BUILD

CSULB

BUILD SUMMER SYMPOSIUM

BOOK OF ABSTRACTS

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LONG BEACH

JULY 29, 2016

SESSION 1

AUTHOR	MENTOR	TITLE	PAGE NO.
Aburub, Kadisha	Dr. Judy Brusslan	Determining the Role of an *Arabidopsis Thaliana* Urea Transmembrane Transporter in Leaf Senescence	2
Alfaro, Kenya	Dr. Robert Shug	Study of the correlation between EEG signal patterns and total convictions	13
Allen, Johnridd	Dr. Robert Shug	The Effects of Traumatic Brain Injury on Working Memory	6
Altamirano, Vanessa	Dr. Courtney Ahrens	Factors that Facilitate Mexican-American Women's Decision to Stay in an Abusive Relationship	8
Alvarado, Carlos	Dr. Editte Gharakhanian	Study of Role of Env7 and Yck3 in Autophagy Process in *Saccharomyces cerevisiae* using Phloxine B: Viability Assay	2
Arevalo, Natalie	Dr. Shadnaz Asgari	A Noninvasive Approach to Intracranial Pressure Measurement	14
Argame, Matthew	Dr. Jennifer Ostergren	Survey of the Homeless Community in the City of Long Beach: A Preliminary Analysis	7
Ari, Selin	Dr.Courtney Ahrens	Rape Survivors' Opinions About Services and Contact With Rape Crisis Centers	14
Avila, Tatiana	Dr. William Pedersen	Aggressing Against the Innocent: The Impact of Rumination on Displaced Aggression Towards Ingroup and Outgroup Targets	13
Barajas, Maria	Dr. Araceli Gonzalez	Does Acculturation Moderate the Relationship Between Parental Psychological Control and Depression and Anxiety for Young Adults?	3
Bhakta, Krishan	Dr. Joshua A. Cotter	Muscle Fiber CrossSectional Area is Unaffected 14 Days After A Clinical Dose of Radiation	17
Bryant, Amanda	Dr. Jesse Dillon	Assessing the Effects of Sea Level Rise on Coastal Salt Marsh Decomposers	16
Chau, Noel	Dr. Jason Schwans	Investigating Substituted Phenols as Inhibitors for Cholinesterases	7
Chetsawang, Jason	Dr.Douglas A Pace	Assessment on *Toxoplasma gondii* Invasion and Survivability in Different Ionic Environments	9
Curiel, Lizette	Dr. Deborah Fraser	Investigating Lysosomal Maturation In Macrophages During Clearance Of Atherogenic Lipoproteins	12

SESSION 1

AUTHOR	MENTOR	TITLE	PAGE NO.
Dang, Hoang	Dr. Kensaku Nakayama	The Syntheses and Study of Potential Catalysts for the Kabachnik-Fields Reaction Using Chiral Diols as Auxiliaries	4
Daniels, Paul Marc	Dr. Amy Wax	The Effect of Sleep on Relationships within Work Teams	15
Dunne, Lauren	Dr. Guido Urizar	The Influence of Collectivism on the Relationship Between Ethnicity and Physical Activity in Low-income Mothers.	17
Ema, Yeasmin	Dr. Barbara Grossman-Thompson	Nepali Migrant Labor: Literature Review and Preliminary Data Comparison	18
Esqueda, Genesis	Dr. Roger C. Lo	Synthesis of Alginate Microbeads for Biomedical Applications	1
Feri, Micah Mae	Dr. Kevin Sinchak	G protein-coupled estrogen receptor 1 is found on the plasma membrane and cytoplasm of tissue from the arcuate nucleus of the hypothalamus	18
Gagan, Joshuah	Dr. David Stout	Manufacturing of Artificial Tissues using Hybrid Biomaterials and a Low-Cost Three Dimensional Printer	9
Garcia, Melany	Dr. Selena Nguyen-Rodriguez	Insomnia and Self-Rated Health among Clinically vs. Non-Clinically Depressed Cancer Survivors who underwent Chemotherapy	5
Goh, Vivianna	Dr. Long Wang	Fueling Adolescent Elite Figure Skaters for Optimal Health and Performance:A Literature Review	10
Gomez, Zaira	Dr. Judy Brusslan	The Role of a Defense Protein (At5g48657) and a Peptide Transporter (At5g46050) During Leaf Senescence	19
Grosvirt-Dramen, Adam	Dr. Roger Lo	A 3D-printed Microfluidic Device for Alginate Microbead Synthesis	1
Harris, Jason	Dr. Ehsan Barjasteh	Integration of Bragg Fiber Optic Sensors for Strain Detection in Structures Composed of PEEK Composites	11
Huynh, Jessica	Dr. Deborah Fraser	C1q Increases Efferocytosis of Apoptotic Cells by Macrophage Foam Cells	19
Jackson, Alexandrea	Dr. Christiane Beyer	Assistive Glove for Hemiparesis Patients	6

SESSION 1

AUTHOR	MENTOR	TITLE	PAGE NO.
Manoogian, Adam	Dr. Arturo Zavala	Oxycodone Reward in Male and Female Adolescent Rats: Effects of Dose	3
Park, Eun Ae	Dr. Young-Seok Shon	Gold nanorods; A Nanometer-sized alternative treatment for cancer	16
Torres, Michael	Dr. Erlyana Erlyana	Health seeking behavior for Children of Latino and Cambodian migrant families residing in Long Beach: A literature review	5

SESSION 2

AUTHOR	MENTOR	TITLE	PAGE NO.
Cheong, Rudolph	Dr. Deborah Fraser	Characterizing Differences Between C1q Sufficient and C1q Deficient Macrophages	24
De Orla-Barile, Marian	Dr. Mohammed Forouzesh	What Areas to Study in Biomedical Engineering: A Multidisciplinary Challenge for Students	25
Johnson, Preston	Dr. Lindsey Sterling	Investigating the Relationship Between Cognitive Flexibility, Rumination and Depression in Adults with Autism Spectrum Disorder	23
Kakutani, Leesa	Dr. Paul Weers	Design of an apoLp-III/apoE-CT chimera	35
Lam, Laurel	Dr. Feborah Fraser	Investigating Modulation of Cell Death by Innate Immune Protein C1q	27
Leyba, Katherine	Dr. I-Hung Khoo	Biofeedback Device for Gait Rehabilitation: A Validity Test	23
Lin, Stephanie	Dr. Virginia Gray	Impact of a Six-Week Nutrition and Physical Activity Intervention for Low-Income Parents	28
Liska, Hannah	Dr. Robert Schug	Length of Homelessness as a Predictor of Cognitive Impairment in the Frontal Lobe	27
Ly, Quang(Leo)	Dr. Ted yu	The Proposal to Determine the Structure of Tetrasodium Rhodizonate	22
Maldonado, Jairo	Dr. Panadda Marayong	Design Improvements of a Vibrotactile Device for Rehabilitation of Persons with Lower-limb Amputation	33

SESSION 2

AUTHOR	MENTOR	TITLE	PAGE NO.
Sollenberger, Nathan	Dr. Arturo Zavala	Methylphenidate Exposure Enhances Oxycodone Reward in Male and Female Adolescent Rats	38
McNeill, Juvonne	Dr. Zachary Dubois	A Literature Review Examining Social Support and Mental Health Among Gender and Sexual Minorities	25
Ngo, Sang	Dr. David Stout	Novel Technique of Changing Porosity in Three Dimensional Printing Bone Structure and its Biocompatibility to Osteoblast Cells	29
Nieto, Nicholas	Dr. Jason Schwans	Evaluating Sulfur-Containing Organo Phosphates as Selective-Inhibitors of Butyrylcholinesterase	34
Nilakantan, Shiva	Dr. Ehsan Barjasteh	Exploring the Isothermal Degradation of Polybenzoxazines Materials	34
Pardo, Paulina	Dr. Deborah Fraser	Investigating Cholesterol and Triglyceride Levels in Mouse Models of Atherosclerosis	39
Patel, Salina	Dr. Kevin Sinchak	Subpopulation of β-endorphin neurons in the arcuate nucleus of the hypothalamus of female rats express progesterone receptor	21
Pham, Trong	Dr. Young-Hee Cho	The Role of Rumination in Mediating Depressive Symptoms and Gait Performance	36
Phun, Vicky	Dr. Gino Galvez	Examining the Relationship Between Freshmen Students' Interest in Science and Expected Performance Within a Science Course	29
Pittman, Patricia	Dr. H. Isabella Lanza	Does Self-Control Moderate the Relationship Between Stress and Depression in College Students?	37
Ramos, Layla	Dr. Houng-Wei Tsai	Sexually Dimorphic Expression of Calbindin Neurons in the Non-reproductive Regions of the Mouse Forebrain	30
Richard, Chyann	Dr. Michelle Barrack	Validation of a Nutrition Screening Survey to Identify Nutritional Risks Associated with the Female Athlete Triad	38

SESSION 2

AUTHOR	MENTOR	TITLE	PAGE NO.
Rodriguez, Patsy	Dr. Courtney Ahrens	The Barriers that Affect Mexican-American Survivors' Decision to Stay in an Abusive Relationship	35
Rodriguez, Roberto	Dr. Young-Seok Shon	Conjugated Gold Nanorod-Graphene Oxide Hybrids as Theranostic Agents for Cancer Treatment	24
Rodriguez, Tania	Dr. May Ling Halim	Cross-Cultural Comparison on Gender-Typed Appearances in Korean and American Children	30
Tanner, Shai	Dr. Houng-Wei Tsai	Effects of Sex and Age on Eif2s3x and Eif2s3y Expression in the Developing Mouse Cortex and Hippocampus	31
Thai, Edward	Dr. Ted Yu	Dissolvable Energy Sources for Dissolvable Medical Devices	37
Vasquez, Nancy	Dr. Nancy Hall	Long-range Coarticulation: A Study of /r/ and /l/'s Effect on Preceding Vowels in American English	32
Walker, Tian	Dr. Zachary Dubois	Psychosocial Stress Experience Among Transgender Men: Gender Affirmation and Social-Identity Management Early in Transition	26
Watts, Landon	Dr. Stephen Mezyk	Trichloramine Reactivity with Amino Acids Under Wastewater Treatment Conditions	21
West, Jazmine	Dr. Michelle Barrack	Prevalence and Predictors of Disordered Eating Among a Diverse Group of College Freshmen	32
Yao, Author	Dr. Erlyana Erlyana	Assessing the Knowledge, Perceptions, and Practices in Advance Care Planning: A Comparison between American and Japanese Physicians	33

SESSION 1

1. A 3D-printed Microfluidic Device for Alginate Microbead Synthesis.

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The biocompatibility of alginate makes it a viable candidate as a vehicle for drug delivery. Sodium alginate instantaneously reacts with calcium chloride to form a hydrogel in a process called crosslinking. The goal of this study is to design a microfluidic chip capable of continuously producing alginate microbeads of uniform shape and size. Our chip is 3D-printed to decrease manufacturing time. We designed a cylindrical microfluidic chip using SketchUp and printed it with a commercial acrylic resin using the digital light processing (DLP) technology. The chip was printed with 0.8mm diameter channels. The sodium alginate solution and the oil were loaded into the microfluidic chip using separate syringe pumps at 5 mL/hr for the alginate flow stream and 50 mL/hr for the oil flow stream. The emulsion enters a calcium chloride solution where the hydrogel beads form. Preliminary results show success in bead formation. The next step is to characterize bead size using ImageJ and identify and optimize the operation parameters such as flow rates and chip dimensions. Further research includes testing effect of flowrates on bead size, automation of bead synthesis, new materials to print our chips, and bead efficiency as drug delivery devices.

Keywords: alginate, microfluidics, microbeads, 3D printing

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2. Synthesis of Alginate Microbeads for Biomedical Applications.

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Microbeads have found applications in various areas, such as separation science, chemical catalysis, and drug delivery to capture targets of interests for diagnosing diseases. Microparticles provide spatial control by allowing minimally invasive delivery to a patient's target site and, through the flexible size selection, an adjustable surface area per unit volume can be tailored for desired applications. We seek to miniaturize the microbead assay alginate particle synthesis onto a microfluidics-based system, which can provide good process control on particle size and shape. We tested the synthesis of alginate microparticles by suspending sodium alginate mixture in oil into a calcium chloride solution via 3D printed acrylic microchip. Various methods have been used to produce microparticles, including hydrodynamic techniques and controlled surface nucleation. However, these methods are not time efficient and costly. With a microreactor, running a synthesis reaction it will be simple, yielding a large amount of desired product under a reasonable period of time. We aim to design and construct a microfluidics-based system that can perform automated synthesis in a simple, one-step process by employing 3D printing and Py-LAB automation.

3. Determining the Role of an *Arabidopsis thaliana* Urea Transmembrane Transporter in Leaf Senescence.

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Leaf senescence is the final stage of leaf development in which nutrients from older tissues are transported to growing plant tissues. Senescence is induced by stress or aging. A greater understanding of leaf senescence can be used to improve crop yield. Our lab looks at a subset senescence up-regulated genes (SURGs) that accumulate trimethyl marks on histone 3 lysine 4 (H3K4me3) in parallel to changes in gene expression (K4-SURGs). The K4-SURG of interest is At5g45380, which encodes a urea transmembrane transporter. Urea is a nitrogen-rich compound that could play a role in nitrogen recycling during leaf senescence. Two T-DNA insertion lines disrupt this gene, SALK_04064 and SALK_036318. One of the lines, SALK_040674 is a confirmed homozygous mutant, while homozygous SALK_036318 lines are still being identified. The SALK_040674 line was confirmed by DNA extraction and PCR amplification, with primers that flank the insertion site. Amplification of cDNA using specific primers confirms the loss of gene expression.

Key Words: Senescence, K4-SURG, *Arabidopsis thaliana*

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4. Study of Role of Env7 and Yck3 in Autophagy Process in *Saccharomyces cerevisiae* using Phloxine B: Viability Assay.

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One important function of the vacuole in *Saccharomyces cerevisiae* is the regulation of autophagy. When faced with stressful situations, such as starvation, vacuoles will respond with the degradation of organelles and macromolecules in the cytosol in order to maintain homeostasis and survive. Two genes, Env7 and Yck3, have been proven to cause negative-regulation of vacuole fusion. It is predicted that defects in these genes should lead to a lack of autophagy as a result. One indirect way to examine autophagy inhibition in strains with defective genes is through a viability assay. A plate made of Synthetic Minimal (SM) media was used as a control while a SM plate with 400 ng/mL of rapamycin was used to induce autophagy. Phloxine B (5 μg/mL) was used as a dye that stained dead cells, which indicates an absence of autophagy. Cells with a defective vacuole will be unable to undergo autophagy when plated with rapamycin and will have a brighter staining than those cells able to undergo autophagy. With this viability assay, we expect to gather information whether Env7 and Yck3 plays any significant role in the process of autophagy and if these genes are to be furthered studied.

Keywords: Autophagy, Vacuoles, Phloxine B, ENV7, YCK3

This research was supported by the National Institute of General Medical Sciences of the National Institutes of Health under Award Numbers; 8UL1GM118979-02; 8TL4GM118980-02; 8RL5GM118978-02.

5. Does Acculturation Moderate the Relationship Between Parental Psychological Control and Depression (and Anxiety) for Young Adults?

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Little is known about how child and adolescent home environment affect mental health mechanisms in Latino/Hispanic young adults. Parental psychological control has been shown to affect adolescent mental health (i.e., depression and anxiety). Additionally, acculturation, specifically, in the Latino/Hispanic population, has been shown to affect adolescent mental health; however, studies have obtained inconclusive results on how acculturation may act as protective or risk factor for mental health in immigrants compared to US born Latino and non-Latino white people. The purpose of this study is to determine whether acculturation moderates the relationships of parental psychological control, depression, and anxiety in young adults. It is hypothesized that the relationship between parental psychological control and depression (and anxiety) will depend upon acculturation, such that higher parental psychological control will be associated with higher levels of depression (anxiety) when acculturation is higher.

61 young adults (ages 18 to 23) were assessed using the Child's Report of Parental Behavior Inventory, the Beck Depression Inventory, State Trait Anxiety Inventory, and The Short Acculturation Scale for Hispanics. Using linear regression analysis to test the hypothesis, results showed no significant for the interaction between acculturation and parental psychological control, depression, and anxiety. However, parental psychological control was shown to be a significant predictor of depression and anxiety regardless of acculturation. Future studies may benefit from utilizing two-dimensional acculturation measurements and larger sample size. Findings may help clarify the role acculturation plays in parental psychological control, depression, and anxiety relationships.

Key words: young adults, parental psychological control, acculturation, depression, and anxiety

This research was supported by the National Institute of General Medical Sciences of the National Institutes of Health under Award Numbers; 8UL1GM118979-03; 8TL4GM118980-03; 8RL5GM118978-03.

6. Oxycodone Reward in Male and Female Adolescent Rats.

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Oxycodone abuse among adolescents has increased in recent years. Interestingly, males tend to show higher rates of abuse, but females show enhanced sensitivity to the rewarding effects. However, little preclinical research has examined the rewarding effects of oxycodone in male and female adolescents. To fill this gap in research, we examined sex differences in the rewarding effects of oxycodone in adolescent rats using the conditioned place preference (CPP) paradigm, an established animal model of drug reward. We hypothesized that female rats would exhibit

more robust oxycodone-induced CPP compared to male rats. Male and female rats were assessed for oxycodone-induced CPP using an 11-day CPP procedure beginning on postnatal day (PD) 40. During 15-min pre-conditioning and post-conditioning sessions, rats were tested for their baseline and final place preference, respectively. During conditioning (PD 42-47), rats underwent daily 30-min sessions, during which they received alternating oxycodone (0, .033, 0.1, 0.3, 0.9 mg/kg) and saline injections in their non-preferred and preferred compartments, respectively. Results indicate that a significant shift towards the oxycodone paired compartment was found for males at .1 and .9 mg/kg. Surprisingly, for females, there was a significant shift at .1, .3, and .9 mg/kg. These findings suggest that sex differences in oxycodone induced CPP are minimal in mid adolescent rats. Future research will need to elucidate if the lack of prominent sex differences is specific to this age period and if they can be attributed to the onset of gonadal hormones during this developmental period.
Key words: prescription, opioid abuse, drug abuse

This research was supported by the National Institute of General Medical Sciences of the National Institutes of Health under Award Numbers; 8UL1GM118979-03; 8TL4GM118980-03; 8RL5GM118978-03.

7. The Syntheses and Study of Potential Catalysts for the Kabachnik-Fields Reaction Using Chiral Diols as Auxiliaries.

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α-Aminophosphonates are structurally similar to α-amino acids, the biological building blocks of proteins. Their low toxicity toward the human body makes them a valuable class of organic compounds with a wide array of medical and agricultural uses (e.g. enzyme inhibitors, anti-tumor agents, pesticides, etc.). The Kabachnik-Fields reaction, a one-pot, three-component reaction between a phosphite, an amine, and an aldehyde with a catalyst under solvent-free conditions, is one of the most important methods to synthesize α-aminophosphonates. Despite the method's high versatility and high yields, the list of chiral catalysts for this reaction that are structurally simple is still limited.

Here in this project, we will synthesize a potential chiral catalyst for this reaction by reacting a chiral tartrate derivative (e.g. diethyl, diisopropyl esters) with phenylboronic acid. To prepare the catalyst, the starting materials are refluxed in toluene for 24 hours. The crude reaction mixture is then dried, filtrated, removed of all the solvent, and purified and isolated by flash column chromatography. Then, the chiral product is tested as a catalyst in the Kabachnik-Fields reaction to determine if it will form α-aminophosphonates. These findings will potentially expand the list of compounds that can catalyze the synthesis of α-aminophosphonates and thus may help make their medicinal and agricultural applications more accessible to society.

8. Health Seeking Behavior for Children of Latino and Cambodian Migrant Families Residing in Long Beach: A Literature Review.

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Findings from the literature showed common themes of health perception among Latino and Asian immigrants. Three articles discussed Latinos without health insurance feared deportation or cost, and were treated differently due to language barriers. Those who had negative experiences sought care from their native countries (if possible) or relied on home remedies and/or prayer to cure and/or prevent illness. Similar to Latinos, three of the five sources said Asians experienced language, belief (fear of deportation) and health literacy barriers, causing them to seek care in their native countries, and/or rely on alternative medicine such as home remedies and traditional medicines. Another factor leading to underutilization of health care services was lack of familiarity of western healthcare and transportation. Therefore, the purpose of this literature review is to understand health seeking behavior of the Latino and Cambodian population, by focusing on the following topics: the concept of healthy children, perceived cause of the illnesses, type of treatment/ choice of providers, and barriers to obtaining care. Overall, 30 articles were reviewed using three data bases – CSULB, John's Hopkins, and Google Scholar. However, only 12 sources met the following criteria: published within eight years, study conducted in the US, and qualitative or mixed data.

Keywords: Asian, Cambodian, Culture Beliefs, Health, Health Seeking Behavior, Immigrant Children, Foregone care, Qualitative

This research was supported by the National Institute of General Medical Sciences of the National Institutes of Health under Award Numbers; 8UL1GM118979-03; 8TL4GM118980-03; 8RL5GM118978-03.

9. Insomnia and Self-Rated Health among Clinically vs. Non-Clinically Depressed Cancer Survivors who underwent Chemotherapy.

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Background: Cancer-related research shows that depression can lead to higher risks of poor quality of life (Stommel et al., 2002), and that mindset is a big indicator of determining the recovery process of cancer (Spiegal, 2001). However, there has yet to be research among those who were treated with chemotherapy that compares insomnia and self-rated health, based on whether or not they are clinically depressed.
Methods: Cross-sectional public data from the 2012 national Health and Retirement Study (HRS) sample was collected by face-to-face or telephone interviews (in English or Spanish).Secondary analysis will be performed on weighted samples, employing descriptive and inferential analyses.
Results: Descriptive statistics will describe the HRS participants, ages 50+ (male/female). Chi-square analysis will include percentages for group comparisons, using the chi-square statistic to test significance, presenting odds ratios for effect size.

Conclusion: The observed relationships may help us learn more regarding the recovery process of chemotherapy and how mental health can affect specific outcomes.

Keywords: Depression, Insomnia, Self-Rated Health, Chemotherapy

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10. Assistive Glove for Hemiparesis Patients.

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About 6.8 million people suffer from hemiparesis, a condition that weakens and limits the mobility of muscles on one side of the body. With this disorder, patients have difficulties with maintaining grips and controlling their strength. The goal of this research is to create an assistive hand device, resembling a glove, to increase mobility and strengthen grasps. This glove will be customizable to each patient using 3D scanning and 3D printing technologies. The 3D printed glove will include nitinol wires, tactile on/off switches, and a power source to activate the wire. Nitinol wire curls when it is being heated and goes back to its original form when cooled, mimicking muscle fiber. Using bundles of nitinol wire would replace bulky actuators normally found in these types of devices. The tactile on/off switch would act as the devices on and off switch powering the device. Our approach includes conducting different tests with VA hospital stroke patients to determine the strength, efficiency, temperature, and accuracy that the glove can endure. Data that will be collected includes amount of force the device can withstand, temperature it takes for the wires to curl, and the time it takes for the wires to respond.

Keywords: Nitinol wire, glove, device, hemiparesis

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11. The Effects of Traumatic Brain Injury on Working Memory.

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Working memory is one facet of executive function that is responsible for reasoning and in the decision making process. A head injury that causes damage to the outermost layer of the human brain, known as the cortex, may interfere with the ability to reason, control anger, and control

impulses. This study is aimed to investigate the effect of traumatic brain injury (TBI) on working memory. Our hypothesis is that a traumatic brain injury will lead to a reduction in the capacity of working memory. For this study, 35 adult men were given the Wechsler Adult Intelligence Scale-Fourth Edition (WAIS-IV) test to measure working memory, and the Ohio State University TBI Identification Tool to assess past head injuries. The results indicated a significant lower score on working memory tasks for those that have self-reported a TBI compared to those who have not.

12. Investigating Substituted Phenols as Inhibitors for Cholinesterases.

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Cholinesterases are divided into two major classes, acetylcholinesterases (AChE) and butyrylcholinesterase (BChE), and have gained attention for their association with Alzheimer's disease (AD). While the biological function of AChE is well understood, the role of BChE remains unclear. Previous studies have shown that patients with AD tend to have a decrease in AChE activity, while BChE activity increases. These results have led to the development of BChE-specific inhibitors. Nevertheless, the exploration of potential cholinesterase inhibitors may provide more potent therapeutics for AD patients. Surveying the literature shows substituted aromatic groups are components of many cholinesterase inhibitors, but synthesizing and systematically evaluating the importance of aromatic substituents presents a significant challenge. To readily evaluate a series of aromatic compounds as inhibitors, the ability of substituted phenols to inhibit BChE and AChE was investigated. Relative inhibition was determined by performing kinetic assays using UV spectroscopy. Several phenols inhibited the enzymes, with 2,4-dibromophenol as the most effective inhibitor showing 99.9% inhibition. Further, compounds with larger substituents led to more potent inhibitors. These studies can be used to help guide the inclusion of substituents in future developments of cholinesterase inhibitors.

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13. Survey of the Homeless Community in the City of Long Beach: A Preliminary Analysis.

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The amount of homeless individuals in the city of Long Beach has gradually decreased over the last few years. This is due to organizations that help reintegrate them into the community

organizations such as the Long Beach Rescue Mission. For such organizations to be effective, we must understand the perceptions of homelessness from the community which they will be integrated in, as well as their own perceptions. Lindsay Phillips conducted research on the community's perceived causes of homelessness. Our study focuses on the personal accounts of the homeless community, which is correlated with Phillips' findings. According to Phillips, the top three "definitely likely" perceived causes of homelessness are *poor economic conditions* (63%), *having a mental illness* (57%), *and having a problem with illicit drugs* (57%). From our study, many homeless individuals would say having a mental health problem and having problems with illegal drugs/substance were perceived causes of homelessness.

14. Factors that Facilitate Mexican-American Women's Decision to Stay in an Abusive Relationship.

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Intimate Partner Violence (IPV) has a profound impact on survivors' physical and psychological well-being (Dutton et al., 2006). Past research has examined how disclosure of IPV is affected by the Latino culture (Ahrens et al., 2010), but there is little literature that specifically studies IPV in the Mexican culture. The current Qualitative study fills this gap by examining factors that facilitate a woman's decision to remain in an abusive relationship (e.g., cultural beliefs, family, learned hopefulness, and love). The study further compares these facilitators across women who are still in the relationship, separated because partner chose to leave, separated because survivor chose to leave, or separated because legally required to do so. Researchers interviewed 15 immigrant Mexican-American women who experienced IPV within the last five years. To analyze the data, researchers used a process called inductive thematic analysis which includes creating a codebook, using this codebook to code excerpts, and calculating interrater reliability. Identifying factors that facilitate a woman's decision to stay can further our understanding of survivors' needs and help inform the development of culturally competent services.

Keywords: Intimate Partner Violence, cultural beliefs, Mexican-American women

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15. Assessment on *Toxoplasma gondii* Invasion and Survivability in Different Ionic Environments.

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Toxoplasma gondii is an obligate unicellular parasite that is currently known to infect mammals and avian species. Previous studies have shown that certain biological ions, such as potassium play a critical role in regulating the invasive behavior of the parasite which is linked to cytosolic pH regulation. The aim of this study is to further identify what aspects of parasite biology are adversely effected through the removal of key biological ions, such as potassium, and/or acidic conditions. We undertook experiments designed to test extracellular and intracellular collected parasite survival and parasite invasion ability while exposed to varying ionic/pH conditions. We hypothesize that parasites will experience increase survival and invasion ability when potassium and Sodium is removed from the environment. Both survivability and invasion ability were tested using a counter staining giemsa assay where the number of parasites are enumerated by counting the number of parasitophorous vacuoles (PV) per host cell. Preliminary results currently show both extracellularly-collected and intracellularly-collected parasites exposed to environments without sodium have a significant increase of PV per Nuclei in the invasion assays. Interestingly, in the survival assays, parasites collected extracellularly were able to survive all ionic treatments with equal ability. Invasion-linked behaviors are much more sensitive to ionic conditions and therefore represent a potentially powerful strategy for disrupting parasite virulence during the tachyzoite lytic stage of the life cycle. Further experiments are currently being conducted to support these preliminary results and elucidate other, less obvious responses to ionic conditions by *T. gondii.*

Keywords: Toxoplasma Gondii, parasitophorous vacuole, Giemsa Stain, Survivability, Invasion

Research reported in this preliminary results was supported by California State University of Long Beach, BUILD, Center of the National Institutes of Health under award number 8TL4GM118980-02.

16. Manufacturing of Artificial Tissues using Hybrid Biomaterials and a Low-Cost Three Dimensional Printer.

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Tissue engineering has a significant impact on how organs are created, yet scaffolding and vascularization are still an issue. Our novel methods of dispensing biomaterials utilize current technologies to efficiently make three dimensional tissue. By using a low-cost RepRap Prusa i3, we have modified the system for our manufactured biomaterials. Modifications include a pneumatic

system, a miniature incubator, and a syringe-like nozzle. Bounded by a water-jacket, the incubator serves as a cartridge to maintaining homeostasis of the biomaterial. The pneumatic pump pushes the biomaterials through a Teflon tube into the syringe nozzle which moves across the z-axis to dispense at the will of the printer's designation. What constitutes the microenvironment of the cell is alginate. This hydrogel is derived from brown seaweed that contains a rich Extra Cellular Matrix (ECM) which can hold water and nutrients. Although it has been the most reliable biomaterial, the ECM is not stable to contain cells. To solve this, Ethylenediaminetetraacetic acid acts as an adhesive for the cells to attach to the alginate contents. Studies suggest that when cells are controlled, they will be influenced to make the appropriate tissue necessary to create all layers and structures to develop an organ.

Keywords: RepRap, Extruder, Hydrogels, Vascularization

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17. Fueling Adolescent Elite Figure Skaters for Optimal Health and Performance: A Literature Review.

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Introduction: Young elite figure skaters can have difficulty planning meals due to hectic schedules- and the pressure to improve performance while remaining thin. Research shows that an adolescent skater's dietary intake is often less than recommended values[1, 2]. While low macronutrient and micronutrient intakes do not always result in low weight, they do affect growth and development. To improve health and performance, adolescent figure skaters should consume adequate levels of calories and nutrients to ensure proper growth, development, and prevention of injury.
Objectives: The purpose of this study is to identify the needs of young skaters for a future nutrition education program. This literature review examines ten articles for the following topics: nutrients of concern, health issues, and possible solutions.
Methods: Articles were retrieved using academic databases such as PubMed, ScienceDirect, Taylor & Francis Online, and Google Scholar.
Results: Research states that young figure skaters had an energy intake lower than recommended, and noted carbohydrates and calcium as main nutrients of concern for both male and female skaters. Female skaters also lacked folate and iron in their diets[3, 4]. Studies suggest that elite figure skaters increase nutrient intake by consuming smaller meals more frequently throughout the day[3, 5]. By maintaining energy intake, skaters can reduce fatigue, which can lead to illness and injury[6.] In other articles, questionnaires were used to measure body image perception; studies showed that young skaters desired to lose weight, despite their low body mass index (BMI)[7,8]. Adolescent female skaters are especially "at elevated risk for disordered eating, caloric restriction, low-nutrient intakes and weight-loss behaviors"[1].
Conclusions: Research on adolescent elite figure skaters consistently asserts need for young elite figure skaters to increase energy intake and consume more nutrients in their diet. However, due to their young age and lack of nutrition-related knowledge and skills, adolescents will need help

incorporating these ideas into their daily life. Future research should focus on the development of nutrition education programs for adolescent figure skaters, their families, and coaches.

Keywords: elite figure skating, nutrition, injury prevention, dietary intake, child, adolescent, youth

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18. Integration of Bragg Fiber Optic Sensors for Strain Detection in Structures Composed of PEEK Composite.

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The need for structural health monitoring, or the use of *in-situ* continuous measurement of structural operating parameters, was initially implemented in the fields of aerospace and civil engineering composites. Fiber optic sensors (FOS) are considered for these methods due to their high durability, negligible impact on embedded materials, insensitivity to electromagnetic fields, accuracy, and low cost. Our study focuses on the formation of artificial neural pathways for the use of structural health monitoring in prosthesis by means of Fiber Bragg Grating optic (FBG) sensors to detect shifts in strain. Implementation of these fibers are embedded into

polyetheretherketone (PEEK) based structures. Then tested using an industrial interrogator and analysis software to acquire preliminary data. PEEK was considered for its biocompatibility properties and applications with *in-vivo* prosthetics. This method acts as a system of early detection which could prevent the prosthesis from critical failure due to previously undetected interior defects, further improving the patient's wellbeing.

Keywords: FBG, Health Monitoring, FOS, PEEK

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19. Investigating Lysosomal Maturation In Macrophages During Clearance Of Atherogenic Lipoproteins.

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Atherosclerosis is an inflammatory disease that consists of buildup of fats, cholesterol, and other substances in the artery walls forming plaque. Disrupted clearance of damaged lipoproteins (LDL) contributes to the progression of this disease, which is the leading cause of death in Americans. C1q is an innate immune protein that binds modified LDL and assists in removal by macrophages. The aim was to investigate the effect of C1q on lysosomal maturation in macrophages during clearance of atherogenic lipoproteins. Raw 264.7 macrophages were treated in three different conditions; untreated, ingesting oxLDL, and ingesting oxLDL bound to C1q. Cells from all three treatments were stained with lysosensor blue and imaged using a fluorescent microscope to identify the relative amounts of acidic lysosomes per cell under each condition. Levels of fluorescence were measured in >8 fields per condition using the EVOS FLauto and normalized to number of cells per field. Preliminary results showed that macrophages ingesting oxLDL have increased levels of acidic lysosomes, while the presence of C1q reduced the levels of acidic lysosomes towards untreated basal levels. These studies suggest opsonization with C1q modifies cholesterol trafficking or metabolism in macrophages. Future studies will investigate co-localization of oxLDL with acidic lysosomes by confocal microscopy.

Keywords: c1q, Lysosomal Maturation, Atherogenic Lipoproteins

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20. Aggressing Against the Innocent: The Impact of Rumination on Displaced Aggression Towards Ingroup and Outgroup Targets.

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Rumination is defined as thinking about a provoking event and prior research has consistently linked it to increases in aggressive behavior. The current study is the first to investigate how the degree of rumination affects displaced aggression (i.e., "taking it out" on an innocent individual) against both ingroup targets (e.g., students from California State University, Long Beach) and outgroup targets (e.g., University of Southern California students). Participants (*n* = 59) were provoked by an outgroup member and the degree to which they ruminated was measured by assessing (1) *how often* and (2) *how strongly* they thought about the provocation. Finally, displaced aggression towards either an innocent ingroup or outgroup target was assessed. A multiple regression was performed using both degree of rumination and type of target as predictor variables and the amount of displaced aggression as the criterion variable. Results indicated that the degree of rumination moderated displaced aggression towards the different types of targets. Specifically, displaced aggression towards ingroup and outgroup targets did not differ when participants reported low levels of rumination but when they ruminated at mean or high levels the outgroup target received significantly more displaced aggression. One potential implication of these findings is the advisability of employing strategies that limit the likelihood of rumination (e.g., distraction, mindfulness, etc.) as a means to reduce intergroup aggression.

Keywords: rumination, displaced aggression, aggression, intergroup aggression

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21. The Study of the Correlation between EEG Signal Patterns and Total Convictions.

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Slow waves in certain parts of the brain during resting state can indicate abnormal brain functioning. Past research on criminal participants has found relationships between violence and slow waves (theta waves) in the prefrontal and temporal lobe. This study aimed to find the correlation between abnormal slow waves and the total convictions of a participant. The prediction was that there would be a strong relationship in theta waves in the frontal and/or temporal lobe as the amount of convictions increase. The participant population for this study were homeless volunteers. Participants provided their total number of convictions as part of a

self-report crime measure, and were set up for electroencephalogram (EEG) data collection. During EEG administration, the participants were asked to perform two tasks after a resting state. This study focuses on the resting state data. Regression analysis found the relationship between delta waves in a section of the left frontal lobe and the increase in conviction, r(32) =.370, p=.037. These results are important to our understanding of mental abnormalities in criminals in order to reduce the number of crime by reducing conviction rates.

Keywords: slow waves, electroencephalogram, EEG, convictions, frontal lobes

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22. A Noninvasive Approach to Intracranial Pressure Measurement.

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Traumatic brain injuries (TBI) require the measurement of intracranial pressure (ICP) which is currently measured invasively in the intensive care unit (ICU). The invasive procedure requires drilling the skull and inserting a sensor inside the lateral ventricles. In order to avoid this, we aim to develop a method in which ICP is measured noninvasively. As the first phase of the project, a literature review was conducted to learn about ICP and the significance of its measurement. In the second phase, we annotated a large data set of cerebral blood flow velocity (CBFV) signals collected from TBI patients at UCLA Medical Center. In phase three, we used four different methods on the CBFV signals and compared the results of each against the annotated data set. We aim to employ the latency of CBFV signals to estimate ICP noninvasively to enhance patient care in the ICU.

23. Rape Survivors' Opinions About Services and Contact With Rape Crisis Centers.

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The *Voices and Faces Project* is a national network for survivors of sexual assault. This organization collected over 300 online surveys regarding survivors' assault and recovery experiences. The current study focuses on survivors' written testimonials about their interactions and opinions of rape crisis centers. Two independent coders used an inductive coding process stemming from Glaser's Grounded Theory (1998) to organize and assign codes to each narrative. The first step of this process was to create a codebook that captured key themes regarding how survivors first came into contact with rape crisis center, what happened when they interacted with rape crisis center staff, and how they felt about those interactions. Results revealed three main themes about how contact was initiated: 1) survivors sought services on their own; 2)

contact was initiated by others, such as family, friends, or medical personnel; and 3) survivors were mandated to initiate contact. For interactions, survivors described services that were provided as well as the nature of the interactions. Specific services included: 1) hotline advocacy; 2) medical advocacy; 3) legal advocacy; 4) shelter; 5) individual counseling; 6) support groups; 7) referrals and resources; and 8) provided information about sexual assault. Survivors also described emotional support provided by staff, including: 1) having someone understand and listen; and 2) having someone provide affirmation and validation. In contrast, other survivors described the lack of such services and a lack of emotional support. Survivors opinions about these interactions were also coded. Key themes of why the experience was positive included: 1) having a safe environment; 2) gaining empowerment from the services provided; 3) feeling that they were not alone; and 4) overall feeling that their interactions were helpful, supportive, and invaluable. Key themes of the negative opinions included: 1) unfulfilled needs; 2) unprofessional staff interactions; and 3) a poor and unhelpful experience. Further analyses was then conducted to determine the association between how survivors came into contact with the rape crisis centers, how staff interacted with survivors, and survivors' overall opinions of their contact with rape crisis centers. Implications of these findings for researchers, rape crisis centers, and survivors will be discussed.

24. The Effect of Sleep on Relationships within Work Teams.

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There is a severe lack of research on the effects of sleep on the relationships within teams. Therefore, the purpose of this study is to further understand the impact of sleep on team relationships in terms of how members feel towards each other. The belief being, the quantity of sleep has a strong impact on social networks within teams. The sleep data of 35 CSULB psychology students was tracked using a mobile application named Sleep Bot, which detects movements on a bed during the night and gathers statistics based on those movements. The individuals also took multiple self-report surveys and completed two tasks that tested their decision skills and creativity skills. Then the participants self-assembled into teams consisting of 3 persons each. In these teams, they participated in a mock hiring process of a faculty member, assessing the pros and cons of applicants using résumés with which they were provided. The data will be run using an Exponential Random Graph Model (ERGM), which is used to explain why relationships form between individuals. Understanding the effects of sleep on social networks can be extremely beneficial, as it can lead to better health within teammates and improve efficiency in collaborative efforts.

Keywords: Sleep, Social Networks, Teams, Decision Making

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25. Assessing the Effects of Sea Level Rise on Coastal Salt Marsh Decomposers

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Coastal salt marshes are endangered, biodiverse ecosystems that are responsible for high levels of primary productivity by plants and algae and decomposition by invertebrates, fungi, and bacteria. They also offer protection of coastlines from floods, which are predicted to increase due to sea level rise (SLR).The goal of this study is to assess the impacts of SLR on decomposer community diversity and abundance. To simulate the effects of SLR, multiple marsh weirs that manipulate inundation levels, were placed in two different salt marsh sites: Southern California (Huntington Beach) and Northern California (China Camp in the San Francisco Bay). During 2015-2016, the sites were visited and soil samples collected from the weirs and control sites. Traditional taxonomic methods are being used to sort and identify invertebrates. Soil DNA extraction kits and polymerase chain reaction (PCR) amplification of 16S rRNA and internal transcribed spacer (ITS) genes are being used to monitor bacterial and fungal communities. Successful samples will be sent out for next generation Illumina sequencing to determine diversity of bacteria and fungi. The results of this study will allow us to predict changes in the food chain and diversity of coastal salt marsh ecosystems and inform SLR management strategies.

26. Gold Nanorod Hybrids: A Nanoscale Alternative Treatment for Cancer.

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According to Center of Disease Control and Prevention, about 650,000 cancer patients receive chemotherapy in the U.S. Of those people about 90% percent of chemotherapy patients experience side effects that arise from healthy cells being damaged in the process. Through the use of gold nanorods (AuNR) drug delivery is given an advantage on chemotherapy. Due to the AuNR`s particular size, light can be used as a source of energy to excite the electrons on the nanorods (NR), and pass through tissues to get close with the cancer cells in the patients body. As a result, drug is delivered directly onto the cancer cells. Nanorod-graphene oxide hybrid (NRGOH) will be used as a placeholder for the AuNR with glutathione and dendrons introduced to the NRGOH to lower the cellular toxicity. AuNR are synthesized with ethyltrimethylammonium bromide (CTAB) which acts as a stabilizing agent. Nano rods on Graphene oxide can be synthesized by using 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide hydrochloride as a solvent. Glutathione-capped gold nanorods can be synthesized by a similar method as AuNR.

Keywords: Gold Nanorods, cancer, chemotherapy

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27. Muscle Fiber Cross-Sectional Area is Unaffected 14 Days After A Clinical Dose of Radiation.

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Skeletal muscle regeneration has previously been shown to be blunted following a dose of 7 Giy gamma irradiation with cardiotoxin injury. It has yet to be established if the same dose ofū radiation effects non-injured skeletal muscle. **PURPOSE**: The objective of the current study was to investigate the effects of a 7 Gy dose of irradiation on the cross-sectional area (CSA) of the tibialis anterior (TA). **METHODS:** Adult male mice (C57BL/J6) were assigned to one of six groups: 1) 4 day control, 2) 4 day irradiated (IRR), 3) 7 day control, 4) 7 day IRR, 5) 14 day control, 6) 14 day IRR. Each mouse was injected with saline before irradiation as part of a larger study. Following injection, mice in the irradiation groups were exposed to a dose of 7 Gy of gamma irradiation which is considered to be a clinically relevant dose. Following each time period the TA was removed and prepared for histological analysis by hematoxylin and eosin staining. Approximately 100 fibers of each muscle sample were analyzed with ImageJ software to estimate average fiber CSA. Data were analyzed by one-way ANOVA in GraphPad Prism. **RESULTS**: These results show that a single dose of 7 Gy of gamma irradiation does not affect skeletal muscle fiber CSA 14 days after exposure. **CONCLUSIONS:** The results imply that a dose of 7 gamma irradiation (Gy) does not negatively affect CSA of healthy skeletal muscle 14 days following exposure in comparison to non-irradiated muscles

28. The Influence of Collectivism on the Relationship Between Ethnicity and Physical Activity in Low-income Mothers.

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Research has shown that Latinos show higher levels of collectivism than non-Latino whites, in that they tend to view the needs of the group as superseding the needs of the individual. Few studies have examined the role of collectivism among Latinas participating in physical activity programs. The purpose of this study was to examine whether collectivism influences the relationship between ethnicity and physical activity levels among low-income mothers participating in a 3-month physical activity program. The sample included 28 low-income mothers (age range= 25-46 years, *M*=32 years; 67% earned less than $25,000 in total family income per year). Collectivism scores were obtained from a self-report measure at baseline that ranged on a Likert scale (from 1 to 9). The mothers physical activity levels were obtained at 3-months post intervention through a semi-structured interview that accesses minutes of moderate to vigorous intensity physical activity (excluding housework) within the past 7 days. A multiple regression model controlling for baseline physical activity revealed that Latinas did not significantly increase their levels of physical activity compared to their non-Latina counter parts [β=170.06, p=.10]. Results further explained that collectivism did not influence the relationship between Latina vs. non-Latina mothers and their Physical Activity levels at 3-months post physical activity intervention [β= .42, p=.95]. These results indicate that there may be a need to explore other possible variables that

better influence the relationship between ethnicity and physical activity levels in low-income mothers.

29. Nepali Migrant Labor: Literature Review and Preliminary Data Comparison.

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Background: With increased demand for unskilled labor abroad and a struggling domestic economy, Nepali men and women are migrating abroad for labor. Scholars have examined the causes and results of migration for wage labor to understand the movement and development of the Nepali community. The knowledge derived from these studies improves understanding of migration and its effect on society.
Objective: This study is devoted to highlighting common themes derived through comparison of existing research on Nepali migrants and preliminary data.
Method: 10 scholarly articles were reviewed and selected based on keywords of 'Nepal; remittances; men; women; migration' and compared with quantitative survey data collected in May 2015 from returned migrant women (n=150) using pen and paper surveys.
Conclusion: The literature and data coincide in the areas of destination of immigration, marital status, and impact of remittances on education. The information in this study will be used to develop research on Nepali labor migrant women's health before and after migration.
Acknowledgement: This research was supported by the National Institutes of Health.

30. G protein-coupled estrogen receptor 1 is found on the plasma membrane and cytoplasm of tissue from the arcuate nucleus of the hypothalamus.

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In the ovariectomized (OVX) rat primed with 2µg estradiol benzoate (EB), sexual receptivity (lordosis) can be facilitated within 30 minutes after the infusion of non-esterified 17β- estradiol (E2) into the arcuate nucleus of the hypothalamus (ARH). Our lab has shown that the E2 rapid facilitation of lordosis is mediated by G protein-coupled estrogen receptor (GPER) which is localized to orphanin FQ (OFQ) neurons and induces the release of OFQ to facilitate lordosis. However, it is unclear whether the GPER signaling is initiated at the plasma membrane or in the cytoplasm. Within the ARH, immunohistochemical studies indicate that GPER is located in the cytoplasm. Others have observed GPER in the plasma membrane of the hippocampus. This investigation aimed to test for the localization of GPER in the plasma membrane and cytoplasm of the ARH. GPER levels in plasma membrane and cytosolic fractions of ARH tissue were determined by western blot analysis where a band corresponding to GPER was observed. Plasma membrane preparations lacked positive LIM kinase staining indicating that the preparations were not contaminated with cytoplasmic fractions. These findings indicate that E2 may initiate signaling via ARH GPER at either the levels of the plasma membrane or intracellularly within the cytoplasm.

Keywords: GPER, estrogen receptor, lordosis, g-protein
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31. The Role of a Defense Protein (At5g48657) and a Peptide Transporter (At5g46050) During Leaf Senescence.

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Leaf senescence is the programed catabolism and transport of essential nutrients into developing organs such as flowers and grains. This is a key process to understand as leaf senescence has been linked to crop production. K4-SURGs are genes that are up regulated during senescence that accumulate trimethylation of Lys-4 in histone 3 at the same time. At5g48657 is a K4-SURG encoding a defense protein while At5g46050 is a K4-SURG encoding peptide transporter 3. These genes are being studied in the model organism *Arabidopsis thaliana* to determine if they play a role in senescence. We have obtained T-DNA insertions disrupting each of the two genes, SALK_080643 for At5g48657 and SALK_025187 for At5g46050. PCR analysis was used to confirm that our T-DNA insertions were homozygous, with both alleles disrupted by the T-DNA. The insertion site for the T-DNA was determined by DNA sequencing and expression of the mutant gene will be tested by amplification of cDNA. The progression of leaf senescence for each mutant line will be compared to WT plants. These findings could lead to a better understanding of how specific genes are playing a role during senescence, and what occurs during the end stages of a plant's life.

Keywords: Senescence, K4-SURG, *Arabidopsis thaliana*

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32. C1q Increases Efferocytosis of Apoptotic Cells by Macrophage Foam Cells

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Atherosclerosis is an inflammatory disease that occurs from the accumulation of low-density lipoprotein, LDL in macrophages forming foam cells, leading to plaque formation. Complement protein C1q has been shown to bind modified LDL and increase its removal by macrophages. We aimed to test the ability of foam cells formed in the presence or absence of C1q to carry out the important atheroprotective function of efferocytosis, (the removal of apoptotic cells). Raw264.7 macrophages were incubated with two types of modified LDL; medium-oxidized LDL (moxLDL) and acetylated LDL (acLDL) with and without C1q to form macrophage foam cells. The foam cells were then fluorescently labeled with Celltrace Violet and incubated with CFSE-stained apoptotic Raw264.7 cells. Efferoctyosis was assessed by flow cytometry to measure the percentage of Celltrace Violet-positive foam cells that had ingested CFSE-labeled apoptotic cells. The data showed that moxLDL foam cells formed in the presence of C1q showed increased efferocytosis, the ingestion of apoptotic cells, compared to foam cells formed in the absence of C1q. These data suggest that one of the protective roles of C1q in atherosclerosis may be in improving the ability of foam cells to clear apoptotic cells and debris from the plaque region.

Keywords: atherosclerosis, LDL, efferocytosis, C1q, foam-cell

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SESSION 2

1. Trichloramine Reactivity with Amino Acids Under Wastewater Treatment Conditions.

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The Orange County Water district uses the Advanced Oxidation process (AOP) to further purify water from the initial primary, and secondary treatments. In this process, hydrogen peroxide (H_2O_2) reacts with UV light, yielding hydroxyl radicals ($^{\cdot}OH$). After the microfiltration, and reverse osmosis processes (RO), the hydroxyl radicals will decompose remaining contaminants. In addition to these hydroxyl radicals, 12.5% basic hypochlorite solution is mixed into wastewater to create chloramines (NH_2Cl, $NHCl_2$, NCl_3). These chloramines are added to prevent biofouling of the RO membranes. Initially, trichloramine (NCl_3) is favored due to the higher acidity, but as the water moves through treatment, the pH approaches 5.5 and monochloramine (NH_2Cl) and dichloramine ($NHCl_2$) are found to dominate in equal amounts leaving trace amounts of NCl_3. While these chloramines are beneficial to the RO process, they can interfere with the AOP chemistry, decreasing the quantity of hydroxide radicals produced and potentially reacting with organics present producing toxic halogenated byproducts. In this study, the rate of decay for trichloramine, with amino acids will be tracked by using Stopped Flow kinetics. As a result, the data will allow insight into how organic matter in wastewater will react with the chloramines present in the AOP.

Keywords: Trichloramine (NCl_3), AOP, Wastewater

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2. Subpopulation of β-endorphin neurons in the arcuate nucleus of the hypothalamus of female rats express progesterone receptor.

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Estradiol initially inhibits sexual receptivity (lordosis) by activating beta-endorphin (β-END) neurons. Infusions of progesterone into the arcuate nucleus of the hypothalamus (ARH) rapidly facilitate lordosis by deactivating these β-END neurons. Behavioral studies in our laboratory indicate that progesterone is acting directly on ARH β-END neurons and not on neurons presynaptic to β-END neurons. Therefore, we hypothesized that progesterone is acting on progesterone receptor (PR) that are expressed in the ARH β-END neurons. To test this hypothesis, we ran double-label immunohistochemistry for β-END and PR on free-floating sections that contain the ARH from female rats. It was observed that a subpopulation of the ARH β-END

neurons express PR. These results support our hypothesis that progesterone can act directly on β-END neurons via PR to deactivate and facilitate lordosis. By understanding where and how progesterone receptors act in the brain, these studies can help pave way for therapeutics in women's health.

Key words: Beta-endorphin, progesterone receptor-B, arcuate nucleus of the hypothalamus, lordosis.

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3. Proposal to Determine the Structure of Tetrasodium Rhodizonate for Dissolvable Batteries.

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Within 5 years, dissolvable medical devices (DMD) have emerged as a new approach to internal and surgical medicine. They are able to perform and then absorb without having to be surgically removed. Batteries to power these medical devices have to also be dissolvable and biocompatible. Lithium-ion batteries, known as the most popular power source due to its highest energy density, are not suitable for DMD because of their high toxicity. $Li_4C_6O_6$ is an organic cathode material for Li-ion batteries. Tetrasodium rhodizonate ($Na_4C_6O_6$), which replaces Li with Na, is an adapting structure from a successful model in Li-ion batteries. In this proposal, we will use density functional theory (DFT) such as GAUSSIAN 03 program using B3LYP hybrid exchange-correlation functional to predict the crystal structure of $Na_4C_6O_6$. The crystal structure, which manipulates the electrolytic performance, is one of the fundamental properties of materials science. Identifying the correct crystal structure assists in determining the details for the electrochemical properties of these organic electrodes and exploring its potential to be a long lasting battery for dissolvable medical devices.

Keywords**:** DFT, $Na_4C_6O_6$, dissolvable device

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4. Investigating the Relationship Between Cognitive Flexibility, Rumination and Depression in Adults with Autism Spectrum Disorder.

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There is a paucity of research examining individual characteristics associated with depression among adults with autism spectrum disorder (ASD). Evidence suggests cognitive flexibility (CF) is related to severity of psychiatric symptoms, including autism-specific symptoms and depression. However, the relationship between CF and depression in adults with ASD has yet to be examined in detail and may be particularly salient in adulthood, when CF is fully developed. In addition, rumination has been associated with increased depression symptoms and CF deficits in ASD. The current study will investigate the relationship between CF, rumination and depressive symptoms among adults with ASD. It is hypothesized that (a) as CF increases depressive symptoms will decrease and (b) that rumination will be expressed at higher rates among those who have CF deficits and (c) depressive symptoms. Thirty adults with ASD (≥ 18 years of age) will complete measures of depression (Beck Depression Inventory; Patient Health Questionnaire 9), CF (Cognitive Flexibility Scale) and Rumination (Ruminative Response Scale) as well as complete a CF task (Wisconsin Card Storing Test). Regression analyses will be conducted to test the proposed hypotheses. Results from this study have the potential to elucidate specific characteristics that can be attributed to depression in adult with ASD, ultimately assisting in the development of more accurate screening and diagnostic tools and treatment strategies.

Keywords: Cognitive Flexibility, Autism, Depression, and Rumination.

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5. Biofeedback Device for Gait Rehabilitation: A Validity Test.

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Stroke patients exhibiting gait asymmetry require rehabilitation to improve walking and reduce injury from fall. A device, called 'Walk-Even', which consists of force sensor embedded insoles, a wireless module, a microcontroller, and a laser trigger system has been developed which analyzes gait and provides auditory biofeedback to correct gait asymmetry in real-time. To test Walk-Even's accuracy in measuring the key gait parameters, an experiment was conducted on 17 healthy adults ages 18 to 28 to compare the measurements of Walk-Even with a commercial electronic pressure mat, the ProtoKinetics Zeno Walkway. During the experiment, participants wore Walk-Even while performing a straight walk at a self-selected pace on Zeno Walkway. Two conditions were tested: normal walking and simulated asymmetrical walking. Asymmetrical

walking was simulated by attaching a 7-pound weight on the participant's ankle. Temporal gait parameters, including swing time (the time when the person's foot is off the ground) were measured.
From the experiment, data analysis showed that the swing time between both devices resulted in improved correlation with the implementation of recording synchronization and a customized post-processing method. These results indicate Walk-Even's ability to provide accurate gait measurements for future experimental use in stroke patient rehabilitation by providing biofeedback. Due to the affordability, portability, and user-friendly interface, Walk-Even could be a possible alternative to expensive commercial devices in analyzing gait asymmetry, and another option in traditional physical therapy treatment to correct gait asymmetry.

6. Characterizing Differences Between C1q Sufficient and C1q Deficient Macrophages.

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Innate immune protein C1q has been shown to alter macrophage inflammatory responses when bound to targets. Exogenous C1q down-regulates levels of inflammatory cytokine interleukin 1-beta (IL-1β) in macrophages during ingestion of oxidized low density lipoprotein (oxLDL) and acetylated low density lipoprotein (acLDL). OxLDL and acLDL are damaged lipoproteins that are involved in promoting atherosclerosis when ingested by macrophages. Since macrophages can create and secrete C1q, we wanted to investigate whether endogenous C1q is protective against the proinflammatory effects of oxLDL and acLDL. We will test this using bone marrow derived macrophages (BMDM) from wild type (WT) and C1q deficient mice. BMDM will be incubated with oxLDL or acLDL, and levels of cytokine IL-1β gene expression will be measured by quantitative PCR (qPCR). It is expected that the presence of endogenous C1q will down-regulate proinflammatory cytokine IL-1β expression in these BMDM. This study has the potential to further understand mechanisms of macrophage inflammatory programming in atherosclerosis.

Keywords: C1q, IL-1β, Atherosclerosis, Inflammation

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7. Conjugated Gold Nanorod-Graphene Oxide Hybrids as Theranostic Agents for Cancer Treatment

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Our lab targets the preparation of dendron-coated gold nanorod-graphene oxide hybrids as a new platform endowed with therapeutic functionalities, allowing for eradication of cancer cells. Nanorods were synthesized with cetyltrimethylammonium bromide (CTAB) as a stabilizer to prevent particle aggregation. UV-Vis spectroscopy confirmed successful synthesis with the

presence of transverse surface plasmon resonance (TSPR) bands at 520 nm and longitudinal surface plasmon resonance (LSPR) bands at 780 nm. Using transmission electron microscopy the rod was confirmed to be 54 nm in length and 15 nm in width. Ultimately, the presence of the 780 nm LSPR band of gold nanorods adsorbed on graphene oxide was critical to ensure safe theranostic applications and allow for the planning of cell studies. Replacement of CTAB with glutathione ligands will be attempted to increase biocompatibility of hybrid in the future.

8. What Areas to Study in Biomedical Engineering: A Multidisciplinary Challenge for Students.

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The field of Biomedical Engineering (BME) is and will be growing exponentially within the next one to two decades. Today, there are approximately 150 BME programs in the United States. During the current decade, the Bureau of Labor Statistic's released that the fastest expanding occupation was and is BME. An estimated 72% growth in this field had been established to take place by 2012. Because BME is an interdisciplinary and broad field, it can be difficult and confusing for students to decide what to study. This project will examine: (1) Future trends in BME; (2) Areas of academic study and research that are of interest now and will be in the future; (3) Skills that students need to succeed in the field of BME; (4) How other BME curriculums compare with CSU Long Beach; To collect data, a short answer and open ended survey questionnaire was designed and administered to 3 female and 3 male faculty members/lectures from California State University, Long Beach and Arizona State University as pilot subjects. The survey was given via an online software known as Qualtrics. We anticipate that these results will assist students in the fields of science, medicine, and engineering who are planning to study BME.

Keywords: Biomedical Engineering Education, Interdisciplinary, Health and Medicine, BME

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9. A Literature Review Examining Social Support and Mental Health Among Gender and Sexual Minorities.

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This literature review includes 11 studies published between 2012-2015 with a focus on social support and related mental and physical health outcomes among gender and sexual minorities. Transgender people experience heightened stigma and stress related to their minority status. In the United States, 60% have experienced harassment or violence due to their gender presentation, 60% have been denied healthcare, and 57% have family that choose not to speak to them. Transgender individuals also experience unique stressors during the process of gender

transition, when the body, gender expression, and social identity are most in flux. This literature review revealed that these combined experiences increase the risk for mental and physical health issues, including anxiety, depression, and cardiovascular disease. Social support, including online support, has shown to improve the mental health of sexual and gender minorities; however, sufficient support may be unavailable or inaccessible during gender transition. Although there is a dearth of research discussing the benefits of peer support among transgender individuals, peer support has shown to improve mental health. Providing support prior to, during, and after transition may diminish suicide risk which is higher among transgender people (41%) compared to the general population (4.6%). Future work will include a continued assessment of these models of social support, which may be adapted to meet the needs of transgender people during transition. An online, peer-mentorship program, connecting mentors who have already transitioned with those early in transition, could be particularly helpful in alleviating negative health outcomes.

Keywords: transgender, transition, minority stress, social support, stigma

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10. Psychosocial Stress Experience Among Transgender Men: Gender Affirmation and Social-Identity Management Early in Transition.

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Transgender men are people assigned a female sex-designation at birth and who identify as male/trans-masculine. For those who pursue transition, testosterone therapy (T) and/or surgeries help to better align their bodies with their gender identities. In addition to general daily stress, transgender men also experience stigma and stress associated with their minority-status, which can negatively affect health. Nonetheless, transgender men remain an under-researched group, and these excess stressors are not yet well understood. A subset of interviews (n=8) was selected from The Transitioning Experience Study (N=65), which asks, “What stressors do transgender men face during their transition and how do these influence health?” Interviews were selected based on participants’ early-transition status (≤ 2 years on T). Qualitative coding and thematic analyses were then used to identify and characterize transition-specific stressors, including “Coming-Out Stress” and struggles with gendered social interactions (“Transitioning Identity Stress”). Analyses revealed two prominent factors which influenced transgender men’s experiences with these stressors: (1) duration of relationships (i.e., whether relationships preceded transition or not) and (2) whether others consistently tried to affirm their gender (e.g., through the use of male pronouns). These findings contribute to our understanding of challenges faced during transition, which can facilitate the development of support and awareness about the transitioning experience.

Keywords: Transgender Men, Transition, Stress, Stigma, Coming-Out

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11. Length of Homelessness as a Predictor of Cognitive Impairment in the Frontal Lobe.

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Due to the ethical implications of experimenting within homeless populations, little research has been published examining the brain functioning of these individuals using electroencephalograms (EEG). The present study collected data from participants performing a go no-go task while an electroencephalogram cap was recording brain wave activity. Thirty-five adult male participants from the Long Beach Rescue Mission were recruited based on their history of homelessness. Ten subjects results were inconclusive and therefore thrown out. We hypothesized that there would be a positive linear regression between duration of homelessness and frontal lobe functioning when subjects performed the Go No-go task. Regression analysis supported the hypothesized relationship between delta waves in the right frontal lobe in electrode F4 (r=.40, p=.044) and F8 (r=.556, p=.004). These results indicate how important it is to come up with immediate intervention strategies for the homeless. It is a significant addition to the research in homeless communities, allowing a better understanding of the effects of homelessness.

Keywords: Homelessness, slow wave, delta activity, theta activity, TBI, EEG, frontal lobe damage

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12. Investigating Modulation of Cell Death by Innate Immune Protein C1q

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Atherosclerosis, which is characterized by an accumulation of low-density lipoprotein (LDL) in the artery wall, is a predominant contributor to cardiovascular disease, the leading cause of death in the U.S. today. Atherosclerotic plaque consists of apoptotic lipid-filled macrophages, called foam

cells, which exacerbate the progression of atherosclerosis. Complement protein C1q has been shown to have a protective role in facilitating lipoprotein clearance during the early stages of atherosclerosis. However, the protective mechanisms of C1q's role in regulation of gene expression has not been identified. Our project aims to address whether C1q may help to promote cell survival by investigating expression of CASP7, an apoptotic gene, in the presence of C1q during oxidized (damaged) lipoprotein clearance in raw murine cells.

13. Impact of a Six-Week Nutrition and Physical Activity Intervention for Low-Income Parents

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Background: Interventions directed towards modifiable risk factors, such as nutrition and physical activity, have potential to positively impact chronic disease risk. Moreover, low-income adults have reported physical inactivity and poor dietary quality.
Objective: To improve dietary intake, nutrition knowledge, and physical activity of low-income parents.
Methods: California State University, Northridge (CSUN) and California State University, Long Beach (CSULB) delivered a nutrition intervention at a North Long Beach community center. Intervention included nutrition lessons, group exercises, and cooking demonstrations. Focus groups were implemented to assess program impacts. Data collected in Spanish were recorded, then transcribed and translated to English. Two independent researchers verified translation accuracy. Transcripts were analyzed using an open coding system to identify salient themes.
Results: Four primary themes emerged from the focus group data: 1) changes in consumption, 2) physical activity changes, 3) disease prevention, and 4) program improvement. Participants reported decreased intake of sodium, solid fats, and carbohydrates and an increased intake of fruits, vegetables, and physical activity. Smaller portions were also reported. Recipes and visuals were helpful in promoting self-efficacy.
Reported improvements: A six-week intervention showed improvements in dietary intake and physical activity. Future work should recruit larger samples and include long term follow-ups to test sustainability.

Keywords: Nutrition intervention/program/education, low-income, community, parents

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14. Novel Technique of Changing Porosity in Three Dimensional Printing Bone Structure and its Biocompatibility to Osteoblast Cells.

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Modern research has developed a new method to replicate the nanostructure of bone using a 3-D printer. This method offers multiple advantages that include printing bone structures that replicate actual human bone's porosity for prevention of rejection by the body to the nanostructure compared to the microstructure. Biocompatibility of the 3-D printed bone structures will allow custom prints to accommodate different needs for each patient due to factors such as age, size, and daily activities. Observations of the body's response to the bone structures will be determined from material characteristics and biocompatibility tests. Material characteristics of the created bone structure will be determined from scanning electron microscope (SEM) images, compression, tensile, bending, and shear testing, while material biocompatibility is determined using cell adhesion, toxicity, and proliferation test. Results will show level of biocompatibility of the material from the new method. After collecting these results, changes will be made to improve the material for future implants in humans.

Key words: 3-D printed bone, biocompatibility, material characteristics, porosity, nanostructure

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15. Examining the Relationship Between Freshmen Students' Interest in Science and Expected Performance Within a Science Course.

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There is a significant need to address the shortfall of Science, Technology, Engineering, and Mathematics (STEM) professionals in the United States. One reason for this is that there is a shortage of college students that are interested in pursuing science careers. Studies show how subject interest and expectation of doing well in the field are factors that determine the types of career students will pursue. However, very little research exists that examines this relationship within the field of science. This study specifically examined the relationship between students' interest in science and their expectation of achievement within a science course. It was hypothesized that a high level of interest will be related to a high level of expected performance. Survey questions were administered to freshmen students (N = 936) enrolled in chemistry, physics, and biology classes. A bivariate correlational analysis demonstrated that there was a positive association between science interest and expected performance within a science course (r = 0.41, p < 0.01). These findings highlight the importance of science interest among college students.

Keywords: interest, science, performance, expectation, career

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16. Sexually Dimorphic Expression of Calbindin Neurons in the Non-reproductive Regions of the Mouse Forebrain.

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Calbindin-D28K, a calcium binding protein, is a biomarker for sexually dimorphic neuronal populations in the rodent brain, with more calbindin-expressing cells in the preoptic area (POA) and the bed nucleus of the stria terminalis (BNST), two regions intimately connected with the control of male sexual behavior, of male mice than in females. Such a sex difference in the number of calbindin-immunoreactive (ir) neurons seems to be regulated by perinatal exposure to testosterone (T) partially via activation of androgen receptor (AR). A recent study reported that sex differences in social and anxiety-like behaviors as well as gene expression in the amygdala and prefrontal cortex were eliminated in calbindin-knockout mice, indicating that sexual dimorphism in calbindin expression and function might be present and similarly regulated by AR in non-reproductive brain regions as well. To test our hypothesis, we used immunohistochemistry to detect calbindin-ir neurons in the forebrains of testicular feminized (Tfm) mice, lacking functional AR, and their wild-type littermates around pre-pubescence. We first observed that calbindin is widely expressed in a variety of brain regions, including the cerebral cortex and hippocampus. Next, we found more calbindin-containing cells in the primary motor cortex (M1), not entorhinal cortex, of wild-type female mice than males, and Tfm males show female-like number of calbindin-ir neurons. Our preliminary data support a critical role for the AR in establishing brain sexual dimorphism in calbindin expression during early development as well as its links to non-reproductive neural function.

17. Cross-Cultural Comparison on Gender-Typed Appearances in Korean and American Children.

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In early childhood, girls express a desire to wear feminine clothing (e.g., pink dresses) and boys express a desire to wear masculine clothing (e.g., superhero shirts). This period of time is referred to as *appearance rigidity* and is thought to reflect children's emerging sense of a gender identity. The current study will examine whether appearance rigidity can be found in Korean 4-year-olds (*n*=55) and how Korean children's appearances compare to American children's (*n*=80). Because clothing and appearance distinguishes genders in Korean culture as well, we predict that appearance rigidity would indeed be found among young Korean children. In terms of cross-cultural comparisons, previous research has found more dialectical thinking (e.g., coexistence/flexibility of masculinity and femininity) in East Asian cultures compared to Western cultures (Spencer-Rodgers, et al., 2010). Thus, we predict that 4-year-old American children will exhibit more gender-typed appearances than Korean children. Two experimenters will code

children's appearances using a previously validated coding system of gender-typed elements (e.g., colors) using videos from previous studies (Halim, et al., 2013). Appearance rigidity will be compared using a 2 (gender) x 2 (country: America vs. Korea) between-subjects ANOVA with appearance rigidity as the outcome. The findings of the study can reveal whether the emergence of gender identity is manifested in similar ways across different cultures.

Keywords*:* Appearance Rigidity, Gender Identity, Gender Appearances

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18. Effects of Sex and Age on *Eif2s3x* and *Eif2s3y* Expression in the Developing Mouse Cortex and Hippocampus.

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Brain sexual differentiation is the key physiological process that causes differences in neural structure and function between the sexes. Besides steroid hormones, increasing evidence indicates that sexual dimorphism can be attributed to the direct action of genes on the X and Y chromosomes. We have previously found that female neonatal mice display higher *Eif2s3x* mRNA levels in the cortex/hippocampus than males, likely due to escaping from X-chromosome inactivation. However, as age increases, the difference in *Eif2s3x* transcription between the sexes disappears. On the other hand, its functionally equivalent, Y-linked paralogue, *Eif2s3y*, is expressed exclusively in males with an age-dependent elevation. Our findings indicate that in the mouse cortex/hippocampus, the transient, female bias in *Eif2s3x* expression seems to be insufficient to compensate for the additional expression of *Eif2s3y* in the male, implying that these two X-Y paralogous genes may be dynamically regulated during early development, but function differently in a sex-specific manner. To test this hypothesis, we plan to first measure the summed mRNA levels of *Eif2s3x* and *Eif2s3y* using the PCR primers designed to recognize both transcripts equally. Next, we will test if the sex and age differences in *Eif2s3x* and *Eif2s3y* expression are preserved at the protein level in the developing mouse cortex/hippocampus using immunoblotting and immunocytochemistry.

Keywords: sex chromosomes, sexual differentiation, Eif2s3y/x

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19. Long-range Coarticulation: A Study of /r/ and /l/'s Effect on Preceding Vowels in American English.

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In British English, speakers start moving their tongue towards /r/ or /l/ as early as five syllables before /r/ or /l/ occur. This movement of the tongue affects the vowels that precede, making them more like /r/ and /l/. American English has variants of the /r/ sound that do not exist in British, such as the "syllabic" /r/ in *girl*, and the word final /r/ as in *car*. This study examines whether American English also has these long-range effects of /r/ and /l/. A monolingual participant from Southern California was recorded reading three repetitions of 359 items, which were produced in the frame sentence *He said it oughta be* ____. Praat software was used to create visual representations of spectral peaks (formants). A series of three-way ANOVAs analyzed the contrast of r/l, the effects of r/l position, and stress. Preliminary results suggest that these patterns have a shorter coarticulatory range, extending as far as one syllable. Understanding these patterns is useful for creating a basic foundation of how speech is produced and perceived. Such findings can assist future studies interested in improving treatment methods for speech disorders, as well as perfecting speech synthesis (e.g. Siri) for more accurate, natural speech production/perception.

Keywords: Acoustic Phonetics, Coarticulation, Liquids (r/l)

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20. Prevalence and Predictors of Disordered Eating Among a Diverse Group of College Freshmen

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This study aimed to evaluate the prevalence of disordered eating and related predictors among a diverse sample of college freshman. A sample of 106 male and female students completed a survey evaluating demographic information, sports participation history, and dietary patterns. The Eating Disorder Examination Questionnaire (EDE-Q) assessed subscales of disordered eating including weight concern, shape concern, eating concern, and dietary restraint. Data were analyzed using Microsoft Excel and SPSS. Statistical measures included independent samples t-tests, frequency, and logistic regression analyses. Among the sample, 23.6%, 24.8%, 1.9%, 12.4% of students were classified with elevated (subscale score >3) weight, shape, eating concern and dietary restraint, respectively, and 44.3%, 19.8%, 4.7%, 1.9% of students met criteria for excessive exercise, binge eating, laxative or diuretic use, and self-induced vomiting. Females displayed a higher elevated weight ($p= 0.003$), shape ($p= 0.002$), and eating concern ($p= 0.01$) compared to males. Vegetarians scored higher for the weight ($p= 0.002$), shape ($p= 0.003$), and dietary restraint ($p=0.02$) subscales. Students currently trying to lose weight also displayed higher weight, shape, and eating concern, and dietary restraint scores ($p<0.001$ for all subscales). There were no

significant differences in EDE-Q subscale scores among the sample based on ethnicity. The reported desire to currently lose weight (beta coefficients ranging from 0.4-0.7, $p<0.001$) emerged as the strongest predictor of weight, shape, eating concern, and dietary restraint scores in the multivariate linear regression analyses. These findings provide further evidence of potential at-risk populations that may benefit from nutritional intervention.

21. Vibrotactile Device for Rehabilitative Training of Persons with Lower-limb Amputation.

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Lower-limb amputees are at higher risks of falls if environmentally triggered tactile feedback, felt through their prostheses, is not interpreted properly. A corrective step must be executed to avoid perturbations, disturbances caused by an outside force that result in falls. A vibrotactile system was developed to train below-knee amputees in a lab setting on how to detect and react to imposed tactile feedback. The device holds vibrating motors and an actuation unit that simulate real-life perturbations. Tests are conducted by activating the perturbations during the swing phase of a patient's gait cycle. The swing phase occurs after the patient's toe pushes off and before the heel strikes the ground. Gait phases were identified by the original vibrotactile system using an angle measurement tool called a goniometer which was placed across the afflicted knee. Pilot studies were conducted to test the functionality of the system. This work describes the design improvements done on the existing vibrotactile system to increase accuracy and efficiency.

Keywords: Vibrotactile, Transtibial, Rehabilitation, Gait, and Lower-Limb

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22. Assessing the Knowledge, Perceptions, and Practices in Advance Care Planning: A Comparison between American and Japanese Physicians

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The global trend of a rapidly aging population in developed countries has resulted in an unmet need for healthcare professionals trained in advance care planning (ACP) as diseases of affluence become increasingly prevalent. To assess the magnitude of the issue, this study explored the differences in the approaches and perceptions toward ACP between physicians in Kameda Medical Center, Japan (n=71), and Long Beach Memorial Medical Center, US (n=123) using online survey data collected in 2015. Thematic coding was used on the qualitative data, while independent samples t-tests and chi-squared tests were used for the quantitative data. The findings revealed American physicians were significantly more likely than Japanese physicians to be satisfied with their understanding of their patient population's cultural perspectives of ACP

(p<.001). While no significant association (p=.242) could be ascertained on their perceived value for additional training on ACP, the average response indicated they thought that such training would at least be moderately helpful. American physicians were also significantly more likely to have advance directives than their Japanese counterparts (p<.001). The results highlighted the continued ambivalent nature of discussions on death and dying, underscoring the need to improve physicians' preparedness for ACP in both Japan and the US. Future studies should investigate the efficacy of measures used for such additional training.

23. Exploring The Isothermal Degradation of Polybenzoxazine Materials.

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Polybenzoxazines (PBZ) are a new exciting set of polymer materials that show promise for applications in industry due to their many attractive qualities. PBZ exhibits qualities such as no catalysts necessary for curing, low flammability, high char yield, and excellent mechanical properties. Due to these qualities, PBZ have the potential to replace epoxy resins bismaleimides, cyanate esters, and polyimides in several applications in industry. Polymer materials including PBZ are susceptible to oxidative degradation at high temperatures approaching their glass temperature and because polymer materials in industry face conditions of high temperatures they are at risk of failure after long periods of time. The purpose of this study is to investigate the thermal aging of PBZ to further understand the environmental effects on PBZ and to ensure the safe use of PBZ in industry. Samples of PBZ will be measured at the two temperatures of 180 and 200 C for a long period of around 5000 hours. The thermal aging will be measured in an air-circulating oven. The properties of thickness, weight, and volume will periodically be monitored. Thus far, several samples of the PBZ material have been cured and prepared for testing.

Keywords: Pbz, thermal aging, oxidative degradation

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24. Evaluating Sulfur-Containing Organo Phosphates as Selective-Inhibitors of Butyrylcholinesterase.

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As patients with Alzheimer's disease show decreased levels of acetylcholinesterase (AChE) activity and increased levels of butyrylcholinesterase (BChE) activity, the development of potent and specific BChE inhibitors has received much attention. Previous studies suggest that the active site and site known as the peripheral binding site are important for catalysis, and bivalent inhibitors that target both sites have been investigated. We identified bivalent organophosphates (bisphosphates) as potent and specific BChE inhibitors and identified that substitution of oxygen

with sulfur in the bivalent inhibitors (bisphosphorothiolates) led to a 100-fold lower K_I value for the sulfur-containing compound. Single-phosphate analogs bearing oxygen versus sulfur showed a similar 100-fold difference in KI values, but in a tetraethyl bisphosphate background the oxygen and sulfur analogs showed similar KI values suggesting the longer alkyl chains are needed for the sulfur versus oxygen difference. To investigate if the inhibitors act as reversible or irreversible inhibitors testing if addition of substrate outcompeted the inhibitor. Substrate addition restored activity in the presence of the oxygen and sulfur-containing inhibitor suggesting the compounds act as reversible inhibitors. We are currently exploring how altering the chain linker length in the tetra butyl bisphosphates increases or decreases better binding interactions.

25. Design Of An ApoLp-III/apoE-CT Chimera.

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Human apolipoprotein E (apoE) is a two-domain protein that mediates plasma cholesterol homeostasis by serving as a ligand for the low density lipoprotein (LDL) receptor. The N-terminal (NT) domain of apoE has four α-helices arranged in a bundle similar to apolipophorin III (apoLp-III), a model insect apolipoprotein containing five α-helices. The C-terminal (CT) domain has been found to initiate lipid binding. To better understand the role of apoE-CT, a novel chimeric apolipoprotein was designed by attaching apoE-CT to apoLp-III. A disulfide bond was introduced to the apoLp-III region of the chimera to eliminate its lipid binding. The chimeric protein, apoE3, apoE-CT, and apoLp-III were recombinantly expressed in bacterial cells, then purified using nickel affinity chromatography. Gel electrophoresis verified the collection and purification of the chimera and control proteins. Western blot analysis verified the presence of apoE-CT within apoLp-III/apoE-CT by use of a monoclonal apoE-CT specific antibody. Crosslinking studies using dimethylsuberimidate (DMS) revealed that the apoLp-III/apoE-CT chimera formed oligomers while apoLp-III remained monomeric. Future directions include measuring the chimera's secondary structure, protein stability and binding activity to phospholipids and LDL.

26. The Barriers that Affect Mexican-American Survivors' Decision to Stay in an Abusive Relationship.

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Past research has shown that intimate partner violence (IPV) has direct consequences for women's safety and well-being. Although communities are making important steps to increase their responsiveness to abuse, most offer limited resources to survivors of IPV. Therefore, the following pilot study seeks to analyze the reasons why survivors stay with abusive partners along with their relationship status to their abusive partner. A sample of 15 migrant Mexican women were interviewed to capture all aspects of survivors experiences with IPV. Open-ended questions were developed with the purpose for addressing survivors reasons for staying in an abusive relationship. Survivors responses were analyzed using inductive thematic analysis. Through the use of marginal coding, common themes were developed from all 15 survivors' responses. They were identified and arranged into a standardized codebook, and inter-rater reliability was calculated. The preliminary results to this study may suggest that survivors of IPV show common

barriers (e.g. nowhere to go, financial burden, and inadequate job skills) that may prevent survivors from leaving an abusive partner. The main objective of this study is to raise awareness and educate domestic violence organizations on how to provide helpful resources for Mexican migrant survivors who face difficult barriers when leaving their abusive partners.

Keywords: Survivors, Intimate Partner Violence, Migrant Mexican Women

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27. The Role of Rumination in Mediating Depressive Symptoms and Gait Performance.

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More than 33% of older adults age 65 and older fall each year and the risk of falling increases with age (Gillespie et al., 2009). More than 2 million Americans age 65 and older also suffer from some form of depression (NIH, 1999). Older adults with depression have deficits in attention and executive function, a cognitive process that uses sensory information to modulate and produce a behavior, which reduces gait performance and thus contributes to greater risk of falls. Rumination could be an underlying mechanism that reduces gait performance by interfering with attention and executive function. Previous studies have examined how greater rumination reduces cognitive performance among younger adults with depressive symptoms, but have not examined the role of rumination on gait performance among older adults (Connolly et al., 2014). This study will investigate the role of rumination in mediating the relationship between depression and reduced gait performance among older adults. We hypothesized that greater depression in older adults will be associated with greater rumination, which in turn will be associated with poorer gait performance. Twenty-five community-dwelling older adults age 65 and older, will be recruited from Long Beach Senior Center. Rumination and depressive symptoms will be measured by the Ruminative Response Scale and Beck Depression Inventory, respectively. A mediation analysis using a bootstrapping method (Hayes, 2009), will be conducted to determine the effect of rumination in mediating depression and gait performance. With confirmative hypothesis, this may suggest that rumination is associated with fall risks among older adults with depressive symptoms.

28. Does Self-Control Moderate the Relationship Between Stress and Depression in College Students?

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The pressure for high academic achievement and desirable social relationships places young college adults in a precarious developmental stage filled with new stress from which depressive symptoms often occur. Previous literature has stated that self-control may potentially defend against depressive symptoms when there are accumulated stressors in children and adolescents, but none have addressed the problem in college students. Self-control is characterized as effortful resisting of impulses or temptations. The current study will investigate gender differences in self-control moderating the relationship between stress and depressive symptoms for college students. Undergraduate students were recruited from public sites on the California State University, Long Beach campus, and were asked to take a 15-minute health-risk behavior survey on an electronic tablet. Scales included the Brief Self-Control Survey, the Center for Epidemiological Studies Depression Scale (CES-D), and the Perceived Stress Scale – 10 item version (PSS-10). Two hierarchical regression analyses will be run for males and females respectively to examine self-control as a moderator between stress and depression. It is becoming increasingly important to examine new ways to buffer the effects of stress and depression as more and more college students take on jobs as well as classes.

Keywords: Self-Control, Stress, Depression, College Students

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29. Dissolvable Energy Sources for Edible Medical Electronics.

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Dissolvable medical devices are a relatively new and a safer alternative to surgical implants. Rather than having chronic implants that could result in infections and be time consuming, one could just swallow a medical device. The devices, such as cameras or drug delivery systems, would be able to execute many tasks in the human body in order to monitor and improve a patient's health. In order to power this device it would require a power source that would dissolve as well. Natural materials are preferred for this battery. Melanin in cuttlefish ink has been used in the construction of cathodes for the battery and uses a sodium electrochemical cell [Ref 6]. Magnesium for the anode is also a possibility due to its high energy density and biocompatibility, paired with a cathode of iron, molybdenum, or tungsten [Ref 2].The usual lithium would be harmful to humans. The next step of the research is to search for and test more variations of safe biodegradable materials in the manufacturing of the batteries to reduce the risk of adverse

effects when ingesting the battery. This is a very promising area of research and many different ways it can be approached.

Keywords: Dissolvable Battery, Biodegradable, Medical Devices, Biocompatible

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30. Methylphenidate Exposure Enhances Oxycodone Reward in Male and Female Adolescent Rats.

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Oxycodone (OXY) abuse among adolescents has increased in recent years. Surprisingly, little preclinical research has examined the rewarding effects of oxycodone in male and female adolescent rats, with whom we previously demonstrated a dose-dependent preference for oxycodone-related cues using the established conditioned place preference (CPP) paradigm. Meanwhile, the ADHD drug methylphenidate (MPH, Ritalin), commonly prescribed during childhood, has been shown to enhance drug reward. Therefore, we examined the effects of MPH on adolescent rat OXY CPP. Male and female rats were intraperitoneally injected with either 4 mg/kg MPH or saline from postnatal day (PD) 11-20. They were then assessed for OXY CPP using an 11-day procedure beginning on PD 40. During pre-conditioning and post-conditioning sessions, rats were tested for their baseline and final place preference, respectively, in 15-min sessions. During conditioning (PD 42-47), rats underwent daily 30-min sessions, receiving alternating oxycodone (0, .033, 0.1, 0.3 mg/kg) and saline injections in distinct compartments. We predict that MPH rats will show OXY CPP at lower doses than saline controls, demonstrating an enhanced sensitivity to OXY reward as a result of the exposure.

31. Validation of a Nutrition Screening Survey to Identify Nutritional Risks Associated with the Female Athlete Triad.

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The Female Athlete Triad is a medical condition characterized by low energy availability, functional hypothalamic amenorrhea, and low bone mineral density. The onset of this syndrome may result from disordered eating or from athletes' lack of knowledge regarding their nutritional needs. Nutrition screening has been a reported tool that aids in the identification of dietary intake and subsequent nutritional deficiencies. Currently, the existing resources and nutrition screening tools used to detect nutritional deficiencies in athletes are time consuming

and lack an aspect of immediate feedback for athletes. Therefore, this study aims to validate a novel screening tool for identifying nutritional risks in athletes and active college students in a more timely manner. In this study, college students (age 18---25) will complete a 3---part survey inquiring about their health and body related measures (i.e., food and beverage intake, dietary patterns, exercise behaviors, supplement intake, and disordered eating behaviors). This study may provide evidence regarding the validity of this new screening tool that may facilitate a more efficient nutritional screening process.

Key Words*:* Female Athlete Triad, Nutrition Screening, Eating Attitudes and Behaviors, Disordered Eating

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32. Investigating Cholesterol and Triglyceride Levels in Mouse Models of Atherosclerosis

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The inflammatory disease atherosclerosis is a major contributor to heart disease, the leading cause of death in Americans. Innate immune protein C1q has a dual role in atherosclerosis. It activates complement, which promotes disease progression, but it also activates macrophages, which can help them clear cholesterol and is beneficial. Previous experiments have only been performed in vitro and now it will be determined if C1q acts similarly in vivo. Atherosclerosis-prone mice that are sufficient or deficient in C1q will be fed a high fat diet for 10 weeks. Then, blood will be collected and changes in the systemic cytokine levels will be measured by Luminex multiplex analysis. Preliminary experiments were done to measure plasma cholesterol and triglyceride levels in control, normal chow-fed mice. There were no differences in triglyceride levels between different genotypes of the control mice. However, there was a difference in cholesterol levels between the different groups. As expected, the LDLR-/- atherosclerosis model mice had significantly higher cholesterol levels than the LDLR sufficient mice. In future, similar experiments will be performed in the high-fat western diet fed mice.

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