of hybrid siblings. Previous research indicates that mitochondrial-nuclear epistasis effects the C. briggsae hybrids by reducing fitness, possibly by delaying development. These data influenced us to investigate whether hybrids develop slower than their parents. To achieve this goal, we measured the growth rates of cytoplasmic-nuclear hybrids (cybrids), which contain the mitochondrial genome of one parent strain and the nuclear genome of another genetically divergent strain. We collected micrographs of multiple individuals from replicate cybrid lines, as well as from the parent strains, at regular intervals during larval development. We then determined the development rates of the lines and strains by measuring the total length of each individual at each time point. We expected that the cybrid lines would be developmentally delayed; however, only two of the lines, which are biological replicates, show a statistically significant difference in development – and they have a faster development rate than their parents. Because the cybrid lines only genetically differ from the parent strains by their mitochondrial genotypes, our data shows that disrupting mitochondrial and nuclear genetic interactions impacts organismal fitness, but not by delaying development. Future efforts will seek to identify the specific mitochondrial and nuclear genetic variants that are involved in this interaction and to understand the molecular and cellular mechanisms that become disrupted to elicit the cellular- and organismal-level phenotype that affects development.

Sophie Tang and Kammi Sayaseng, Ph.D.
haimingtang@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Fall Incidence In Sd/Icu: A Restrospective Descriptive Chart Review Study

Background/Objective: Among elderly adults in the United States, fall is the number one cause of injury and death. Despite the implementation of fall prevention program, fall incidents continue to happen in the inpatient setting. Fall incidents have caused significant financial burden to the healthcare organizations and many unintended complications among patients. The goal of this project is to identify the contributing factors to falls in inpatient settings.

Methodology: Retrospective chart review will be used to identify fall risk factors and to help combat fall rate in inpatient setting. The project is conducted at Step-down/Intensive Care Unit of the VA Central California Health Care System Fresno (VACCHCS), between the months of January 2016 to December 2018. The author performed case review on 30 fall incidents that happened within the stated timeframe.

Results: The preliminary results have showed age, cognitive impairment, polypharmacy, polymorbidity, and high scores on Morse Fall Scale have associations with fall incidents in the inpatient setting. Further data analysis and results will be discussed in poster presentation.

Conclusion: The project concludes fall incidents in inpatient settings are multifactorial and some are non-modifiable. A successful fall prevention program should be approached from a multidisciplinary approach: ongoing staff and patient education, assessment, and evaluation are necessary.

Noelle Tarazona and Jennifer Roos, PT, DPT, GCS
Jennifer Roos
ntarazona93@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

The Effects Of Physical Therapy For An Adult Who Sustained Multiple Injuries In A Pedestrian Vs. Automobile Accident: A Case Report

Pedestrian traffic collisions accounted for approximately 129,000 United States emergency department admissions in 2015. The traumatic nature of the accidents can lead to prolonged hospital stays, putting patients at an increased risk for decreased strength and reduced pulmonary function due to immobility. Research has shown that early rehabilitation helps to minimize these negative effects. The purpose of this case report is to discuss the effects of physical therapy in an acute care setting for a 66-year-old female who presented with multiple fractures and pulmonary complications secondary to a pedestrian traffic accident. The patient was a 66-year-old Hispanic female admitted to an acute care hospital. Imaging at admission concluded rib, pelvic, and tibial fractures, as well as a pneumothorax. Past medical history included asthma and chronic obstructive pulmonary disease (COPD) as the patient was a daily smoker. The patient received rehabilitation one to two times per day for a total of 14 therapy sessions. Therapy focused on bed mobility, transfers, and ambulation in order to increase independence after discharge. Additional treatment priorities included family training and breathing techniques. By discharge, at least 25% less assistance was required to perform all functional activities, and ambulation distance had increased by 176 feet. The positive effects of early rehabilitation were demonstrated by increased functional independence in an adult who sustained multiple injuries following a traumatic accident. Further progression was limited by pulmonary complications during the patient's hospital stay. Future research is needed to explore the carryover effects of family training, as well as the long-term implications of early mobility-based interventions for the multi-trauma patient population.

Gauhli Thao and David Lent, Ph.D.
Peter Robles
gauhli@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

The Effect Of Deet (N, N-Diethyl-Meta-Toluamide) Analogs On Avoidance Behaviors In Drosophila Melanogaster

The most commonly used insect repellent DEET, while very effective, could be improved for multiple reasons, including: (1) lowering toxicity levels, (2) effectiveness to more broadly avert insects over longer periods of time and (3) improve effectiveness with repetitive exposure. The fruit fly, Drosophila melanogaster, has emerged as a model to investigate DEET alternatives due to the ability to genetically manipulate the neural circuitry and behavior. We used the fruit fly to examine behavioral responses with respect to olfaction, gustation, and habituation. The central issue of this research involves identifying effective repellents that the fruit fly responds to, regardless of mechanism. To investigate this problem, we used gustatory, olfactory and habituation assay, along with Gal4/UAS-shibire system. The gustatory assay, otherwise known as a binary food choice assay, was utilized to determine the effects of the DEET analogs on food choice. The olfactory assay, one-choice and two-choice assay, was used to determine if the analogs effect insect's response via olfaction. The habituation assay, was used to examine if the DEET analogs continue to repel post-exposure. Finally, the Gal4/UAS-shibire system was implemented to study receptor neurons of interest, via temperature-sensitive neuronal inhibition, involved in olfactory and gustatory detection. We found a few DEET analogs that were effective via olfactory signaling pathways, but had little to no response in gustatory assays. There were 4 compounds that were proved effective in the olfactory screens. We also found 4 different compounds that were effective in the gustatory assay. However, the compounds that worked in olfactory screens did not work in the gustatory screens. Currently, the habituation assay and Gal4/UAS system screens are in progress. In the long-term, these techniques will clarify the neural/behavioral mechanisms of fruit flies in contact with repellents, while examining the insect's ability to habituate, and possibly even lead to discovering new insect repellents that continue to repel post-exposure.

Vang Thao and Krish Krishnan, Ph.D.
Jaideep Singh, Krish Krishnan
levithao@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Kinetic Studies Of The Oxidation Process Of Glutathione Using Nuclear Magnetic Resonance Spectroscopy

Glutathione (GSH) is an important cellular anti-oxidant that assists in the neutralization of toxic reactive oxygen species (ROS). Glutathione accomplishes its anti-oxidant function through a redox reaction that produces a disulfide linkage between two glutathione molecules, producing a dimeric structure known as glutathione disulfide (GSSG). The ratio of cellular GSH to GSSG is used to measure oxidative stress, however little information is known about the dynamic physical aspects of the redox reaction that converts reduced GSH to oxidized GSSG. Although redox reactions in water are biologically relevant, the reaction process is much slower in an organic solvent such as dimethyl sulfoxide (DMSO). Our research laboratory has previously showcased that the implementation of DMSO allows the oxidation process of GSH to be observed as a step by step process. This research explores the oxidation mechanism of GSH to GSSG by using quantitative real-time nuclear magnetic resonance (NMR) spectroscopy. To understand the formation rate of GSSG, spectral changes are monitored as a function of time to get kinetic information and as a function of temperature to obtain thermodynamic parameters of the redox reaction. Furthermore, two-dimensional NMR experiment are used to determine the structural configuration of glutathione during the oxidation process.

Jia Jian Tin and Debra Bekerian, Ph.D.
jtin@alliant.edu
Alliant International University - California School of Professional Psychology
Department of Clinical Psychology

The Lawful Good Dragon: Benefits Of Tabletop Roleplaying Games On Children'S Behavior

Table-top Role-playing games (TRPG) refers to role-playing games using dice, paper, and pencil(pen). TRPG involves a Game Master (GM) and a group of players roleplaying as an imaginary character in a fictional world. An increase in media coverage and appearances in trending TV series like Stranger Things resulted in an increase in children participation in TRPG. In 2017, Wizards of the Coast, publisher of Dungeons & Dragons, reported their most successful year, ever. This growth is not limited to leisure activities as there is an increase in the use of TRPGs as a therapeutic tool! Research on TRPGs are focused on its application within the Autistic Spectrum Disorder population and children with social anxiety. However, few studies have investigated TRPGs effect on children's self-regulation skills. This research aims to explore whether engaging in TRPG activities improves children's behavior. TRPG puts players in different social roles allowing children to explore the consequences of their actions, engage in discussion of sensitive topics, and experience the interaction with others, all from a safer position. The study uses the Strengths and Difficulties Questionnaire (SDQ) to gather parent's report on the child's prosocial, externalizing, and internalizing behaviors. Engaging in TRPG activities encourages positive communication between players and a secure environment to explore their emotions. Engagement with other children will likely help children who prefer to withdraw to instead gain a more positive perception of the world around them. Children should be able to pick up these skills in games and transfer them to their daily lives.

Denise Tran and Kammi Sayaseng, Ph.D.
nisetran@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

The Role Of Nurses In Early Recognition And Prompt Intervention Of Sepsis: An Educational Module

Early recognition of sepsis is essential to prevent high mortality and morbidity. Nurses play a significant role in identifying patients with sepsis because they have constant patient interaction. However, studies show that there is a lack of knowledge and competency on the nurses' part to identify and recognize the early signs and symptoms of sepsis. In medicine, there is a continual advancement in understanding diseases, both from a medical and scientific perspective (Kleinpell, 2017). With constant advancements come changes to best practice recommendations. It is vital that nurses stay well informed on these changes. Implementing guidelines and protocols will help guide nurses in improving their early recognition skills and carry out tasks that will need to be executed.

The purpose of this study is to evaluate Family Nurse Practitioner students' knowledge about early sepsis and their ability to implement interventions in a timely matter. The clinical knowledge and skill of nurses is important to this process and in achieving safe patient care. The method that will be used for this study will be a quasi-experimental design. An educational module will be conducted to obtain data analysis on 25 Fresno State Nurse Practitioner students. The result of this project is pending but the percentage of expected students correctly recognizing early sepsis and treatment plan will be 100% on the post test, after the educational module that will be presented.

Reference

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Andreina Trujillo and Karine Gousset, Ph.D.
atrujillo6@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

The Role Of Mitochondrial Dna In Tunneling Nanotubes Formation In Rho Cells

Tunneling nanotubes (TNTs) have been recently discovered as a new essential form of cell-cell communication in multicellular organisms. Although TNTs have been found to be an important cell-cell signaling pathway, its mechanism of formation and functions are still not fully understood.

Our lab has hypothesized that the mitochondria might play a role in TNT formation through the localized production of hydrogen peroxide. Previous studies have shown that exposure to 50 ng/ml of Etbr for 40 days in mammalian cells caused a complete loss of mtDNA resulting in stable Rho 0 cells. Using this approach, I will apply this experimental design to HeLa cells and view the effects on TNT formation once Rho 0 cells have been successfully engineered.

I will determine if Rho 0 cells were successfully engineered by labeling the mtDNA with Quant-it PicoGreen Reagent, which labels dsDNA. The plasma membrane will be labeled with the membrane dye, WGA Rhodamine, to determine the effects on TNT formation. The effects of treatment with EtBr on HeLa cells, on both mtDNA and TNT formation will be assessed every 2 weeks during the process of the HeLa cells becoming stable Rho 0 cells and 2 weeks after HeLa cells have become stable Rho 0 cells.

I have observed HeLa cells every two weeks since starting EtBr treatment and I have started to see an effect on mtDNA. Interestingly, treatment with EtBr, which is stressful for the cells, resulted in an increase in TNT formation, along with a shift of mtDNA from the center of the cells towards the plasma membrane. This is exciting results as TNTs have been shown to be a major intercellular mechanism for mitochondria. The last step will be to assess the effects on TNT formation on stable Rho 0 cells.

Kari Turner and Jennifer Roos, PT, DPT, GCS
ksil2011@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

The Physical Therapy Management Of A 28-Year-Old Female With Chronic Whiplash-Associated Disorder: A Case Report

Over two million Americans are injured in motor vehicle accidents (MVAs) each year.1 Whiplash-associated disorder (WAD) is the most common injury resulting from MVAs, affecting up to 83% of people.2 The purpose of this case report is to evaluate the effectiveness of an individualized physical therapy (PT) protocol including therapeutic exercise, neuromuscular rehabilitation, manual therapy, and patient education for a 28-year-old female with chronic WAD in an outpatient setting.

The patient was a registered nurse with the medical diagnosis of cervicalgia after an MVA 10 months prior. Despite previous PT and chiropractic treatments, the patient experienced recurrent neck symptoms that never fully dissipated. Chief complaint included neck and upper back muscle tightness and pain that caused persistent headaches and an inability to look over her right shoulder. The plan of care included 12 treatments; two times per week for six weeks.

The following outcome measures were used: Neck Disability Index Questionnaire (NDI), Numeric Pain Rating Scale (NPRS), range of motion (ROM), and manual muscle testing (MMT). Interventions included therapeutic exercise, manual therapy, patient education, and neuromuscular rehabilitation techniques. After 11 treatments, goals for cervical ROM, MMT scapular strength, and improved postural alignment were met. Outcomes included a six-percentage point reduction in NDI, a MCID of three-points in the NPRS, full cervical ROM, and 5/5 MMT scapular strength.

The results suggest an individualized PT protocol may be efficacious in the treatment for chronic WAD. Future research into neuromuscular rehabilitation techniques for patients with chronic WAD and their effectiveness should be considered.

Melody Van Allen and Neelam Chanda, Ph.D.
ordiezona@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Cair To Prevent Vaccine Errors

ABSTRACT

Background: Safe vaccine administration practice requires an efficient multi-step process that follows a standard schedule. The California Immunization Registry (CAIR) is a lifespan, population-based web application containing consolidated immunization records for nearly all Californians. One function of CAIR is the ability to validate immunization history and provides immunization forecasts for shots due and past due.

Objective: To find out if there was a decrease in vaccine errors between 2014 & 2018 after implementing a procedure to verify CAIR before administering a vaccine.

Methods: This retrospective study will compare the average rate of errors that occurred in 2014, before a procedure was in place to the average rate of errors in 2015-2018 after implementing the procedure to verify CAIR prior to administering a vaccine.

Results: In 2014 there was an average of eight vaccine errors reported per month. After implementing a procedure to check CAIR, findings showed the average number of errors reported in 2015-2018 was less than eight.

Conclusion: This study is important because, vaccine errors can lead to harm especially in vulnerable populations. The information obtained from this study can assist in future performance improvement activities within this Rural Health Care setting.

Justin Vang and Krish Krishnan, Ph.D.
Cheenou Her, Jaideep Singh
yasxayas@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Understanding The Effects Of Sucralose On Invertase And β-Galactosidase Catalyzed Hydrolysis By Nuclear Magnetic Resonance Spectroscopy

Sucralose is an artificial sugar and a derivative of sucrose by the replacement of three hydroxyl groups on C1' and C6' of β-D-fructose and C4 of β-D-glucose. Sucralose was initially thought to be a biologically inert molecule, passing through the body almost entirely intact. However, current research has suggested that sucralose decreases the stability of whey protein isolate, inhibits transmembrane transport and reduces enzyme catalysis. The purpose of this research is to measure the kinetics of enzymes, invertase and β-galactosidase, better understand why sucralose acts as a competitive inhibitor. We speculated that sucralose acts as a competitive inhibitor because its structure contains glycosidic oxygen bonded to a C1 carbon of a β-D-galactose derivative and a C2 carbon of aββ-D-fructose derivative. Because these two bond linkages are very similar to the target cleavage site of the enzymes invertase and β-galactosidase, we test the kinetic parameters of those enzymes in the presence of sucralose. However, our results suggest that the glycosidic bond linkage may not be the primary target of interest. To further test the mechanism for which sucralose is acting as a competitive inhibitor, we employed disaccharides trehalose and maltose that contain a similar structure with differing glycosidic bond linkages.

We test the enzyme kinetics of invertase and β-galactosidase by using nuclear magnetic resonance (NMR) spectroscopy to obtain the rate of change of substrate conversion as a unit of concentration in real time. This rate of change is studied using methods of initial rate analysis and progress curve analysis to obtain the kinetic parameters, KM and Vmax, of the enzymes. These parameters are then fit into the competitive inhibition model to get sucralose's inhibition constants for both invertase and β-galactosidase.

Feiling Vang and Kristi Closser, Ph.D.
Betsabe Ollervides
f_vang@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

A Comparative Study Of The Photoexcited States Of Phenylurea Heribicides

Photodegradation is one of the primary abiotic mechanisms by which organic molecules can break apart. In the Fresno area, a large quantity of these herbicides are used every year and can affect the environment, particularly through the water supply. After they serve their purpose, herbicides themselves can cause soil and water contamination and they also degrade through many different pathways producing products which are potentially more toxic than the parent compound, presenting health risks to humans and the environment. In this project, we calculated the excited states and initial forces of five different phenylurea herbicides (diuron, isoproturon, fenuron, chlorotoluron, and metobromuron) using quantum chemical methods to help predict how these molecules degrade. The calculations were done using Q-chem, a commercially available software package using density functional based methods with Gaussian basis sets (6-31G* and 6-31+G*). We found many similarities between these molecules but also some very interesting differences. Ultimately, if we can accurately predict photodegradation products for a given class of molecules, this can potentially lead to developing safer but effective alternatives for widely used pesticides.

Matthew Vang and Ulrike Müller, Ph.D.
Alex Buenrostro, Lukyon Mendrin, Jose Ramos
matthewvang@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Do Vertebrae And Long Bones Scale Differently Based On The Different Types Of Stress They Experience?

Large animals have bones that are not only larger but have a different shape from those of small animals. This change in bone shape with increasing body size is a response to the increase in body mass and hence the mechanical loads that the skeleton has to bear. How the shape of a particular bone changes with body size depends on the type of stress that is most likely to break that bone, whether it is bending (such as a leg bone) or compression (such as the spine). Different pressures act on long bones, such as the femur, which deal with bending stresses because they are more prone to bending because they are long, while vertebrae are more prone to compression stress due to gravity. Previous studies have focused on determining how a particular bone scales with size, but have not compared different bones. We hypothesize that long bones exhibit so-called elastic scaling (length increases with mass0.25), and that compact bones exhibit compression scaling (length increases with mass0). Our null hypothesis is that shape does not change with body size (geometric scaling; length scales with mass0.33). In this study, we measured the mass, length, and diameter of ten different bones, including four different long bones, the mandible, and vertebrae, in order to determine how their length and diameter scale with bone mass. We found that most bones showed geometric scaling - their shape did not change with size. This finding implies that the bones of larger animals are more likely to break because their load bearing ability is lower than that of small animals. This study helps us understand how biological structures accommodate mechanical stress.

Victoria Vang and Victoria Vang, Ph.D.
victoriaj1@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
School of Nursing

Breast Cancer Awareness In College Students

The purpose of this project is to evaluate the attitudes, beliefs, and awareness towards breast cancer in first semester Bachelor's in Science, Registered Nurse students at California State University, Fresno. Learning will be evaluated by administering a pre and post-test along with a PowerPoint presentation regarding the subject. The results are pending project completion. Potential benefits will include these future RN students to have a better understanding of the breast cancer screening and promote awareness. My study design will be both quantitative and a questionnaire. My goal after this is to hopefully open the college students' eyes and remind them to take care of themselves during this difficult but rewarding journey they are on so they can educate their patients.

Dominic Vieira and Jiaochen Liang, Ph.D.
Jiaochen Liang
dvieira1@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Agricultural Business

The Effects Of Housing Price And Labor Market On Commodity Prices: New Evidence From The San Joaquin Valley

This research focuses on the impacts of housing prices and labor markets on agricultural commodity prices. Recent literature suggests close relationships between agricultural commodity prices and local economic conditions. For example, real estate asset markets are directly associated with farmland values and can therefore influence agricultural production costs. Turbulence in local labor markets can also affect the supply, costs, and productivity of labor in the agricultural sector. This study investigates these relationships using empirical data from the San Joaquin Valley of California, which is an important agricultural production center of almonds and walnuts in the US. Specifically, cointegration analysis and the Granger causality test are used to investigate monthly data from real estate markets, labor markets, and almond and walnut prices of the San Joaquin Valley. Both national and local level data from the housing and labor markets are analyzed, and the results are compared. The empirical results suggest that while most of the real estate and labor market related indicators have significant long-term cointegration relationships with agricultural commodity prices, local economic variables- especially local real estate asset prices and employment factors- have the most prominent causality impacts on the major commodity prices of the San Joaquin Valley. The results provide new insights on the relationship between asset prices, commodity markets, and regional economic volatility.

Miguel Villarreal and Amber Hammons, Ph.D.
Regina Perez-Carranza
miguelhmc1@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Food Science and Nutrition

Healthier Campus Initiative-Menu Labeling And Healthier Eating

Introduction: The National College Health Assessment surveyed more than 80,000 US college students and found that 30% of them were overweight or obese based on self-reported height and weight. Overweight and obesity may increase the risk of many health problems, including diabetes, heart disease, and certain cancers. Additionally, the foods we choose can have a profound effect on energy, concentration, and memory because the body and brain need appropriate nutrition to function properly.

Objective:To assess college students' attitudes on the importance of healthy eating, the importance of designating healthy food as healthy, and the likelihood of using a healthy icon in their decision-making process when purchasing food.

Method:A random sample of 2,500 students were electronically emailed a brief survey in August 2018. The survey included five close-ended questions and one open-ended question.

Results: Approximately 12% (n=310) of the students responded to the survey. Eighty-seven percent of the sample felt that labeling healthy food as healthy was important. Forty-eight percent of the respondents said it was very likely that they would use the healthy icon in their decision making when purchasing food. Almost every 2 out of 3 (64%) respondents said that they would regularly look for foods with the healthy eating icon, with ninety-five percent of the sample saying that they would sometimes (44%) to regularly (52%) purchase the foods with the healthy eating icon.

Conclusion: Nearly all respondents stated that healthy eating was important to them. This number supports other studies that state that students are aware of the importance of healthy eating but feel that their campus doesn't tailor to healthier eating. The findings from these studies suggest that there needs to be more campus efforts into identifying healthier eating options, starting with menu labeling.

Malshana Wadugurunnehalage and Ajith Weerasinghe, Ph.D.
malshan@mail.fresnostate.edu
California State University, Fresno - Lyles College of Engineering
Department of Mechanical Engineering

Standardizing On Energy Storage Technologies In Electric Vehicles

The field of energy storage technologies in Electric Vehicles (EV) is rapidly developing. In particular, the energy storing capacity and the number of charging cycles (which are together indicative of the useful life of an EV battery) have become key factors for obtaining market demand in the automotive industry.One area of concern is the environmental impact caused by the development of such battery technologies. The importance of standardization in the development of different energy storage technologies is discussed in this proposal as a promising solution to this problem. Possible pathways to introduce EV Battery Switching Stations and reliable recycling strategies will be discussed in this project. In particular, the effect standardized EV batteries have on battery switching strategies will be demonstrated and the results discussed. The extended use of battery storage technologies that are a result of the "Electric Vehicles to Photovoltaic" concept will be discussed. The energy usage of EV battery models are calculated and methods of utilizing an Internet of Things (IoT) -based embedded system to increase the system effectiveness are discussed.Proposed work will be timely managed and further development of work will be discussed at the end.

Jamie Waite and Hubert Muchalski, Ph.D.
Karina Bustos, Alex Ewing
waitejamie1555@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Chemistry

Substrate Scope Studies Of The Gold(I)-Catalyzed Synthesis Of 2,3-Disubstituted Benzofurans

Benzofurans are members of oxygen-containing heterocycles composed of a benzene and furan ring fused together. Many compounds of biological significance such as dronedarone, amiodarone, Naloxone, and many opioids contain benzofuran as part of their structure. While there are several methods to synthesize benzofurans, the stoichiometric reagents required are very expensive in large quantities. In contrast, catalytic methods that use transition metals are significantly more efficient; however, they require high catalyst loading, a drawback which allows for further improvement. Recent discoveries in our research group suggest that benzofurans can be synthesized via cyclization reaction of 2-alkynyl ethers. The reaction proceeds smoothly with only 0.5 mol% of gold(I) catalyst, an approximately 10-fold improvement over existing catalytic methods. This project's goal was to test the substituent scope allowed when synthesizing benzofurans with this novel method. To this end, the Sonogashira cross-coupling reaction was used to synthesize six substrates with varying substituents (varying between electron-rich and electron-poor groups). The model compounds were purified by flash column chromatography and characterized by NMR and IR spectroscopy. Each model substrate was subjected to gold(I)-catalyzed cyclization reaction to investigate structure–reactivity relationship. The conversion of the starting material was measured using quantitative NMR spectroscopy and each product was isolated by flash chromatography and characterized by spectroscopic methods (1H NMR, 13C NMR, and IR).

Ben Warmerdam and Kuang Chen, Ph.D.
bwarmerdam@mail.fresnostate.edu
California State University, Fresno - Sid Craig School of Business
Department of Business Finance

Pet Company Stock Portfolio

The objective of this project is to create a portfolio of businesses that are involved in the selling, caring, or service of pets. The portfolio will be arranged dependant upon market share, revenues generated from operations involved with pets, and future outlook. This project will hopefully provide insight and guidance to investors looking to invest in the pet industry.

Reina Warnert and David Lent, Ph.D.
Reo H. Maynard
rmwarnett@mail.fresnostate.edu
California State University, Fresno - College of Science and Mathematics
Department of Biology

Visual And Olfactory Navigation In The Carpenter Ant, Camponotus Essigi

Camponotus essigi ant colonies are found in wooded environments and foragers tend to be solitary, establishing their own unique routes. The combination of foraging method and environment suggest that these ants would not benefit from using pheromone trails for route guidance. Other species that occupy similar environments and forage in a similar manner are known to rely mostly on visual cues for navigation. However, how C. essigi use visual cues and possible odor cues to navigate is mostly unknown. Our goal was to identify how they used

different visual features to guide their routes, and whether center of mass was a main guiding feature. We trained colonies to navigate approximately 1 meter to the base of a black cylinder and associated it with a sucrose food reward. To narrow down the visual mechanism, we tested with a changing landmark to see if they still navigated using center of mass. When presented with a novel landmark (black cone) ants still sought it out and searched at the base of it for the sucrose reward. We also examined if they learned other visual features of the training object. When tested with both landmarks (cone and cylinder), ants showed a preference for the trained landmark, demonstrating that their visual navigation including not just center of mass, but also multiple features such as edges or peaks. Next, we examined if during foraging ants established pheromone trails in conjunction with visual navigation. We allowed the ants to habitually forage over a week without a visual cue, then observed whether they returned directly to the food source, which it appeared they did not. Individuals followed their own independent and distinctive routes, indicating that odor trails are not used for navigation. Our data suggests that carpenter ants can discriminate between multiple characteristics of visual landmarks and use those characteristics for route navigation and that they do not use pheromone trails.

Troy Watson and Deify Law, Ph.D.
troywatson93@mail.fresnostate.edu
California State University, Fresno - Lyles College of Engineering
Department of Mechanical Engineering

Aerodynamic Drag Measurements Of Flow Around A Cylindrical Rod In A Wind Tunnel Setting

The purpose of this project is to measure the aerodynamic drag of an object, such as a cylindrical rod, in a wind tunnel setting. Drag is the force felt by the cylindrical rod in the direction that the air is moving in the wind tunnel. Drag is measured using a strain gage, which is a sensor that converts force into an electrical resistance that varies based upon the amount of force being applied. The sensor is wired to a strain indicator that reads the sensor value as a numerical value that can be recorded for analysis. To relate strain readings to a force value for analysis, known weights are suspended from the rod. The strain reading and corresponding weight are recorded to create a calibration equation to relate all necessary strain and force values. These readings along with the wind speed and rod dimensions are used to calculate the drag coefficient of the cylindrical rod. The drag coefficient is a dimensionless quantity used to represent drag on an object. Preliminary testing shows that there is a strong correlation between the experimental drag coefficient and the published drag coefficient of the rod at higher wind speeds in the wind tunnel. The experimental drag coefficient of the rod is estimated to be 2, while the published data suggests a value of 1.5. The published figure is a theoretical number that does not account for real world conditions. In conclusion, this project demonstrates that the drag measurement system is functional and the measured drag coefficient is in good agreement with the published drag coefficient.

Taelor Wells and Albert Valencia, Ph.D.
twells20@mail.fresnostate.edu
California State University, Fresno - Kremen School of Education and Human Development
Department of Counselor Education and Rehabilitation

Campus Climate And Intimate Partner Violence: Applying A Primary Prevention Approach To Raise Awareness And Promote Prosocial Behaviors

Intimate partner violence (IPV) remains a prevalent issue on college campuses, with 27% to 55% of college students reporting sexual assault perpetration alone. Due to the complex nature of IPV and the limited amount of research on this phenomenon, previous findings have been mixed with respect to effective interventions to treat this issue. The purpose of this project is to address existing gaps in the literature by implementing a preventative approach to the problem of IPV on college campuses. The author of this project developed a 45-minute presentation to provide psychoeducation on IPV and prosocial behaviors intended for undergraduate student populations. To determine the adequacy of the presentation, a pilot study was conducted using a sample of eight graduate students enrolled at a large-size public university in the western United States. Participants viewed the presentation and completed a pre-test and post-test consisting of three measures: knowledge on IPV and related topics, level of rape myth acceptance (RMA), and perceived bystander efficacy. A series of paired samples t-tests were run to determine if scores changed significantly from the pre-test to the post-test. The results revealed significant change in participants' scores from pre-test to post-test for all three measures. Despite the small sample size, the results from this pilot study provided useful information to improve the content included in the presentation. In addition to college students, the findings from this project produce several implications to benefit victims of IPV, perpetrators of IPV, university faculty and staff, medical professionals, mental health clinicians, and all individuals who are at risk of IPV.

Emma Willis and Jessica McKenzie, Ph.D.
Jessica McKenzie
emmakwillis@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Child Development and Family Studies

Finding Their Voice: Support For Pregnant Teens Encourages Self-Reliance, While Judgement Silences

California's Central Valley has one of the highest teen pregnancy rates in the state (Anderson, 2016). Research on teen pregnancy tends to focus on the negative impacts for these young women, such as emotional and social isolation, lack of resources, low graduation rates, and a continuing cycle of poverty. However, we do not know how teen pregnancy impacts individuals, specifically the pregnant teens themselves. We do not know from their perspective what challenges they faced and how they overcame them. Qualitative, strength-based research is essential to develop an intimate understanding of their experiences and of their resilience.

To achieve this goal, we conducted a comparative case study of three women between the ages of 18 and 25, each of whom were pregnant before or at age 19. To learn how these young women construct their pregnancies and how their experiences affected them as youth and now as adults, each participant completed an initial survey and in-person interview. Interview questions pertained to the support and resources they receive as pregnant youth, their life after pregnancy, and how their relationships changed over time.

Through a qualitative analysis of these interviews, themes of judgment and fear of judgement affecting self-worth, lack of and desire for support, the benefits of supportive relationships, and resilience and self-reliance were found in each case. The findings of this study indicate that social and familial support encourage and strengthen pregnant teens' self-reliance. When they desire support yet do not seek it out in fear of judgement, a pregnant teen is forced to be self-reliant, which creates isolation and fear creating even greater need for support that they cannot reach. Societal stigmatization - including in academic research - serves to perpetuate the cycle of isolation and toxic self-reliance. With support and empathy, though, pregnant teens develop empowering self-reliance and resilience.

Kajai Xiong and Jessica McKenzie, Ph.D.
Jose Reyes, Alysia Corona, Chelsee Armsworthy, Jessica McKenzie
cassiexiong97@mail.fresnostate.edu
California State University, Fresno - Jordan College of Agriculture and Science Technology
Department of Child and Family Science

Transformation And Maintenance Of Moral Values In A Globalized World: Perspectives Of Sex Work Among Adolescents In Two Thai Communities

How do moral values transform as a result of globalization-based cultural change? This interview study addressed this question by examining the moral reasoning of 20 Thai adolescents in each a globalized city and a rural village when discussing the culturally salient moral issue of sex work. An inductive thematic analysis revealed three themes:

Female Chastity: Rural and urban adolescents suggested that sex workers violate cultural norms of female chastity and purity. The perceived function of female chastity, however, diverged across cultural lines. Rural adolescents framed female chastity as important because it heeds Buddhist teachings, while urban adolescents framed female chastity as a requisite for women to receive romantic love.

Reputation: Rural and urban adolescents framed sex work as a shameful job that threatens reputation. The focus of whose reputation is threatened, though, varied across communities. Rural adolescents overwhelmingly focused on the shame that sex workers bring to their family, while urban adolescents focused on the shame that sex workers bring to the country.

Choice: Urban adolescents emphasized choice and agency - suggesting both that sex work is unacceptable because there are other job choices, and that it is acceptable as long as the sex worker chooses this line of work. Rural adolescents seldom discussed choice and agency. When they did, sex work was framed as acceptable only when done to benefit one's family (not the self). Choicefulness as a moral good differs across cultural communities.

While community-based virtues of reputation and purity were prioritized across contexts of globalization, the framing and function of these virtues varied. Findings further suggest that autonomous virtues of agency and choice are key virtues in the globalized urban city, but not in the rural Thai village. This study points to how moral values are simultaneously maintained and transformed in the face of globalization-based cultural change.

Janelyn Jade Young and Jennifer Roos, PT, DPT, GCS
Monica Rivera
jjadeyoung@mail.fresnostate.edu
California State University, Fresno - College of Health and Human Services
Department of Physical Therapy

The Effect Of Acute Care Strengthening And Endurance Intervention On A 92-Year-Old Woman With Congestive Heart Failure And Dementia: A Case Report

A person has a 50% chance of mortality within five years of being diagnosed with congestive heart failure. Congestive heart failure is a growing epidemic affecting the elderly population in the United States and can potentially lead to cognitive impairments such as dementia. At this time, there is insufficient evidence to demonstrate if physical therapy intervention can slow the progression of congestive heart failure or dementia when present in a patient concurrently. The purpose of this case report is to identify the effects of a strengthening and endurance program on potentially slowing the progression of congestive heart failure and dementia in an acute care hospital. A 92-year-old Caucasian woman presented with generalized weakness, shortness of breath, fluctuating cognition, and an extensive past medical history. Physical therapy was prescribed for a 30-45-minute session, every day for one week. Strengthening and endurance programs were used to allow safe mobility and to improve walking distance. Her goals were to sit to stand with a front wheeled walker, increase lower extremity strength, and walk with a front wheeled walker for 100 ft. The patient was able to participate in 5 days of therapy and progressed in all physical goals set. She was able to perform more strengthening exercises, increase strength in her lower extremities, and ambulated a farther distance. However, her cognition declined throughout her hospital stay. The intervention improved the patient's physical endurance and strength; however, it had no effect on slowing the progression of her dementia. Physical therapy can potentially assist with functional limitations caused by congestive heart failure but may not help with dementia when other medical conditions are present.

Shervin Zoghi and Saeed Attar, Ph.D.
Dariush Bazyani
shervin.zoghi@mail.fresnostate.edu
California State University, Fresno - Lyles College of Engineering
Department of Mechanical Engineering

Drivers Of Healthcare Disparities And Potential Solutions For Underserved Populations

The United States healthcare system is burdened with health disparities that threaten one's health equity. These disparities stem from a multitude of factors, including socioeconomic status, insurance rates, and geographic access to medical care. For example, the academic literature routinely documents insurance status as a strong predictor of diagnostic cancer screening and disease progression post-treatment. It has been the intent of this project to analyze the impact of key variables on perpetuating these conditions. Preliminary analysis shows a strong correlation ($p<0.05$) between markets, labor unions, and poverty, on health and social problems. One of the solutions is to ensure that the medicaid expansion program is passed in all 50 states. This applies to people that fall within 138% of the federal poverty level, which constitutes the overwhelming majority of the 25% of Americans who are uninsured or underinsured. People can pursue preventive care rather than emergency care, for issues ranging from the common cold to something as complex as cancer. The data shows that bypassing the hospital system means not only better health outcomes, but also lower costs due to the bureaucracy of bloated hospital and insurance systems. By analyzing the costs and benefits through the prism of the statistical model, we believe that expanding coverage and resources as a right of all Americans ensures better health outcomes.