

LIFE SCIENCE

Undergraduate

Title: Small Mammal Population Survey Of Texas A&M University-San Antonio		Presentation ID: A63 – AN
Author: Belinda Aguirre	Discipline: Life Science	
Campus: Texas A&M University – San Antonio	Student Level: Undergraduate	
Co-Authors: Martin Carias and Adam Lorenz	Mentor(s): Dr. Corinna Ross	
<p>Abstract</p> <p>We are conducting a survey of the small mammal fauna in the undeveloped land around the Texas A&M University-San Antonio Campus (TAMUSA). Fieldwork began in January 2015, it's currently still ongoing. Small mammals were trapped using Sherman live traps that were set each evening along transect lines. Traps were checked each morning to determine success of traps and identify species captured. We calculated trap nights as the number of nights multiplied by the numbers of traps set. From January 2015-April 2015 there were a total of 754 trap nights with 11 positive traps. Four mammal species were collected: northern pygmy mouse (<i>Baiomys taylori</i>), American deer mouse (<i>Peromyscus maniculatus</i>), fulvous harvest mouse (<i>Reithrodontomys fulvescens</i>) and hispid cotton rat (<i>Sigmodon hispidus</i>). From June 2015-August 2015 the survey concentrated on old vegetation sites on the property and 285 trap nights resulted in 2 positive traps. Two species of mammals were documented: hispid cotton rat (<i>Sigmodon hispidus</i>) was trapped and the eastern cottontail rabbit (<i>Sylvilagus floridanus</i>) was visually recorded on three occasions. While the percent success was similar between the spring and summer trapping sessions (1% success, and 0.7% success respectively) it is possible the summer activity reflected the increased temperatures in the area.</p>		

Title: Positive Allosteric Modulators Binding Site Determination Within Nicotinic Acetylcholine Receptors		Presentation ID: A64 – AN
Author: Al Muntaser Alaskari	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Dr. Ayman Hamouda	
<p>Abstract</p> <p>Determination of a specific binding site in positive allosteric modulators-muscle type nicotinic acetylcholine receptor. Neuronal nAChRs are implicated in the pathophysiology of many cognitive and neurodegenerative disorders, such as nicotine addiction and Alzheimer's. The designation of selective drugs to target nAChRs has potential of treating these conditions. [dFBr] and [LY] are positive allosteric modulators (PAMs) of (nAChRs), which is a type of drugs that is selective for brain-type nAChRs. On the other hand, these modulators inhibit the muscle function in the human body. Determining the binding site for these modulators at specific amino acid will aid designing PAMs selectively binds to brain- type nAChRs. The question here is how can we determine the binding site of [dFBr] and [LY] with nAChRs? Site-directed mutagens will be used to generate various combinations of nAChRs subunits can be expressed in <i>Xenopus</i> oocytes. Electrophysiological testing of oocytes that express certain nAChR combination will be conducted. As a result we can identify amino acid residue that is specific in controlling the channel. The recording of [LY] with ACh showed increase in Ach efficacy with little effect on Ach potency at (H Alpha4 Beta2 HS). Also, shows that [LY] increased in Ach efficacy with much less effect on Ach potency at (H Alpha4 Beta2 LS). In conclusion, [LY] potentiate Human (Alpha4 Beta2 HS and LS), [LY] increases the efficacy of Ach at (LS, HS). Testing more subunits combinations can be used as a guide to detect specific binding site for synthesizing selective drug.</p>		

Title: Evaluating Time In The Nestbox As A Behavioral Marker Of The Biological Clock In Male Common Marmosets (<i>Callithrix Jacchus</i>)		Presentation ID: A65 – AN
Author: Raquel Alonso	Discipline: Life Science	
Campus: Texas A&M University – San Antonio	Student Level: Undergraduate	
Co-Authors: Christa Leach	Mentor(s): Corinna Ross	
<p>Abstract</p> <p>Marmosets have recently been developed as an aging model and a number of phenotypic tools have been translated from rodent, and human studies into a comprehensive testing system. However, a preclinical marker of many human diseases associated with aging decline is the inability to comprehend and recall time as a normal function of the biological clock, which is difficult to assess in animals. One possible method is to assess an animal's preparation for the end of the day and entry into a sleeping nest. Video was recorded for twelve male-female pair housed marmosets beginning two hours prior to lights out which occurred daily at 7pm. The video was scored using instantaneous sampling every 3 minutes for whether the males were inside or outside of the nestbox. Scores were then calculated for the number of times an animal was in the nestbox for each 30 minute time frame. On average the males spent more time within the nest box thirty minutes prior to lights out when compared to 2 hours prior (30 min = 8.08±0.94; 120 min=4.08 ±1.14; p=0.012). We believe this non-invasive behavioral assessment may offer a new technique for evaluating the biological clock function in future studies.</p>		

Title: Differentiation Of Mosquito Abundance And Diversity Captured With CDC Light Trap And BG-Sentinel™ Trap In San Antonio, Texas		Presentation ID: A66 – AN
Author: Sofia Andujo	Discipline: Life Science	
Campus: Texas A&M University – San Antonio	Student Level: Undergraduate	
Co-Authors:	Mentor(s): M. Wise de Valdez	
<p>Abstract</p> <p>Mosquito surveillance in San Antonio, Texas is limited. We aimed to begin an undergraduate research program to monitor mosquito species distribution and abundance in residential areas across San Antonio. The purpose of this study was to determine mosquito trap efficacy in these residential microhabitats, specifically we compared the BG-Sentinel™ and the CDC mini-light traps. We baited both traps with CO₂ and set the traps weekly in 18 local residential backyards from June 1 – June 31, 2015. We collected a total of 1,955 adult females and identified 29 species. The CDC mini-light trap captured the most diverse array of mosquitoes; with a diversity index of 2.7 and each of the 25 species were collected at least once. In contrast the BG-Sentinel™ showed a diversity index of 2.2 and 29 species were collected. In addition, the BG-Sentinel™ trap collected 74% of total mosquitoes caught, with the most abundance species being <i>Aedes aegypti</i> (37%), followed by <i>Culex quinquefasciatus</i>(16%), <i>Psorophora columbiae</i> (10%), and <i>Aedes vexans</i> (6%). <i>Aedes vexans</i> was the mosquito species most frequently caught in the CDC mini-light trap with 16%, followed by <i>Ae. aegypti</i> (15%), and <i>Ochlerotatus trivittatus</i> (10%). Future studies relating to mosquitos in San Antonio residential areas should use the CDC mini-light trap if diversity is the goal and the BG-Sentinel™ as the primary technique if monitoring <i>Ae. aegypti</i> and <i>Cx. quinquefasciatus</i> is the goal.</p>		

Title: The Binding Effectiveness Of Anti-Rdisnitegrin Polyclonal Antibodies Against Disintegrins From The Venom Of Crotalus Scutulatus Scutulatus (Gloyd, 1940)		Presentation ID: A67 – AN
Author: Raúl Baez Jr	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Undergraduate	
Co-Authors: Rachel Johnson and Victoria Parra	Mentor(s): Mr. Esteban G. Cantu Jr. and Dr. Elda E. Sánchez	
<p>Abstract Disintegrins derived from snake venom are currently being investigated for their potential use in the treatment of cardiovascular and cerebrovascular disorders and cancer. Intraspecies and intrapopulation venom variation, high cost, and low yields can prove to be problematic in the identification and isolation of native disintegrins using traditional biochemical techniques. Currently, the determination of the possible presence of the disintegrin, mojastin, in Mohave rattlesnake venoms (Type B) is done by lethality testing. The use of an anti-disintegrin antibody could reduce or eliminate the use of animals for lethal doses and also identify the abundance of disintegrins in snake venoms. This study implements the use of an anti-recombinant disintegrin polyclonal antibody produced and isolated from the New Zealand rabbit for the detection of disintegrins from crude snake venoms. Thirteen venoms from individual Mohave rattlesnakes of varying geographical locations were analyzed for the presence and relative abundance of disintegrins using Western blot. After correlation with Sonoclot® and LD50 data, it was determined that the antibody allows for a quicker identification of disintegrins within venoms. Furthermore, this data was utilized to identify and isolate a potential novel disintegrin dimer using reverse phase (C18) liquid chromatography.</p>		

Title: Clinical Significance Of Histone Methylation Regulators In Breast Cancer		Presentation ID: A68 – AN
Author: Guadalupe Barbosa	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Undergraduate	
Co-Authors: Venu Cheriya	Mentor(s): Venu Cheriya	
<p>Abstract Breast cancer (BC) is the most common cancer and the second leading cause of death amongst women worldwide. Recent studies have suggested a role for histone methylation associated epigenetic modifications in breast cancer. Therefore we hypothesized that the expression of histone methyl transferase (HMTs) will correlate with clinical outcomes in BC. By using Kaplan-Meier analysis the relationships between HMTs expression and overall survival of BC patients were analyzed. Gene expression data from 3 studies with 487 patients were divided into low and high cohorts for the expression of 35 HMTs each. Among these, 21 HMTs were shown to have clinical significance ($P < 0.05$) in overall survival (OS) of BC. ASH1L and SUV39H2 were determined to have the most significant effect on OS ($p < 0.0129$ and < 0.0087 respectively) and had hazard ratios of 0.3936 and 0.3781 respectively. Additional analysis identified the association of MLL2, SET, EZH1 and SMYD3 with poor distance metastasis free survival. In summary, our results suggest that increased expression of HMTs may promote BC and inhibiting the activity of ASH1L or SUV39H2 may be beneficial to BC patients.</p>		

Title: A Search For A Sex-Determination Mechanism In The Ant-Decapitating Phorid, Pseudacteon Tricuspid And The Spotted Wing Drosophila, D. Suzukii		Presentation ID: A69 – AN
Author: Jennifer Benavides	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Undergraduate	

Co-Authors: Richard Patrock, Nathan Jones, Rob Plowes, Elyse Grilli and Larry Gilbert	Mentor(s): Rudolf Bohm
<p>Abstract</p> <p>Some species of ant-decapitating phorid flies display an odd sexual developmental pathway in that males and females emerge from different sized hosts; males from small and females from larger headed hosts. The basis for failure for males to emerge from larger hosts, is obscure but might involve an absolute inability to overcome host immune responses or some other unknown mechanism(s), such as an environmental-gene interaction in the sex determination pathway. This pathway in <i>Drosophila</i> is well understood and involves a regulatory hierarchy that is first dependent on the ratio of sex to autosomal chromosomes followed by an ordered series of interplaying genes. A cytogenetic analysis of five ant-decapitating <i>Pseudacteon</i> spp. showed the typical Phoridae family undifferentiated sex-chromosome karyotype, which indicates a significant change in the regulatory hierarchy of sex determination. We took the following approach to look for the sex-determination pathway in <i>Pseudacteon tricuspis</i>. Using Primers designed from regions of functional constraint in the <i>tra</i> gene, we cloned this gene from multiple phorids and a <i>Drosophila</i> pest species. An analysis of protein motifs suggest an exciting hypothesis: a redox sensitive element that might be related to lipid metabolism is suggested in one of the exons. This finding suggests a likely mechanism for differential emergence rates between males and females based on host size. We propose that stringent levels of fats will flip the switch in the transformer pathway, giving rise to male flies, while sufficient fat levels will do the opposite and allow for female development.</p>	

Title: Taurine As A Potential Therapeutic Avenue To Treat Aging-Associated Diseases	Presentation ID: A70 – AN
Author: Michael Boachie-Mensah	Discipline: Life Science
Campus: Texas A&M University	Student Level: Undergraduate
Co-Authors: Paola Correa	Mentor(s): Dr. Luis Rene Garcia
<p>Abstract</p> <p>Aging (senescence) increases vulnerability to aging-associated pathologies such as cardiovascular and neurodegenerative diseases—part of the leading causes of death in the world. To alleviate the challenges faced by individuals experiencing problems related to aging, investigations must be conducted to find therapeutic interventions that attenuate the neuronal dysfunction and death associated with these diseases. Using an integrative approach based on pharmacology, transgenics, and genetics, we have identified that the endogenous amino acid taurine is an important modulator of the effects of aging. Here we use <i>C. elegans</i> male mating as a model to assess taurine’s physiological role. As these males age, their efficiency in mating deteriorates due to hyperexcitability of sensory-motor neurons that regulate mating behavior. We found that taurine pre-exposure diminishes aging-associated hyperexcitability of the mating circuit. To study the molecules that mediate taurine signaling, we generated a knockout of a conserved mitochondrial putative taurine transporter (ptt) using the CRISPR-CAS9 system. We validated our preliminary observations through ptt RNAi. The diminished function of ptt suggests that this transporter is essential for mitochondrial function. Thus, taurine might enhance mating prowess in aged males by improving mitochondrial function.</p>	

Title: The Clinical Use Of Disintegrins As Imaging Probes For Atherosclerotic Plaque		Presentation ID: A71 – AN
Author: Ifeoluwa Bob-Nabena	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Dr. Sara Lucena	
<p>Abstract</p> <p>Although there are vast amounts of toxins within the venom of snakes, which are known to cause medical emergencies, they also display various biological functions. In this experiment the disintegrin that is isolated from the prairie rattlesnake’s venom is used to create a fluorescent imaging probe. Once the protein from the venom is cloned, the recombinant protein (R-Viridistatin) the disintegrin is isolated and purified. The characterization of the recombinant peptide (R-Viridistatin) could lead to significant results as a probe for the early detection of atherosclerotic lesions. This experiment was done by using fluorescence microscopy and in vitro cell culture techniques. This study is very important since atherosclerosis is the major reason for most clinical cardiovascular events such as strokes and heart attacks. Therefore the studies of new components that have the potential to be used as probes in the early detection of atherosclerosis lesions are relevant in the diagnosis of this disease that affects millions worldwide.</p>		

Title: Protein Kinase C (PKC) Mediated Histone H3K27 Tri-Methylation Augments Breast Cancer Cell Metastasis		Presentation ID: A72 – AN
Author: Anna Bowsher	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Undergraduate	
Co-Authors: Dr. Venu Cheriya	Mentor(s): Dr. Venu Cheriya	
<p>Abstract</p> <p>Despite advances in breast cancer therapies, it remains the second leading cause of cancer related deaths among U.S. women with a five year survival rate of <25% after distant metastasis. Recent studies identified the overexpression of the histone methyl transferase EZH2 in breast cancer, as a substrate of protein kinase C (PKC), a key promoter of metastasis. Therefore, we hypothesized that PKC mediated trimethylation of histone 3 at lysine 27 (H3K27me3) enhances metastasis. To test this, H3K27me3 status and metastatic potential were assessed in PKC activated cells. The activation of PKC with PMA markedly increased the levels of chromatin associated H3K27me3. In wound healing assays, PMA resulted in a 2x increase in cell migration over the control (p < 0.0001) and 3x more invasion through matrigel than untreated control cells (p=0.0156). The enhancement of H3K27me3 by PMA suggests that PKC has an active role in mediating metastasis in breast cancer. Consequently, PKC-inhibition with bisindolylmaleimide-1 (BIM-1) not only reversed breast cancer migration and invasion but also reduced H3K27me3. Taken together, our data for the first time demonstrates the direct role of PKC-induced in epigenetic modification of H3K27 in breast cancer metastasis.</p>		

Title: Presence Of Vcg Gene Locus As A Potential Genotype Marker In Environmental And Clinical Isolates Of Vibrio Vulnificus From The Gulf Of Mexico		Presentation ID: A73 – AN
Author: Joshua Carbaugh	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors: Thanh Thuy Dan Pham, Johnnie Marie Iglesias, Danielle Steffey and Melanie Mercado Miranda	Mentor(s): Gregory Buck PhD	
<p>Abstract Vibrio vulnificus is an opportunistic human pathogen commonly found in coastal and estuarine waters. The bacterium may cause necrotizing fasciitis (“flesh-eating syndrome”) by entering wounds or gastroenteritis through consumption of improperly prepared oysters. Both disease conditions are rapid, with 50-60% cases resulting in death within 24-72 hours if untreated. However, a large number of oysters are consumed every year with only 90 cases reported nationally. Previous genomic analysis presented a dimorphic gene variant used to distinguish two distinct genotypes, clinical (vcgC) observed in 90% of clinical strains, and environmental (vcgE) present in 85% of environmental isolates. Though the vcg genes has not been determined to encode a protein, the two variant loci share up to 85% nucleotide homology in certain strains and are hypothesized to be stable within each genotype enough for differentiation and potentially attributing increased virulence of the organism. This current project involved detection of similar sequence homology using end point PCR in clinical strain V. vulnificus ATCC 27562 and an assortment of 96 environmental and clinical isolates from local and regional Gulf sites to determine the frequency of each gene in each genotype.</p>		

Title: Population Density And Occupancy Of Ocelots		Presentation ID: A74 – AN
Author: Shelby Carter	Discipline: Life Science	
Campus: Texas A&M University-Kingsville	Student Level: Undergraduate	
Co-Authors: Michael E. Tewes, Justin Wied, John Leonard and Lauren Balderas	Mentor(s): Dr. Michael Tewes	
<p>Abstract The Ocelot occupy both the East El Sauz Ranch and the Yturria Ranch. This focuses on this cat, the ocelot (Leopardus pardalis). Both ranches fall in south Texas where populations have been followed and recorded. These felids are known to be solitary, therefore, any coexistence and occupancy of this cat community will be examined. Several analysis have been down using camera trapping on these species such as Stasey (2012) and Watts (2015). Studies like these will help and be used to contribute to evaluate abundance, density, and occupancy patterns of ocelots on the East El Sauz and Yturria Ranch. Assessing these three different statistics may provide insight into how large this population truly is on not only these two ranches, but in south Texas overall. Results from this study will help continue regulation of population size and other important features. Information will be provided to help biologists understand their ecological role and ass ist with their future conservation.</p>		

Title: A Population Assessment Of Plain Chachalaca (<i>Ortalis Vetula</i>) Transplants In South East Texas		Presentation ID: A75 – AN
Author: Genesis Castillo-Torres	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Dr. Kim Withers	
<p>Abstract</p> <p>The plain chachalaca (<i>Ortalis vetula</i>) is a pheasant-like game bird found in the southern regions of Texas, primarily in the Rio Grande Valley. They are arboreal, and are seen in dense shrub areas near water. Between 1959 and 1987 Texas Parks & Wildlife captured plain chachalacas from the Rio Grande Valley and released them in south Texas with the intention of creating a larger range. William Balda (1988) conducted a study to evaluate the population of plain chachalacas at Welder Wildlife Foundation using call counts and radio telemetry. This study will use similar methods in order to inspect 40 sites at the Welder Wildlife Foundation and surrounding areas. The population survey will run from October 2015 to July 2016. Taped calls will be broadcasted through a speaker in the mornings in each site. The tape will be played for two minutes, a one minute break to listen to calls, then played for another two minutes before moving on to the next site. The chachalaca population on the Welder Wildlife Foundation is expected to have increased since Balda (1988) surveyed the area if habitats are suitable and predation is low.</p>		

Title: GRIP: A Functional Genomics Platform To Identify And Validate Anti-Estrogen Resistance Genes In ER+ Breast Cancer		Presentation ID: A76 – AN
Author: Fred Chatham	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Undergraduate	
Co-Authors: Sarisha Chakkapalli & Dr. Venu Cheriyaath	Mentor(s): Venu Cheriyaath PHD	
<p>Abstract</p> <p>Despite the efficacy of anti-estrogen therapies, over 50% of estrogen receptor positive (ER+) breast cancer cases are either intrinsically resistant or develop resistance during treatment and become incurable. Since conventional methods of drug target identification may take considerable effort and time, we developed a novel high-throughput, genome-wide, cell-based functional genomics screen called GRIP (genome-wide random insertion of promoter) for rapid identification of targets to overcome anti-estrogen resistance. GRIP has the potential to turn on virtually any gene within the genome of breast cancer cells. Our hypothesis is that elevated expression of the gain-of-function genes that complement estrogen-signaling pathways confers anti-estrogen resistance in ER+ breast cancer cells. In a proof-of-concept pilot study GRIP activation resulted in several tamoxifen (TAM)-resistant MCF-7 cell clones. Further analysis of GRIP clones identified the over-expression of Phosphatidylinositide 3-kinase (PI3K) mRNA, a kinase that can induce TAM resistance. Moreover, the removal of GRIP using Cre-Lox abrogated PI3K-expression and reversed the TAM resistant phenotype. In summary, GRIP is an innovative strategy for unbiased, cell-based, functional genomics screening to identify genes that drive anti-estrogen therapy resistance. Identification and validation of clinically relevant anti-estrogen genes using GRIP strategy will elucidate pathophysiology of ER+ breast cancer recurrence.</p>		

Title: 2 Hawai'i Institute Of Marine Biology, School Of Ocean And Earth Science		Presentation ID: A77 – AN
Author: Matthew Cruz	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Dr. Birg and Dr. Hogan	
<p>Abstract</p> <p>Extreme environmental gradients can drive the vertical zonation and speciation of species within intertidal shorelines. <i>Cellana sandwicensis</i> is an endemic species of limpet that occupies the mid shore of intertidal zones of the Hawaiian archipelago. This study focuses on phenotypic variation in shell morphology with respect to intertidal shore height of <i>C. sandwicensis</i> among two islands in the North Western Hawaiian Islands: Mokumanamana (MMM) and Nihoa (NI) . Here we test for differences in shell morphology between the upper, mid, and low sections and correlate those differences with the different levels of stressors. Indices for height (height/length), pointiness, aperture roundness (width/length) and desiccation (circumference/volume) were determined for 132 and 128 individuals collected from NI and MMM respectively. Height/pointiness is related to predation vulnerability (the pointier the shell, the easier to be preyed upon), aperture roundness corresponds to hydrodynamic dragging (more oblong, less drag) and circumference/volume is associated with desiccation (lower values have more resistance to dissection). Analyses reveal differences between high, mid, and low sections among all measured indices on both MMM and NI. These results confer that there is phenotypic plasticity among <i>C. sandwicensis</i> with respect to shell height, pointiness, roundness and circumference/volume that correlate with ecological stressors within the mid-shore. As expected, shells from the low section were flatter which is more advantageous for limpets under high levels of predation and the circumference/volume indices of shells from the higher section were lower than those of the higher sections, indicative of gastropods experiencing high levels of desiccation.</p>		

Title: Cdna Cloning Of Two Novel RGD-Disintegrin Domains Within Metalloproteinase Precursors From A Venezuelan Mapanare (<i>Bothrops Colombiensis</i>) Snake		Presentation ID: A78 – AN
Author: Esteban Cuevas	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Undergraduate	
Co-Authors: Thomas J. Helmke, Chairat Atphaisit and Alexis Rodriguez-Acosta	Mentor(s): Dr. Montamas Suntravat and Dr. Elda Sanchez	
<p>Abstract</p> <p>Snake venom disintegrins are small proteins presented in the venom of several snake families. Disintegrins usually contain an Arg-Gly-Asp (RGD) sequence that is known to be involved in cell adhesion ligand recognition, binding specifically to integrin receptors on the cell surface and also exhibiting anti-platelet aggregation activity. Both native and recombinant disintegrins have been widely investigated for their anti-cancer activities in biological systems in vitro and in vivo. Here, we report the successful cloning of two new cDNAs encoding RGD-disintegrin domains of metalloproteinase precursor sequences obtained from a Venezuelan mapanare (<i>Bothrops colombiensis</i>) venom gland cDNA library. The distinct RGD-disintegrin domains from two different clones 580 and 1824 were amplified by polymerase chain reaction (PCR). PCR was performed using the DNA polymerase and gene-specific primer established considering the disintegrin domain. The PCR products were subcloned into a pGEX-4T-1 vector and transformed into <i>Escherichia coli</i> strain Top10. Plasmids containing inserts of the predicted size for RGD-disintegrins were sequenced to verify that the coding sequence was in-frame with the vector sequence that encodes the GST tag. The confirmed recombinant plasmid was transformed into <i>E. coli</i> strain BL21 (DE3) cells. The expression of these recombinant RGD-disintegrins will be further performed for testing their biological activities.</p>		

Title: Influence Of Precipitation And Temperature On Mosquito Populations In Residential Areas Of San Antonio, Tx		Presentation ID: A79 – AN
Author: Joshua Darden	Discipline: Life Science	
Campus: Texas A&M University – San Antonio	Student Level: Undergraduate	
Co-Authors: Alfonso Vazquez	Mentor(s): Dr. Megan Wise de Valdez	
<p>Abstract</p> <p>The largest cities in Texas are Houston, Dallas/Fort Worth, and San Antonio; all but San Antonio have well-established mosquito control districts. We suspect the lack of a mosquito control district in San Antonio is due to low incidence of mosquito-borne diseases and drier conditions compared to Houston and Dallas/Fort Worth. The purpose of this study was to identify if meteorological components had an impact on mosquito abundance and how abundance changed during the summer months in residential areas of San Antonio, Texas. Mosquitoes were collected from 18 sites across San Antonio, TX. Over the course of the 10-week investigation more than 3000 mosquitoes were identified to 29 species. Using National Oceanic and Atmospheric Administration weather stations we gathered local precipitation, temperature, and wind speed data. Preliminary analysis shows species-specific variation in temporal patterns of mosquito abundance. Precipitation did not influence mosquito abundance when combined over species which may be due to the fact that mosquito species respond differently to precipitation events depending on their oviposition site preference. Also, there was no effect of temperature on mosquito abundance. Further analysis may show species-specific correlation to precipitation. Long-term data over additional months and years will help to elucidate these questions.</p>		

Title: The Effects Of Captopril Treatment And Exercise On Blood Pressure And Gene Expression In The Spontaneously Hypertensive Rats		Presentation ID: A80 – AN
Author: Diamond Enyinnia	Discipline: Life Science	
Campus: Prairie View A&M University	Student Level: Undergraduate	
Co-Authors: Faith Isabelle, Nnaemeka Okorie, and Alphonso Keaton, Ph. D.	Mentor(s): Alphonso Keaton, Ph. D. and Audie Thompson, Ph. D.	
<p>Abstract</p> <p>Angiotensin converting enzyme inhibitors (ACE-I) have been shown to prevent impairment of endothelial cell function in the Spontaneously Hypertensive Rat (SHR). The purpose of this ongoing study is to examine the combined effects of long-term exercise training and ACE-I treatment and its withdrawal on blood pressure and vascular reactivity in the SHR. There are four groups of male SHR that are currently being studied: 1) Untreated SHR; 2) (SHREX) exercised trained (50 cm/s) for 40 minutes/ 3 days a week; 3) (SHREXC) captopril treated (50 mg/kg/day), treatment was initiated at four weeks of age and continued for 12 weeks; 4) (SHREXCW) captopril treatment followed by a 4 week withdrawal period. Currently, in our preliminary data, we have the mean arterial pressure (MAP) in the untreated SHR with an average diastolic blood pressure of 101 mmHg and a systolic blood pressure of 145 mmHg. Exercise treatment in the SHR (SHREX) has a significantly decreased MAP with a diastolic blood pressure of 84 mmHg and a systolic blood pressure of 146 mmHg. Oral administration of captopril with exercise (SHREXC) has a diastolic MAP blood pressure of 93 mmHg and a systolic blood pressure 133 mmHg, with the diastolic pressure surprisingly higher than the SHREX. And Captopril administered with a withdrawal period (SHREXCW) has a MAP diastolic blood pressure of 89 mmHg and a systolic blood pressure of 133 mmHg. In our further studies, we hypothesized to see Captopril treatment coupled with exercise to significantly decrease the MAP in the captopril groups.</p>		

Title: Microna Regulation On Human Ovarian Cancer Cells, Using p150Sal2		Presentation ID: A81 – AN
Author: Whitney Fakolade	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Dr. Chang K Sung	
<p>Abstract Ovarian cancer is a mutation within the female reproductive system, where the cells in the ovaries uncontrollably grow and ultimately metastasize, causing death to about 66% of women who are diagnosed every year. Through detailed research and close analysis, scientists have concluded that in present ovarian cancer cells, there is a lack of the p150Sal2 protein, which is a product of the SALL 2 gene, whereas in normal cells, the protein is present in abundance. Previous studies also have concluded that p150 contains tumor suppressive roles, which regulates the growth and integrity of the ovary cell. Research has also shown that microRNA (miRNA) functions as tumor suppressors in cells of the body. MiRNA are 22-nucleotide sequences that regulate gene expression, and are also induced and reduced by genes as well. The purpose of this project is to introduce p150Sal2, a product of the SALL2 gene into a human ovarian cancer cell, observing what miRNA s are induced or reduced as a result. Correspondingly, this study will shed light into the diagnostic and prognostic therapies of ovarian cancer, and ultimately give more generalized knowledge of this fatal disease.</p>		

Title: Identification And Quantification Of Seagrass Algal Epiphytes		Presentation ID: A82 – AN
Author: Melissa Fisher	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors: Kirk Cammarata	Mentor(s): Kirk Cammarata	
<p>Abstract This study initiated an inventory of epiphytic algal species found on seagrasses near Corpus Christi, Texas. Seagrass communities critically support diverse and economically beneficial fisheries. Epiphytic algae are primary producers providing food for higher trophic level foragers. Higher than average rainfall this year created hyposaline conditions in local bays and the resultant influx of nutrients is expected to impact both the presence and prevalence of different algae. Understanding the epiphyte community dynamics will facilitate epiphyte-scanning-based indicators of water quality which can be calibrated to community characteristics. All 5 local seagrasses were harvested from Redfish Bay and imaged with both visible and fluorescence scanners to characterize epiphyte accumulation patterns as a more robust alternative to dry biomass measurements. Algal epiphytes were dissected, identified, and collected for subsequent DNA fingerprinting (18S RNA, 16S RNA, rbcL, CO1, ITS2). We have tentatively identified 15 epiphyte taxa, finding a prevalence of red algae, abundant diatoms and cyanobacteria, but a deficiency of greens and browns. Notable differences were observed between the different seagrass host species.</p>		

Title: Ever Wonder What Can Improve Your Memory?		Presentation ID: A83 – AN
Author: Yoana Flores	Discipline: Life Science	
Campus: Texas A&M University International	Student Level: Undergraduate	
Co-Authors: Ever wonder what can improve your memory?	Mentor(s): Dr. Deborah Blackwell	
<p>Abstract A study done by the University of Columbia proves that regular, moderate exercise not only maintains blood</p>		

pressure and weight, but also helps everyone feel more energetic, lowers stress, and keeps memory to the max of its capacity. Researchers found that exercise stimulates brain regions involved in memory function to release a chemical called brain-derived neurotrophic factor (BDNF). BDNF rewires memory circuits so they work better. Memory loss increases as one ages and one way to retain that from happening and strengthen everyone's memory is through exercise. The purpose of this poster presentation is to make the public aware of the benefits of regular exercise and encourage to live a brain-healthy life style that may be able to prevent memory disorders like Alzheimer's disease.

Title: Chitosan And Plant Growth Production		Presentation ID: A84 – AN
Author: Shirley Fritzsching	Discipline: Life Science	
Campus: Prairie View A&M University	Student Level: Undergraduate	
Co-Authors: Julia Swaby, M.S., Michelle Mbia and Ebonee Williams, M.S.	Mentor(s): Dr. Peter Ampim and Dr. Laura Carson	
<p>Abstract Chitosan is known to play a role in boosting plant defense and yield. The goal of this study was to investigate the effect of chitosan applied as a drench treatment at transplanting on the growth and development of bell pepper (California Wonder) and sweet corn (G90) grown in a greenhouse. The plants were treated with 100 ml of 20ppm, 40ppm, and 60ppm chitosan using tap water and 1% acetic acid as controls and arranged in a completely randomized design. The plants were watered as needed with the same amount of water and fertilized weekly with 200 ml of Miracle-Gro All Purpose Plant Food (24-8-16) solution prepared at the label rate. The 60 ppm chitosan significantly increased bell pepper root biomass ($p < 0.05$) as well as pepper height and shoot biomass ($p < 0.10$). This treatment also produced higher numerical values for chlorophyll content and leaf area index for pepper than the other treatments. The results for the other chitosan treatments were mixed. All the chitosan treatments also produced more flowers. No significant treatment effects have been determined so far for the ongoing sweet corn study. However the acetic acid treatments of both crops died within 18 and 36 hours indicating the treatment had a lethal effect on both sweet corn and bell pepper. The results suggest that drench application could be a viable way to deliver chitosan to crops especially those grown in containers.</p>		

Title: The Effect Of Social Environment On Egg Size, Fecundity, And Periodicity In Oreochromis Mossambicus		Presentation ID: A85 – AN
Author: Elizabeth Green	Discipline: Life Science	
Campus: Texas A&M University International	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Dr. Michael R. Kidd	
<p>Abstract Tilapia aquaculture is a rapidly growing industry striving to meet the increasing worldwide demand for protein, with over 4.2 million metric tons harvested annually worldwide. Despite its economic importance, very little is understood about the reproductive physiology of these species. In this experiment, we tested the effect of social environment on egg quality, fecundity, and spawning periodicity in Oreochromis mossambicus, a species that is widely used in aquaculture in the US and representative of the many tilapiine species vital to aquaculture and native fisheries worldwide. We have found that female O. mossambicus kept in an isolated setting have significantly smaller eggs and increased fecundity than females kept in a social setting. The results of this experiment provide greater insight into the effect of husbandry conditions on fecundity, egg size and spawning periodicity, which is necessary in order to enhance selective breeding efforts and improve broodstock production.</p>		

Title: Executive Function Assessment Using An Apparatus Designed To Examine Visual And Motor Coordination In Common Marmosets (Callithrix Jacchus)		Presentation ID: A86 – AN
Author: Alexander Greig	Discipline: Life Science	
Campus: Texas A&M University – San Antonio	Student Level: Undergraduate	
Co-Authors: Suzette Tardif and Corinna Ross	Mentor(s): Corinna N. Ross, Ph. D.	
<p>Abstract</p> <p>The common marmoset (<i>Callithrix jacchus</i>) has been targeted to become the standard in nonhuman primate aging models, as they are considered “aged” at 8 years, have a maximum life span of 16 ½ year, and exhibit many aging-related pathologies often seen in humans. Conveyor belt tasks have been used to assess visual-motor coordination in marmosets, gaining popularity in behavioral pharmacological and Parkinson’s research. However, to date no such tasks have been implemented with marmosets to assess executive function, the ability to select actions or thoughts in relation to internal goals. We sought to develop a technique that would provide researchers with a tool to quantify executive function in nonhuman primates, especially in aging and dementia studies, where decline in executive function is predicted to be prevalent.</p>		

Title: Manipulation Of The Fruitless Gene In <i>Drosophila Melanogaster</i> To Form A P1 Mutant For Circuit Mapping		Presentation ID: A87 – AN
Author: Elyse Grilli	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Undergraduate	
Co-Authors: Amrithesh Kumar	Mentor(s): Dr. Rudi Bohm	
<p>Abstract</p> <p>In <i>Drosophila melanogaster</i>, sex-specific splicing of the fruitless gene results in multiple transcripts coding for alternative amino terminal exons. Transcripts from the P1 promoter of the fruitless gene determine courtship behavior and sexual orientation (Ito et al., 1996). The P1 promoter is activated just before the male reaches adulthood, and the transcripts from the promoter are only transcribed in the adult males. Since all transcripts contain the male specific exon, this feature can be exploited to map the fruitless circuit.</p> <p>The ET-FLP-induced intersectional GAL80/GAL4 repression (FINGR) method is an approach to circuit mapping that employs the use of the yeast transgenes GAL4, UAS, GAL80, and Flippase to create genetic mosaics in vivo. FINGR allows for a gene of interest to be expressed only in target areas determined by which promoters the yeast transgenes are under. Using a GAL4 inserted into the male specific exon under the P1 promoter (Manoli et al., 2005), we can express function altering transgenes in FINGR picked subsets of the larger GAL4 defined target area. Mapping the neural connections that lead to behavioral subroutines is vital to understanding male courtship behavior.</p>		

Title: Hellericetin 1 And 2, C-Type Lectins From Southern Pacific Rattlesnake Venom Inhibit Platelet Aggregation: Medicinal Therapeutics?		Presentation ID: A88 – AN
Author: Elizabeth Guerra	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Undergraduate	
Co-Authors: Robert I. Walls, Esteban Cantu, Jacob Valdez, Esteban Cuevas, Sara E. Lucena and Montamas Suntravat	Mentor(s): Elda E. Sanchez	
<p>Abstract Snake venoms hold a large assortment of toxic proteins. However, when isolated and administered properly, these proteins can be of medicinal value to patients at risk of strokes, hearts attacks, or malignant cancers. Snake venom C-type lectin-like proteins, or CTLs, have been found to have functions that would allow them to serve as biomedical treatments for these diseases. These functions include the inhibition of platelet function, coagulation factors, cell adhesion, cell migration, and cell invasion. Two CTLs from Southern Pacific rattlesnake (<i>Crotalus oreganus helleri</i>) venom were purified by cationic exchange chromatography. Their effects on platelet aggregation were tested with an aggregometer using human whole blood and three different agonists; ADP, collagen, and ristocetin. They were also tested in a Sonoclot® Coagulation & Platelet Function Analyzer using a glass bead activated kit. The IC50s for the ristocetin assays were 138 and 125 nM for hellericetin 1 and 2, respectively. There was no activity for either CTL for the inhibition of ADP- or collagen-induced platelet aggregation, nor did they affect the blood signature using the Sonoclot.</p>		

Title: The Distribution Of Littoral Cladocera In Bowie County, Texas		Presentation ID: B63 – AN
Author: Zachary Hancock	Discipline: Life Science	
Campus: Texas A&M University – Texarkana	Student Level: Undergraduate	
Co-Authors: Thomas Strawn, Amanda Blocker and Corey Endsley	Mentor(s): Dr. David Allard and Mr. Brandon Quaid	
<p>Abstract Over the course of two summers (2014-2015), the littoral zones of eight ponds and two lakes were sampled from the Bowie County area for general distribution of microcrustaceans of the Order Anomopoda (an order within the Suborder Cladocera). Ponds and lakes were sampled using a plankton net pitched 4-5 meters and reeled back slowly. Specimens were identified under a compound microscope. Only a small degree of variance (0.040) in species prevalence was observed. Species that appeared in most water-bodies sampled (80%) was <i>Chydorus sphaericus</i>, followed by <i>Daphnia ambigua</i> (70%). In terms of species richness, the two lakes (Spring Lake and Wright Patman) had the highest values (22.6% and 21%, respectively). The pond that displayed the highest percent of richness was ‘Amanda’s Pond,’ at 11.3%. In the littoral of Wright Patman, the exotic <i>Daphnia lumholtzi</i>, which has been the cause of some concern for certain fish populations (see Swaffer & O’Brien 1996), was identified. These findings are fairly consistent with the work of others (Smith 2001, Davidson et al. 2000, Chengalath 1982) on the typical inhabitants of the littoral.</p>		

Title: Cdna Cloning, Expression, And Characterization Of Three Novel Recombinant ECD-Disintegrins Cloned From Glands Of A Bothrops Colombiensis (Venezuelan Mapanare)		Presentation ID: B64 – AN
Author: Thomas Helmke	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Undergraduate	
Co-Authors: Chairat Atphaisit, Esteban D. Cuevas and Alexis Rodriguez-Acosta	Mentor(s): Montamas Suntravat and Elda E. Sanchez	
<p>Abstract</p> <p>Crotalid venoms are rich sources of components that affect the hemostatic system. Snake venom metalloproteinases are zinc-dependent enzymes responsible for hemorrhage that also interfere with hemostasis. The disintegrin domain is a part of snake venom metalloproteinases, which involves the binding of integrin receptors. Disintegrins typically contain the RGD or other tripeptide motifs that can inhibit integrin-mediated platelet aggregation and block many biological functions of integrins on cell surfaces. The aim of this study was to produce three different recombinant disintegrins cloned from glands of a Bothrops colombiensis and to characterize them regarding biological activities. Three different ECD-disintegrin domains of metalloproteinase clones 562, 581, and 723 were used as templates for polymerase chain reaction (PCR). Their disintegrin-like domains were subcloned, expressed in Escherichia coli BL21 cells, and tested for their biological activities. Purified recombinant ECD-disintegrins 562, 581, and 723 were tested for ADP- and collagen-induced platelet aggregation inhibition using an aggregometer. The purified proteins 562 (50 nM), 581 (598 nM), 723 (188 nM) showed collagen-induced platelet aggregation inhibition by 59.2%, 48.4%, and 43.8%, respectively. However, they were not able to inhibit ADP-induced platelet aggregation. Further recombinant disintegrins will be produced for testing the cytotoxicity and the inhibition of proliferation on cancer cell lines.</p>		

Title: The Effect Of Mandatory Overtime On Patient Safety		Presentation ID: B65 – AN
Author: Calvin Hennegar	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors: Corey Wigger, Kaitlyn Breedlove and Brenda Raygoza	Mentor(s): Dr. Cathy Miller	
<p>Abstract</p> <p>The registered nursing shortage has resulted in a lack of qualified personnel to fill staffing requirements throughout the health care industry. A routine way for organizations to meet their staffing obligations is to utilize mandatory and voluntary overtime to provide enough qualified staff to meet the requirements of the patient census. This practice has been linked to nurse injury, illness, burnout, and an unsafe environment for patients. Methods utilized to analyze outcomes related to mandatory overtime include surveys, qualitative studies, and quantitative observational studies. Results indicate that in addition to risks to the nurse, research has shown a correlation between the number of patient injuries and the number of hours nurses have worked within the work week. Adequate staff rest results in increased nurse safety, increased job satisfaction, and decreased burnout. Furthermore, research has shown that well-rested nurses provide an increased quality of care resulting in decreased adverse patient events and outcomes.</p>		

Title: Bisphenol A Exposure Transgenerationally Promotes Yellow Coat Color And Metabolic Syndromes In Agouti Mice		Presentation ID: B66 – AN
Author: Amanda Hill	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Undergraduate	
Co-Authors: Kailee Johnson	Mentor(s): Dr. Venu Cheriya	
<p>Abstract</p> <p>Bisphenol A (BPA), a common plasticizer, causes epigenetic effects by DNA hypomethylation and is associated with metabolic syndromes. Exposure to BPA in utero hypomethylates the Avy locus to promote yellow coat development in agouti mice. However, transgenerational effects of BPA without in utero exposure remained unclear. Considering the heritability of DNA methylation, we hypothesized that BPA-induced epigenetic modifications and associated traits are transmittable without in utero exposure. To test this, in a randomized block design, groups of agouti (Avy/a) and nonagouti (a/a) mice were exposed to BPA from birth until breeding and various parameters of offspring were assessed. Despite the absence of BPA during gestation, parental exposure to BPA significantly increased frequency of yellow offspring (77.78% and 40.00% for BPA vs control, $p=0.013$), suggesting Avy hypomethylation. The BMI of offspring from BPA exposed mice was also significantly higher than the offspring of unexposed mice ($p=0.0455$) and yellow mice were more prone to gain weight than their brown litter mates ($p=0.0001$). Our results for the first time demonstrate the transgenerational epigenetic effects of BPA and signify that even without the exposure to BPA during gestation, offspring may still experience the adverse effects caused by parental contact with BPA before the pregnancy.</p>		

Title: Mating Tactics Of Free-Swimming Female Indo-Pacific Bottlenose Dolphins (Tursiops Aduncus)		Presentation ID: B67 – AN
Author: Jessica Hillhouse	Discipline: Life Science	
Campus: Texas A&M University – Galveston	Student Level: Undergraduate	
Co-Authors: Dara N. Orbach and Angela Ziltener	Mentor(s): Bernd Würsig	
<p>Abstract</p> <p>Mating tactics have been studied more in male than female dolphins. In some populations of Indo-Pacific bottlenose dolphins (<i>Tursiops aduncus</i>), males are aggressive and females may have limited control of mates. If females exercise active mate choice, we predicted their responses to male behaviors would differ from chance expectations. Fourteen underwater video recordings were analyzed of mating-affiliated sequences off the coast of Hurghada, Egypt. The videos were transcribed in Transana and individual behaviors were tallied from an ethogram containing nineteen behaviors. A log likelihood test was used to determine if females responded differently to particular male behaviors. Behaviors were pooled into four categories for females and six categories for males. Female behavioral responses to preceding male behaviors varied from chance expectations ($G^2=72.13$, d.f.=1.5, and $p<0.01$). Furthermore, each female behavior was preceded by a different male behavior more than expected. However, female behaviors did not vary from chance following male copulation attempts. Female behaviors appear to be influenced by preceding male behaviors, suggesting females are capable of active discrimination among males. Variable female responses immediately following copulation attempts could indicate high costs associated with resistance. Recordings of mating behaviors of free-swimming dolphins can broaden our understanding of female mate choice.</p>		

Title: Use Of Hyperspectral Imaging To Compare Colonial Morphology Of Bacteria Normally Found Within Environmental Samples		Presentation ID: B68 – AN
Author: Oluwatoyosi Idowu	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors: Phuong Vo, Shane Smith, Dr. Gregory W. Buck and Dr. Mehrube Mehrubeoglu	Mentor(s): Dr. Gregory W. Buck and Dr. Mehrube Mehrubeoglu	
<p>Abstract</p> <p>The ability to discriminate between bacteria growing within the environment is critical for medicine and microbial ecology; however, genomic methods are expensive. Hyperspectral imaging is an important tool that can aid in the detection and identification of different bacterial species on solid surfaces. The purpose of this study was to provide “proof of concept” by which purified cultures of three common environmental Gram-negative bacteria were compared by hyperspectral imaging as baselines for future experiments for comparing growth of these bacteria on other substrates. <i>Serratia marcescens</i> is often found in soil and water, and may be deleterious to growth of aquatic life. <i>Enterobacter aerogenes</i> may be found in fecal and water samples. <i>Pseudomonas aeruginosa</i> is ubiquitous, and can be found in the environment and within household areas. These bacteria were grown on Tryptic soy agar and the spectral pattern and spatial information from hyperspectral imaging were collected in time intervals of 24 to 168 hours after incubation. Spatial variation and spectral signatures were observed, and this resulted in different wavelengths and reflectance based on the various pigmentation of the bacteria. Results suggest that hyperspectral imaging might be a possible technique for future work on solid substrates other than plate media.</p>		

Title: Advocacy In Action: When New Mothers Wish To Exclusively Breastfeed In The In-Patient Setting		Presentation ID: B69 – AN
Author: Asma Jan	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors: Cheryl Rister, Hashem Abdallah and Andrea Multer	Mentor(s): Dr. Cathy Miller	
<p>Abstract</p> <p>The benefits of exclusively breastfeeding newborns are well documented. However, for a variety of reasons supplementing breastfeeding in the in-patient setting is a common occurrence with healthy newborns, despite a new mother’s intentions of exclusively breastfeeding. The pattern of supplementation can lead to a shorter duration of overall breastfeeding resulting in decreased mother-infant bonding, increased incidence of failure to thrive, increased cost, and increased length of stay. Post-Partum nurses play a key role in the education of new mothers about the benefits of exclusively breastfeeding. Furthermore, post-partum nurses have a unique opportunity to advocate for their patients’ that wish to exclusively breastfeed. Communication and teaching is essential for new mothers to understand not only the benefits of breastfeeding, but also in addressing factors that influence the choice for supplementation and when appropriate, facilitating a new mother’s wish to breast feed exclusively despite in-patient conditions which make doing so challenging.</p>		

Title: Genetic Composition Of Invasive Lionfish Throughout The Atlantic		Presentation ID: B70 – AN
Author: John Johnson	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Derek Hogan	
<p>Abstract Lionfish have recently invaded Atlantic waters and rapidly spread through the Caribbean and into the Gulf of Mexico (GOM), including the Flower Garden Banks National Marine Sanctuary (FGBNS) in Texas. Genetic analyses have determined that there are two species involved (<i>Pterois volitans</i>/<i>P. miles</i>) and suggest that there are two differentiated populations of <i>P. volitans</i>, one in the Atlantic and one in the Caribbean. Observational data suggest that populations in the Florida GOM may have come from the Florida Atlantic population, but little is known of the composition of the GOM invasion. Here we determine the genetic composition of lionfish throughout the Gulf, Caribbean and Atlantic to ascertain; (1) which species have invaded the Texas coast and, (2) to determine the likely route (i.e. Florida or Caribbean) that lionfish invaded the Texas GOM. Understanding the genetic composition and patterns of connectivity of lionfish can aid in multi-agency management efforts to control lionfish populations.</p>		

Title: G1P3, An Immuno-Endocrine Induced Mitochondrial Protein Promotes Breast Cancer Metastasis Through Protein Kinase C (PKC) Activation		Presentation ID: B71 – AN
Author: Jaspreet Kaur	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Undergraduate	
Co-Authors: Ashjan Khalel and Dr. Venu Cheriyaath	Mentor(s): Dr. Venu Cheriyaath	
<p>Abstract Breast cancer (BC) is the second most common cause of cancer related deaths among US women. Recently, we associated G1P3, an immuno-endocrine regulated gene, with ER+ BC progression, but, its molecular mechanisms remain unclear. Although it is localized in mitochondria, cytoplasmic actin was remodeled in G1P3 overexpressing cells (MCF-7G1P3). Thus, we hypothesized that G1P3-induced mitochondrial reactive oxygen species (mtROS) promote BC metastasis through Protein Kinase C (PKC) mediated actin reorganization. Relative to control MCF-7Vector, mtROS was significantly higher in MCF-7G1P3 cells (P=0.0001). In wound-healing assays, MCF-7G1P3 migrated 1.6x faster than MCF-7Vector cells (P< 0.05). Moreover, 1.7x more number of MCF-7G1P3 cells invaded through the matrigel compared to MCF-7vector in invasion assays, indicating the metastatic potential of MCF-7G1P3 cells. Consistent with this, MCF-7G1P3 cells formed significantly higher number of migratory structures such as filopodia (P= 0.0001), actin bundles (P=0.0021), and arcs (P= 0.0280). Scavenging of mtROS with N-acetyl cysteine or the inhibition of PKC activity with a PKC inhibitor reversed G1P3's metastatic effects and concomitantly decreased the migratory structures. In summary, our results for the first time demonstrate the direct role of an immuno-endorine induced gene in BC metastasis and G1P3 inhibition may prevent metastasis of ER+ breast cancers</p>		

Title: Spectrophotometric Characterization Of Methanobactin Analog Peptides (Amb)		Presentation ID: B72 – AN
Author: Ji Hyun Kim	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Undergraduate	
Co-Authors: Shakti Gurung	Mentor(s): DongWon Choi	
<p>Abstract Methanobactins (mbs) are chromopeptides that highly modified Cu-binding with their copper acquisition system secreted by different methanotrophs. The mbs isolation from Methylosinus trichosporium (mb-OB3b; C45H58N10O16S5; Mw 1154.26) has been broadly studied as the archetype molecule. Mb-OB3b composed of seven amino acids and two chromophoric groups consisting of modified amino acids. It includes two oxazolone rings and enethiol groups. Methanobactin analog peptides (amb) containing histidine and cysteine groups replacing the oxazolone and enethiol groups were tested for their capability in binding Cupric ion. Cupric chloride was titrated to amb solutions while the copper binding was monitored spectrophotometrically in a tandem cuvette with PTFE stopper. Copper bindings of amb were detected by strong absorption band development around 270 nm. The absorption band indicates Ligand to Metal charge transfer between tyrosinate and Cu²⁺ ion.</p>		

Title: Shift Work Disorder: Fact Or Myth In Nursing		Presentation ID: B73 – AN
Author: Kersee Klatt	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors: Erica Thompson, Miranda Dirth and Shelby Parks	Mentor(s): Professor Cathy Miller	
<p>Abstract For the past decade, there have been serious discussions and debates about the current United States health care system, however the health of the nurses providing the care has not been adequately addressed. Nurses working night shift have been shown to have higher incidences of adverse health outcomes when compared to nurses working day shift. Working outside a normal 7 a.m. to 7 p.m. shift can have serious short and long term consequences for nurses. Working night shift affects the nurse's sleeping habits, mood and ability to perform tasks properly and effectively. The resulting adverse outcomes often lead to employee job strain which can negatively affect the effectiveness of the health team as a whole. Research results show there is a correlation between working the night shift and health conditions of nurses long after they retire. Health conditions that are most prominent are hypertension, diabetes, and unbalanced hormonal levels. Additionally, research has shown an increased number of adverse patient occurrences such as falls happening during the night shift. Research supports the need for interventions to address the immediate and long-term deleterious health outcomes of night shift work on nurses.</p>		

Title: Maximizing DNA Retention In Nextgen Library Prep		Presentation ID: B74 – AN
Author: Courtney Knauer	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Dr. Chris Bird	
<p>Abstract One challenge in next generation sequencing is minimizing the loss of DNA during library preparation; if these losses can be minimized, then very small quantities of DNA can be used. Paramagnetic beads are almost universally employed in library preparations in order to purify reactions and size-select DNA fragments because</p>		

they are inexpensive and effective. However, paramagnetic beads have also been connected to the loss of DNA. In order to maximize the retention of DNA we identified the factors within a paramagnetic bead clean-up that could contribute to DNA losses. A fully factorial design was employed and the following factors were manipulated: DNA concentration, NaCl PEG concentration, bead brand, elution buffer, elution volume and number of elutions. Gel electrophoresis was used to quantify the concentration and size range of DNA recovered from the beads (retained), supernatant (loss), and reaction tube (loss). The factors most strongly tied to the loss of DNA were the concentration of DNA, elution number and elution volume. These results indicate that the number of paramagnetic beads in a reaction, relative to the DNA concentration, is the single greatest source of DNA loss in library preparation. The number of beads in a clean-up reaction is not considered in any protocol that we know of, and the concentrations of DNA (3, 30ng/uL) are well within ranges typically utilized. By using appropriate ratios of the number of beads to the concentration of DNA and multiple elutions it is possible to substantially increase the retention of DNA in paramagnetic bead clean-ups.

Title: Phosphatidylinositol 3-Kinase (PI3K) Controls In Protein Kinase C (PKC)-Induced Epithelial To Mesenchymal Transition And Breast Cancer Cell Metastasis		Presentation ID: B75 – AN
Author: Mehrnoosh Kohansal	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Undergraduate	
Co-Authors: Alaa Qurban	Mentor(s): Venu Cheriyaath	
<p>Abstract Despite recent advances, ~30% of early breast cancers metastasize. Epithelial to mesenchymal transition (EMT) and macropinosomes formation are prerequisites for metastasis. Both phosphoinositide 3-kinase (PI3K) in protein kinase C (PKC) are deregulated in metastatic cells. However, the relationship between them remains unclear. Our hypothesis is that PI3K is indispensable for PKC-induced breast cancer metastasis. In wound healing and Boyden chamber assays, relative to untreated control, PMA, an activator of PKC enhanced the migration and invasion of the non-metastatic MCF-7 cells by 1.27x and 1.5x respectively (P<0.005). Pretreatment of cells with wortmannin, a specific PI3K inhibitor, significantly reduced the migration and invasion of both untreated and PMA treated cells (p<0.005). Concurrent with these results, PI3K inhibition, abrogated PKC's effects on E-cadherin and vinculin expression, markers of EMT. Additionally, the macropinosome formation was significantly higher in PKC activated cells than control cells (p=0.0001) and wortmannin reversed the effect of PKC on macropinosome formation. The Wortmannin pretreatment also suppressed the activity of PKC in both untreated and PMA treated cells suggesting PKC activity is under the control of PI3K. Taken together, our results suggest that PI3K is indispensable for PKC-induced breast cancer cells metastasis, hence PI3K inhibition may improve breast cancer prognosis.</p>		

Title: Evaluating Time In The Nestbox As A Behavioral Marker Of The Biological Clock In Female Common Marmosets (<i>Callithrix Jacchus</i>)		Presentation ID: B76 – AN
Author: Christa Leach	Discipline: Life Science	
Campus: Texas A&M University – San Antonio	Student Level: Undergraduate	
Co-Authors: Raquel Alonso	Mentor(s): Corinna Ross	
<p>Abstract</p> <p>A number of phenotypic tools have been built into a comprehensive testing system to assess aging in marmosets as a model for human disease. Assessing comprehension of time in a primate has proven difficult because there are no easily translatable ways to ask “what day is it?” or “who is the current President?” One possible method is to assess an animal’s preparation for the end of the day and entry into a sleeping nest. Video was recorded for nine female marmosets beginning two hours prior to lights out (7pm). The video was scored using instantaneous sampling every 3 minutes for whether the females were in the nestbox. There was a great deal of variability between females with some being found in the nestbox for the entire two hour time span prior to lights out and others never entering the box. We did find that on average females spent more time in the nest thirty minutes prior to lights out when compared to 2 hours prior (30 min = 7.55+1.47; 120 min=3.25 +1.16; p=0.04). We were also interested in whether the male-female pair acted together and found that there was no significant correlation for time inside the box.</p>		

Title: Improving Access: The Role of Education in Children’s Oral Health in the Corpus Christi Area – Crafting an Intervention		Presentation ID: B77 – AN
Author: Yudelkys Leonard	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors: Dr. Muhammad Haris, Christopher Nguyen and Abiodun Subair	Mentor(s): Dr. Sherdeana Owens	
<p>Abstract</p> <p>To eliminate health disparities in children, programs must integrate oral health into other health and social programs. The “Improving Access” research project sought to incorporate dental hygiene education into preschool learning programs by targeting both students and parents. Pourat and Finocchio (2010) state “Children in Medicaid, especially Latinos and African Americans, experience high rates of tooth decay, yet they visit dentists less often than privately insured children.” The project specifically targeted young children in these groups. This presentation highlights the intervention portion of the project.</p> <p>The selected interventional strategy was to provide parental education on oral care for young children. Additionally, direct instruction on oral hygiene was provided for 3-4 year old children in selected daycare centers. This required creation of parental questionnaires, selection of daycare centers, crafting of a child-friendly oral health program, ordering appropriate dental supplies for the children, and other activities. These actions formed the basis for an effective intervention and data collection process. Program planning is an integral part of any educational tool; the many steps involved setting up the “Improving Access” project are highlighted in this presentation.</p>		

Title: Role Of The Nitric-Oxide Pathway In The Cellular Changes Produced By Noxious Stimuli In The Marine Mollusk <i>Aplysia Californica</i>		Presentation ID: B78 – AN
Author: Leah Lloyd	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Marcy Wainwright and Riccardo Mozzachiodi	
<p>Abstract Exposure to noxious stimuli induces a concomitant enhancement of defensive responses (e.g., the tail-siphon withdrawal reflex; TSWR) and suppression of feeding in <i>Aplysia californica</i>. These behavioral changes can be reconstructed in vitro in a preparation of the isolated nervous system in which electrical stimulation of the afferent nerves that convey the noxious stimuli (i.e., training) reduces excitability of a cell critical for feeding (neuron B51) and increases excitability of the sensory neurons (SNs) mediating the TSWR. In this study, we tested the hypothesis that the neurotransmitter nitric-oxide (NO) contributes to the induction of the above changes in excitability. To block the NO pathway, we used bath application of the NO synthase inhibitor L-NAME (0.37 mM). Four groups of preparations were used: trained with L-NAME, untrained with L-NAME; trained without L-NAME and untrained without L-NAME. In each preparation, the excitability of B51 and SNs was measured prior to and 15 min after training/no training using the current-clamp technique. Current findings indicate that L-NAME prevents the reduction of B51 excitability, suggesting a role for the NO pathway in this process. Data on the effects of L-NAME on the increased SNs excitability are not yet conclusive, requiring further experiments.</p>		

Title: Study Of The Health Of Emmord's Seagrass Meadow In The Upper Laguna Madre		Presentation ID: B79 – AN
Author: Lucas Martinez	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Roy Lehman	
<p>Abstract In an effort to determine the health of Emmord’s Seagrass Meadow, located in the Upper Laguna Madre, Texas, USA, uniform random sampling of substrate cores, seagrasses, and drift algae were acquired and analyzed along predetermined transects every 100 meters. Sampling was done on the north, middle, and southern parts of Emmord’s Seagrass Meadow. Substrate was determined, seagrasses were identified and measured by root and shoot biomass, and drift algae was identified and measured. All data was recorded and analyzed over a three year period from May 2013 to May 2015, using Quatran statistical analysis software. An overall high root/blade ratio of seagrasses was found in all transect years. A Shannon diversity index showed the seagrass meadow to be on the low end of the scale in terms of drift algae species diversity. A Bray-Curtis index was performed and analyzed to determine the proportion of similarity between each transect of each year. Depth profiles were created for each year and overlaid with certain attributes such as substrate type, species of seagrass and algae, and growth patterns. Profiles supported a growth pattern of seagrasses towards the eastern side of the meadow away from a natural channel.</p>		

Title: An Analysis Of Habitat Selection Among Mammals In Drainage And Lowland Habitats At The Independence Creek Preserve		Presentation ID: B80 – AN
Author: Amanda McDonald	Discipline: Life Science	
Campus: West Texas A&M University	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Dr. Richard Kazmaier	
<p>Abstract</p> <p>Data was collected from eight trail cameras among two different habitats at Independence Creek Preserve (ICP) in Terrell County, Texas spanning the time period of 1/31/14 – 5/3/14. Four cameras were located in what is classified as lowland oak-motte habitat, while the other four cameras were located in what is classified as drainage habitat. A total of 9,849 images were collected, with 4,573 of those images containing data suitable for scoring. Abundance, richness, evenness and diversity among the two habitats were calculated along with a two-tail t-Test performed for each species' data collected in each habitat. The t-Test was used to determine if habitat selection among the species could be statistically validated. A statistical analysis showed strong selection of drainage habitat among gray foxes (<i>Urocyon cinereoargenteus</i>). White-tailed deer (<i>Odocoileus virginianus</i>) showed a strong selection for lowland/oak-motte habitat. While other species were approaching significance concerning habitat selection, only the gray fox and white-tailed deer showed strong selection. It was statistically determined that drainage habitat showed higher diversity and evenness among mammalian species than lowland/oak-motte habitat. It was also evident that lowland habitats exhibited more abundance of mammalian species than drainage habitats.</p>		

Title: All About Iron		Presentation ID: B81 – AN
Author: Taylor McGowen	Discipline: Life Science	
Campus: Prairie View A&M University	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Dr. Max Fontus	
<p>Abstract</p> <p>Sub-Saharan African countries are plagued by an adaptable parasite hungry for iron. Trypanosoma brucei is a protozoan parasite that leads to Human African Trypanosomiasis (HAT), otherwise known as sleeping sickness. Two specific subspecies of interest include T.b. gambiense and T. b. rhodesiense. They lead to either a chronic or acute form of the fatal sleeping sickness disease, respectively. T. brucei is able to survive in both aerobic and anaerobic conditions utilizing lipid metabolism and antigenic variation. The vector of transmission is the tsetse fly where a procyclic form of the parasites survives and multiplies. Upon entry into the mammalian host, the parasites convert into the bloodstream form which is genetically different than the procyclic form. The goal of this research project is to propose pharmaceutical drug target(s) to combat Trypanosoma brucei infections. Available treatment options prove toxic or too costly for usage by the infected. Nifurtimox-Eflornithine Combination Therapy, NECT, the most effective therapy treatment selection, creates reactive radicals in the human body. Analyzing reaction pathways occurring in the parasite's life cycle, identifying naturally and chemically produced occurring superoxide radicals within the parasite, and comprehending the differences in the parasite's life processes will allow for the derivation of a plausible method to end the infection cycle by T. brucei. The impact of these factors on preventing or reducing the virulence of the infection by T. brucei will be assessed using a computer-aided simulation software named CLEMS, Command-Line Electro-Metabolomics Software. The results of successful simulation will form the basis for novel drug therapies.</p>		

Title: What Nursing Specialties Are Most Affected By Addiction?	Presentation ID: B82 – AN
Author: Shawnese McLeod	Discipline: Life Science
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate
Co-Authors: Cecilia Dupree, Natalie Ford and Lindsey Perez	Mentor(s): Dr. Cathy Miller
<p>Abstract</p> <p>Nurses function in high stress, emotional environments and out of necessity have regular access to controlled substances. Substance abuse among nurses was first documented in 1850. In 1982 substance abuse among nurses was finally acknowledged by the American Nurses Association. Nurses are vulnerable to addiction across all ethnic and socioeconomic nursing populations. Addictions can range from caffeine, alcohol, and nicotine to controlled substances such as opiates which can be taken in pill form or injected intravenously. Traditionally, substance abuse issues were treated with harsh disciplinary action including dismissal and loss of licensure. In recent years many states as well as the profession of nursing as a whole, have pursued rehabilitation in lieu of position dismissal and loss of licensure. Understanding which nursing specialties have the highest occurrence of dependency will empower organizations and the nursing profession with targeted data to facilitate the development of preventative interventions, policies and procedures, and therapy modalities targeting the unique challenges faced by each high-risk specialty.</p>	

Title: Effects Of Government Subsidized Food On Childhood Overweight And Obesity: A Systematic Review Of The Literature	Presentation ID: B83 – AN
Author: Andrea Multer	Discipline: Life Science
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate
Co-Authors:	Mentor(s): Theresa J. Garcia
<p>Abstract</p> <p>Background: Forty-five percent of children in the United States (US) are from low-income families and 15% are obese. Low-income and minority children continue to be disproportionately affected by obesity. Participation in governmental food programs (WIC, SNAP, FSP) contributes to obesity in adults, but findings have been inconsistent regarding the relationship between these programs and childhood obesity.</p> <p>Research Question: “Is there a relationship between family participation in governmental food programs and childhood obesity in the US?”</p> <p>Methods: We conducted a narrative systematic review of the literature including research articles published over the last 10 years. MedLine and CINAHL medical databases were searched using the following terms: “food services,” SNAP, WIC, “food stamps,” “body mass index,” BMI, and “childhood obesity”.</p> <p>Results: Initial searches yielded 1,575 articles resulting in 7 studies addressing the research question and meeting inclusion criteria. Included studies were descriptive correlational and used national survey data. Across studies, including over 1 million children, there was no consistent relationship between childhood obesity and participation in governmental food programs.</p> <p>Importance to Discipline: Government programs have no effect on childhood obesity but present an opportunity to positively influence health behaviors of children through health initiatives which can accompany federal assistance.</p>	

Title: A Cardiac Inducing RNA (CIR) That Has The Ability To Transform Mouse Embryonic Fibroblasts Into Cardiac Myocytes In Tissue Culture		Presentation ID: B84 – AN
Author: Michael Neal S.	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Undergraduate	
Co-Authors: Dr. Andrei Kochegarov	Mentor(s): Dr. Larry F. Lemanski	
<p>Abstract</p> <p>In earlier studies, we found that certain non-coding RNAs have the capability of directing the fate of non-muscle cells to express cardiac-specific proteins and differentiate into definitive cardiomyocyte phenotypes. In our current studies, we have discovered a Cardiac Inducing RNA (CIR) that has the ability to induce differentiation of mouse embryonic fibroblasts to form into cardiac myocytes in tissue culture. This RNA has sequence homology with the human N-sulfoglucosaminidase (SGSH) gene and the caspase recruitment domain family member 14 (CARD14) gene. In our experiments, we transfected mouse fibroblasts with escalating concentrations of CIR coupled with a transfection complex composed of Lipofectin and Opti-MEM. After 8 days in culture, immunohistochemical staining showed significant staining for cardiac-specific troponin-T and sarcomeric tropomyosin demonstrating that CIR promotes the differentiation of mouse embryonic fibroblasts into definitive cardiomyocytes in a dose-dependent manner. We conclude that CIR induces the differentiation of mouse fibroblasts to form into cardiomyocytes. Thus, CIR-treated fibroblasts may provide a means to regenerate heart muscle tissue damaged from myocardial infarction or other disease processes in humans to regenerate the damaged cardiac tissue and be able to return these patients to pre-heart-disease activity levels. (Support: NIH HL061246, NSF 1121151 and AHA 15GRNT25700239 to LFL)</p>		

Title: Improving Access: The Role of Education in Children’s Oral Health in the Corpus Christi Area – Literature Review		Presentation ID: B85 – AN
Author: Christopher Nguyen	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors: Dr. Muhammad Haris, Abiodun Subair and Yudelkys Leonard	Mentor(s): Dr. Sherdeana Owens	
<p>Abstract</p> <p>To eliminate health disparities in children, programs must integrate oral health into other health and social programs. The “Improving Access” research project sought to incorporate dental hygiene education into preschool learning programs by targeting both students and parents. The target audience was preschool children in low SES areas of Corpus Christi. This presentation highlights the Literature Review portion of the project. Low SES children suffer disproportionately from poor dental health. Many of these children are from ethnic minority backgrounds and have a greater chance of being both poor and subject to health access disparities. Additionally, if the child is from an immigrant family, there may be the addition of cultural or language barriers to obtaining care. Pourat and Finocchio (2010) state “Children in Medicaid, especially Latinos and African Americans, experience high rates of tooth decay, yet they visit dentists less often than privately insured children.”</p> <p>Understanding the importance of children’s oral health, our goal was to increase dental visits in our target group. The literature review sought to provide background information on the oral health needs of children in low the SES strata generally and here in the Corpus Christi area specifically. The identification of barriers to include: lack of parental knowledge, underutilization of Medicaid, transportation, and time issues were the focus of the literature review. The results provided background information necessary to craft an effective intervention for young children in our community.</p>		

Title: A Comparisons Of Foliar Epicuticular Waxes In Sabal Minor And Sabal Palmetto		Presentation ID: B86 – AN
Author: Beatriz Ortega	Discipline: Life Science	
Campus: Prairie View A&M University	Student Level: Undergraduate	
Co-Authors: Kierra Jones and Yolander Youngblood, Ph.D	Mentor(s): Yolander Youngblood, Ph.D	
<p>Abstract This project takes a closer look at Sabal minor and Sabal palmetto leaf surfaces. Sabal minor is found naturally in the state of Texas. Sabal palmetto isn't but is commonly planted. These two palms are found in the same genus. They differ in hardiness zones and height possibilities. This surfaces includes epidermal waxes covering typical epidermal cells and stomatal guard cells. With the use of the modern JOEL 6010 LV/LA Scanning Electron Microscope foliar epicuticular wax structures/patterns can be viewed using fresh samples. The objective of this study was to compare morphological data for Sabal minor and Sabal palmetto using fresh leaf samples. Samples were collected from four year old Sabal minor and Sabal palmetto palm leaves. Both leaves contained a thin layer of epicuticular wax. Waxes are not built up yet on four year old leaves. Waxes are built up on mature palm leaves- having produced seeds already and over ten years old i n the wild. Wax is laid different according to it's environment. In addition, stomata patterns were seen, as both Sabal minor and Sabal palmetto had relatively pronounced stomata. A difference being that Sabal minor had a continuous uniform pattern of stomata placement, while Sabal palmetto had a sporadic placement of stomata.</p>		

Title: The Effect Of Various Phosphate Sources During Gene Expression And Mineralization		Presentation ID: B87 – AN
Author: Daniela Carolina Ortiz	Discipline: Life Science	
Campus: Texas A&M University International	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Dr. Hari Mandal	
<p>Abstract Multiple phosphate sources were used to trigger mineralization. Their effects on the condition of the cellular matrix and gene expression were studied. In order to effectively establish a calcium to phosphate ratio, various methods such as the von Kossa and Alizarin Red S staining methods were used. Additionally, graphical representations were created that compare the bone fragments obtained from a donor who underwent hip surgery versus the spectrum that underwent the proper staining. Furthermore, TNAP and mRNA expressions were compared from all donors and their phosphate rates established variability between osteocalcin and osteopontin gene expression levels. Lastly, ion quantification allowed calcium and phosphate's concentration to be studied when present in the cell layer.</p>		

Title: Effects Of A Pesticide Grazer Inhibitor On Epiphyte Graer Abundance In Seagrass Beds		Presentation ID: B88 – AN
Author: Lauren Poor	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors: Lauren Alejandro, Ariana Kavandi, and Amie Cuvelier	Mentor(s): Kirk Cammarata	
<p>Abstract We characterized seagrass epiphyte grazer communities in response to top-down inhibition by pesticide, bottom-up forcing through nutrients, and a combination of both. The larger context is to understand the balance between top-down and bottom-up controls of epiphyte coverage of Halodule wrightii seagrasses in Texas. Ten blocks were</p>		

each comprised of 4 plots: Untreated Control, Fertilizer (18-6-12 Osmocote™ slow-release), Grazer Inhibitor (0.038 % Carbaryl™ in plaster blocks), and combined Fertilizer + Grazer Inhibitor. Following 4 weeks of treatment, grazers were collected, sorted, identified, and compared as 7 major groups: fish, shrimp, crabs, gastropods + bivalves, polychaetes, amphipods and isopods. To date, 3 complete blocks have been analyzed. The pesticide Carbaryl significantly reduced populations of both shrimp and amphipods, regardless of fertilization, but had no significant effect on the other groups. Fertilization increased amphipod, shrimp, gastropod + bivalve, and total grazer levels, but these effects were not significant. Normalization of grazer numbers to seagrass biomass of each plot had no effect. We conclude that the grazer inhibitor treatments significantly reduced populations of shrimp and amphipod grazers, which will subsequently allow us to use this system as a model of predation effects on top-down control of seagrass epiphyte accumulation.

Title: Importance Of Communication Between Physicians And Nurses		Presentation ID: C66 – AN
Author: Kimberlee Reed		Discipline: Life Science
Campus: Texas A&M University – Corpus Christi		Student Level: Undergraduate
Co-Authors: Lauren Garcia, April Owen Keck and Sammi Warmath		Mentor(s): Dr. Cathy Miller
Abstract Communication and the development of a professional relationship between physicians and nurses is shown to have a significant impact on patient care and patient outcomes. Poor communication in the healthcare setting is one of the leading contributors to medical errors. Research using a variety of methods to determine exactly how a healthy working relationship; complete with an attitude of teamwork and mutual respect impacts patient safety and well-being. Techniques such as shadowing, interviews, and direct observation were used in data collection. Nurses and physicians provide the majority of care to the patient, therefore efficient communication and consultation between disciplines should reduce errors and aid in the elimination of interprofessional tensions. Results show that by promoting trust and shared-decision making, the physician and nurse professional relationship grows, and in turn, poor attitudes and stereotypes are mitigated or eliminated. As a result, communication that is open, safe, and mutually-respected translates into safer patient care and improved patient outcomes.		

Title: Nurse To Patient Staffing Ratios Impact Patient Health Outcomes		Presentation ID: C67 – AN
Author: Jasmine Robledo		Discipline: Life Science
Campus: Texas A&M University – Corpus Christi		Student Level: Undergraduate
Co-Authors: Justin Ruiz, Anna Robles and Brenda Izaguirre		Mentor(s): Cathy Miller
Abstract Higher numbers of patients per registered nurse have been associated with adverse patient outcomes. Higher nurse to patient ratios secondary to reduced staffing have negatively impacted quality patient care in areas that include patient safety, patient satisfaction, medication errors and patient mortality. Various methods such as surveys, observational studies and qualitative interviews were used to assess the state of the science of nurse to patient ratios in acute care settings. Research shows that when registered nurses are not available to provide quality patient care, the lack of nurse to patient time jeopardizes patient safety at the bedside which can be linked to increased mortality rates within the health-care system. The Registered Nurse Staffing Act is a federal law that has permitted states to individually decide on the quantity of nurse to patient staffing ratios. Fourteen states have mandatory nurse to patient ratio laws that regulate the number of patients a nurse can have throughout their shift. As a result, mandatory state laws that decrease nurse to patient ratio result in positive outcomes such as increased patient safety and satisfaction, and decreased medication errors and patient mortality.		

Title: Investigation Of Language Communication Barriers Physical Therapist Encounter With The Emerging Hispanic Population		Presentation ID: C68 – AN
Author: Jose Robledo	Discipline: Life Science	
Campus: West Texas A&M University	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Vanessa Fiaud, Ph.D.	
<p>Abstract</p> <p>The purpose of this preliminary study was to explore if there are any challenges Physical Therapists encountered when treating Hispanics that have Limited English Proficiency (LEP) skills. The diversity of PT professionals in the field is unable to meet the demands of this emerging diverse population (of Hispanics) that continues to increase and has now become the largest ethnic or race minority according to the U.S. Census Bureau. In this study surveys were distributed to two populations, one intended for Physical Therapists and the other for LEP patients. The surveys' attempt was to investigate the communication/interaction between PTs and LEP patients. The knowledge obtained by this research will allow the determination of existing communication barriers of LEP patients in a PT setting. There exists a need for research to be done regarding LEP patients in Physical Therapy to completely understand the effects these patients are experiencing due to their inability to communicate with PT's. The miscommunication barrier has been long overdue and has existed in various healthcare settings but adverse effects of LEP patients have not been investigated in PT settings.</p>		

Title: The Effects Of Various Intensities Of Active Recovery Following Cryotherapy As A Post-Game Therapeutic Modality For Baseball Pitchers		Presentation ID: C69 – AN
Author: Collin Rodgers	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Dr. Sandy Kimbrough	
<p>Abstract</p> <p>The aim of the present study was to analyze the effectiveness of 10 min high or low intensity active recovery phases with an arm ergometer in addition to 20 min cryotherapy on alleviating perceived muscular soreness and improving shoulder muscular strength recovery as a therapeutic modality for high school baseball pitchers following a 70-pitch simulated game. Participants were randomly assigned to either low intensity active recovery at 10-20% of heart rate reserve (HRR) (n=10, 15.8±1.6yr) or high intensity active recovery at 30-40% HRR (n=10, 16.2±1.8yr). Shoulder internal rotation strength, external rotation strength, abduction strength measurements and perceived muscular soreness ratings were assessed prior to the simulated game (Pre-G), following the simulated game (Post-G), following therapeutic treatment (Post-T), and 24 hours following the completion of the simulated game (Post-24). One-way ANOVA with repeated measures demonstrated no significant differences between the groups in any of the shoulder strength measures ($p > 0.05$), but perceived muscular soreness ratings showed a trend towards lower ratings Post-T and Post-24 in the low-intensity active recovery group ($p = 0.091$) and with a large effect size ($\eta^2 = 0.15$). These results suggest the possibility of an upper limit to optimal active recovery intensity following cryotherapy in regards to perceived soreness.</p>		

Title: Laryngeal Re-Construction To Enhance Speech Production	Presentation ID: C70 – AN
Author: Josselyne Rodriguez	Discipline: Life Science
Campus: Texas A&M University International	Student Level: Undergraduate
Co-Authors: Ariana Reyes, Ruth Reyes, Josselyne Rodriguez and Viviana Rodriguez	Mentor(s): Dr. Sumalai Maroonroge
<p>Abstract</p> <p>Larynx is a tube-shaped organ in the neck that contains the vocal cords. It is part of the respiration and the phonation systems. Larynx is located between the pharynx and the trachea. Humans use the larynx to breathe, talk, and swallow. It manipulates the pitch and loudness of our speech production. Speech language pathologists (SLP) encounter patients with a variety of serious laryngeal disorders such laryngeal cancer, laryngeal trauma as these patients are left without voice. Since communication is a human right, and without communication, life has no quality. Laryngeal reconstruction is the only mean of intervention in addition to speech rehabilitation. The purpose of this research project is to review various laryngeal reconstruction procedures and their outcome measurement to enhance knowledge in working with these patients. A survey was conducted before and after topic presentation and the results were compared. The findings indicated significant difference in the performance of pre and post assessment. Due to the new technology, knowledge on the benefit of these surgical procedures are not familiar to students. It is recommended that new information be imbed in class to enhance knowledge and skills in the areas of voice therapy.</p>	

Title: Mosquito Species Distribution In Suburban, Urban, And Semi-Rural Residences In San Antonio, Texas	Presentation ID: C71 – AN
Author: Alma Ruiz	Discipline: Life Science
Campus: Texas A&M University – San Antonio	Student Level: Undergraduate
Co-Authors: Megan R. Wise de Valdez and Michelle Ximenez	Mentor (s): Megan R. Wise de Valdez
<p>Abstract</p> <p>Understanding mosquito population distribution is important to successful control and it is known that mosquito species distribution differs among land-use patterns such as urban and rural habitats. We therefore conducted a population survey of mosquito species in urban (U), suburban (S), and semi-rural residential areas within San Antonio, Texas. Adult mosquitoes were collected weekly from June 1 – July 29, 2015 in 18 residential backyards representative of each habitat. We collected 3076 females in 28 species and 6 genera. The most prevalent species overall was <i>Aedes aegypti</i> (36%) followed by <i>Culex quinquefasciatus</i> (12%) and <i>Aedes albopictus</i> (8.7%). Mosquito species diversity was higher in the semi-rural habitat (probability of an interspecific encounter estimate (PIE) = 0.89) than in urban (PIE = 0.75) or suburban (PIE = 0.76) habitats. Semi-rural and suburban were most similar in species incidence (Sorenson similarity index(S) = 86%) while semi-rural and urban were least similar (S=73%). This difference in species distribution and diversity is likely due to differences in the availability of host species and oviposition sites in each habitat as well as geographical proximity.</p>	

Title: The Effect Of Vegetation Density And Size On The Microhabitat Use Of Centruroides Vittatus And Vaejovis Waueri		Presentation ID: C72 – AN
Author: Gerardo Saldana	Discipline: Life Science	
Campus: Texas A&M University International	Student Level: Undergraduate	
Co-Authors: Sarahi Ontiveros and Gerardo Saldaña	Mentor(s): C. Neal McReynolds	
<p>Abstract</p> <p>TAMIU campus and La Union Ranch offers a variety of plant species that differ in diversity, density, and size between habitats. Our study was mainly and two scorpion species, Centruroides vittatus, which is commonly known as the striped bark scorpion, and Vaejovis waueri. Ultraviolet lights were used in order to successfully spot and observe the scorpions that fluoresce under UV light. Both distance and direction were measure within an eight meter boundary on each site. The sites were divided as follows: TAMIU Blackbrush- Guajillo (BG) habitat, TAMIU Blackbrush- Mesquite (BM) habitat, La Union Ranch Althorn goatbush (AG), and La Union Ranch Mesquite (M) habitat. The point quarter method was used in order to determine the vegetation density and size. The data was compared using logistic regression to determine the relationship between vegetation size or density and scorpion activity in vegetation or on the ground. Our results show that C.vittatus was not significantly associated vegetation density or size. The statistics on V.waueri could not be done due to the fact that there was a small sample size and only one scorpion was found on vegetation therefore, the activity of the scorpions was not determined by vegetation size or density. The results general show that there was not effect for C.vittatus because it still climbed on the vegetation when the density was low or the plants were small showing no relationship between the scorpion and vegetation density or size.</p>		

Title: Identification Of Conserved Regions In Glutamic Acid Decarboxylase 3' Utrs Of Drosophila		Presentation ID: C73 – AN
Author: Nicholas Salyers	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Undergraduate	
Co-Authors: Dr. Rudolf Bohm	Mentor(s): Dr. Rudolf Bohm	
<p>Abstract</p> <p>Glutamic acid decarboxylase (GAD) is an enzyme that catalyzes the decarboxylation of glutamate to gamma-Aminobutyric acid (GABA), the chief inhibitory neurotransmitter in the central nervous system of mammals, and CO₂. One of the translational repression mechanisms in Drosophila is the interaction of Nanos and Pumilio, which bind to the 3' untranslated region (UTR) of mRNAs. The NOS protein itself does not bind directly to these “Nanos response elements” (NREs). Pumilio, a group gene necessary for the formation of the posterior, binds to these elements and brings the Nanos protein into the complex. We hypothesize that these Nanos response elements play a critical role to the regulation of translation of the GAD1 gene. To determine this, regions of conservation must first be identified throughout multiple species of Drosophila. Regions of conservation between species could indicate that these are Nanos response elements, thus serving a significant purpose in translation. Further research on this using in vitro and in vivo methods will verify this informatics prediction and can lead to better insight of multiple diseases that have a documentation of GAD dysregulation, including, but not limited to, diabetes mellitus, schizophrenia, bipolar disorder, and Parkinson disease.</p>		

Title: Investigating The Differences In The Total And Active Microbial Community Of North Pond		Presentation ID: C74 – AN
Author: Morgan Sobol S	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors: Laura Zinke and Brandi Kiel Reese	Mentor(s): Brandi Kiel Reese	
<p>Abstract</p> <p>Microbes in the marine deep subsurface drive geochemical cycles around the world. It is important to understand how significantly the microbial communities are acting upon these cycles as well as what microbes encompass the different communities throughout the world's oceans. Sediment cores were collected from IODP (Integrated Ocean Drilling Program) Expedition 336 to the western flank of the mid-Atlantic ridge, also referred to as North Pond. The oxygen concentration decreased with depth in the top 60-70 meters, followed by a sharp increase in oxygen until it terminated at the basement. Several statistical analyses were performed to observe the differences between the total (DNA) and active (RNA) microbial community structure, as well as correlate the putative metabolism with the geochemistry. Differences were observed within the DNA and RNA. For example, sequences most closely related to Cyanobacteria were found to dominate the DNA at both sites but were found in small numbers in the RNA. The most abundant phyla in the RNA were Alphaproteobacteria, which suggests that they are more active even though the abundance was not as great in the DNA. Principal Component Analysis showed that iron reducers in the active community correlated strongly with solid phase iron oxides.</p>		

Title: Costa Rican Diets And Their Effect On Blood Pressure		Presentation ID: C75 – AN
Author: Nick Stansbury	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors:	Mentor(s): Dr. Suzzette Chopin	
<p>Abstract</p> <p>Even though Costa Rica is one of the better developed countries in Central America, Costa Rica still suffers from a variety of public health problems. With nearly thirty percent of the Costa Rican deaths related to heart and vascular health issues, the Costa Rican's high carbohydrate diet needs to be evaluated for possible correlations and interactions with health issues. The purpose of this study was to investigate the correlations and interactions, if any occurred, between Costa Rican diets and blood pressure. Participants (n=96) were consenting adults at International Service Learning clinics. Blood pressures and dietary habits were recorded for each participant. There was a positive correlation between carbohydrates and the probability of hypertension which showed as the number of days per week that carbohydrates were eaten the probability for hypertension increased (P value= 0.0876). There was a positive correlation between adding sugar to food or drink and the probability of hypertension showing that the more days per week in which sugar was added to food or drink correlated to increased probability of hypertension (P value= 0.1431). There was a significant combination effect among stage II hypertensive participants that involved the beans and carbohydrate intake. Among participants in the 90th percentile of blood pressures, when systolic and diastolic were combined, the intake of carbohydrates was significantly high. Finally, a conclusive finding between the interaction of juice and salt intake and the participants probability of hypertension was discovered.</p>		

Title: Brain-Machine Interface Control Of A Portable Robotic Exoskeleton For Neuromuscular Rehabilitation		Presentation ID: C76 – AN
Author: Kenan Strange	Discipline: Life Science	
Campus: Texas A&M University – Texarkana	Student Level: Undergraduate	
Co-Authors: Caleb Sparks	Mentor(s): Dr. Donald Peterson	
<p>Abstract</p> <p>Strokes are one of the leading causes of long term disability in the U.S. and a common condition after having a stroke is hemiplegia, which causes paralysis on one side of the body. This is a major expense as well as a hardship on a patient due to lost wages, medical bills, and emotional distress. The purpose of this research was to develop a low-cost, noninvasive Brain-Machine Interface (BMI) control system into an existing portable rehabilitation robotic exoskeleton for the extremities to assist a patient with the rehabilitation of their limb to restore neuromuscular function and to prevent muscular atrophy. A simple EEG sensor (MindWave Mobile, NeuroSky) was used to capture brain wave activity in the Alpha (8-12 Hz), Beta (13-30 Hz), and Gamma (30-60 Hz) frequency ranges and was integrated into the exoskeleton system using a LabVIEW-controlled data acquisition device (CompactRIO, National Instruments). Results demonstrated that it is possible to actuate and control the rehabilitation system using brainwave function and intensity. This low-cost, and portable, EEG-based exoskeleton system can be easily implemented in clinical or home settings and can assist researchers in further studying how the neural plasticity of the brain is impacted as a result of robotic intervention.</p>		

Title: Use Of Hyperspectral Imaging To Distinguish Between Bacterial Species Commonly Seen In Foodborne Illnesses		Presentation ID: C77 – AN
Author: Phuong Vo	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Undergraduate	
Co-Authors: Oluwatoyosi Idowu and Shane Smith	Mentor(s): Gregory W. Buck and Mehrube Mehrubeoglu	
<p>Abstract</p> <p>Bacteria are the cause of a vast majority of foodborne illnesses. Identification of these bacteria by complicated laboratory tests is a time-consuming process; while culture methods are standard, they are expensive and require 24-72 hours. Hyperspectral imaging emerged as a novel technique to quickly identify and differentiate bacteria in contaminated food samples. This screening technique operates visible and near-infrared wavelength ranging between 400-1000 nm to detect unique spectral signatures of microorganisms. Three foodborne bacteria, including two Gram-negative bacilli, Escherichia coli ATCC 25922 and Salmonella enterica, and the Gram-positive coccus Staphylococcus aureus ATCC 25923, were used in this study. Cultures were plated on Tryptic Soy Agar (TSA) Petri dishes, followed by incubation for 24 hours, 48 hours, 96 hours, and seven days. After each incubation period, images of these colonies were captured by the hyperspectral imaging system. Preliminary results showed that correct identification of bacteria are probably more related to a specific time window on agar plates, and the spatial arrangement of the colonies on the surface of agar plates. Future experiments will further delineate the best time parameters for bacterial growth and hyperspectral analysis.</p>		

Master's

Title: Construction of a Next Generation Gal4 Plasmid for Promoter Characterization		Presentation ID: C78 – AN
Author: AbdulHafiz Aliagan	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Master's	
Co-Authors: Sarah Donaho, Heather Garcia	Mentor(s): Enrique Massa	
Abstract Neuronal and cardiac cell activity are regulated by various types of voltage-gated ion channels that conduct sodium, calcium, chloride or potassium ions. The KCNQ channel is a voltage-gated K ⁺ channel crucially involved in neuronal and cardiac electrical activity, thus mutation in this ion channel could render cells hyperexcitable by altering refractory time and shifting resting potential. We are investigating the <i>Drosophila melanogaster</i> ortholog of this mutant channel to further characterize the key regulatory elements that drive transcription of this gene. In these studies we constructed a modified GAL4 expression system that relies on the pBID plasmid system for site-specific integration and expression of GAL4 via control by a candidate promoter DNA fragment. The GAL4-pBID construct will in turn be used to examine expression patterns of the <i>Drosophila</i> KCNQ gene in transgenic flies. These transgenic flies will aid in localization of the regulatory elements necessary for the expression of this ion channel in the nervous system and cardiac tissue.		

Title: CHG Bathing In The ICU		Presentation ID: C79 – AN
Author: Derek Arredondo	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Master's	
Co-Authors:	Mentor(s): Dr. Sara Baldwin	
Abstract Objective: In an attempt to reduce Hospital-Acquired Infections (HAIs), Chlorhexidine Gluconate (CHG) bathing is now extensively used in Intensive Care Units (ICUs) despite a paucity of randomized controlled trials (RCTs). Many nurses prefer the convenience of CHG wipes and seem reluctant to consider a change. The purpose of this Integrative Systematic Review of Literature (ISRL) is to determine the most effective bathing practice with acceptably minimal risks. Method: After the problem was identified, an internet search was conducted via CINAHL, EBSCO and Google Scholar. Search words included all combinations of terms: chlorhexidine gluconate, CHG, ICU, intensive care, bathing, bath, washing, wipes, HAI, and infections. Exclusion criteria: non-CHG related, non-ICU related, not peer-reviewed, non-experimental, or publish before 2009. Results: Approximately 40 relevant articles were located and four studies met the inclusion criteria. Results were inconsistent, as half of the studies suggested CHG bathing related to decreased HAI rates. The other half, including the strongest RCT, found no significant difference. Conclusion: A change in practice back to traditional bathing, or non-antiseptic wipes, should not increase the risk of infection and will immediately serve to reduce: risk of adverse reactions, risk of pathogen resistance to CHG, chemical application stress, and health care costs.		

Title: GABA Receptor Isoforms, a Signature for Neuronal Activity?		Presentation ID: C80 – AN
Author: Amrithesh Arun	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Master’s	
Co-Authors: Rudolf Bohm	Mentor(s): Rudolf Bohm	
<p>Abstract Neuronal homeostasis is a phenomenon where neurons regulate their excitability as an adjustment in response to the activity in the system (Turrigiano 2012). In our study, we investigate homeostatic compensation in the form of selective preference to code for more sensitive isoforms of an inhibitory Drosophila channel when the system is made hyperactive. GABA (γ amino butyric acid) an inhibitory neurotransmitter that signals the opening of a Chloride channel to allow ions to be move into the cell, hyperpolarizing the membrane. According to neuronal homeostasis hypothesis, a hyper excitable environment will drive the neurons to choose an isoform of the GABA receptor so as to achieve more inhibition. We devised a PCR based assay which is representative of isoform preference, by using primers specific for each of the alternatively spliced exons of our interest. As a signature for neuronal activity, this assay will be used to study control of neurodegeneration by hyper excitable environments in our fly models of polyQ diseases.</p>		

Title: Role Of G1p3-Induced Tubulin Acetylation Confers Metastatic Potential In Breast Cancer Cells		Presentation ID: C81 – AN
Author: Swati Balluri	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Master’s	
Co-Authors: Dr. Venu Cheriyaath	Mentor(s): Dr. Venu Cheriyaath	
<p>Abstract The overall objective of this study is to elucidate the role of G1P3 in breast cancer metastasis. Metastatic breast cancer results in ~90% of the breast cancer related deaths. Therefore, delineating mechanisms of metastasis may help to prevent and reverse the metastasis. Although G1P3 is a mitochondrial localized antiapoptotic protein, microtubules were remodeled in G1P3 expressing cells. Additionally, relative to control (MCF-7vector) cells, MCF-7G1P3 cells had significantly higher levels of mitochondrial reactive oxygen species (mtROS). Consistent with increased mtROS, there was a 1.2 fold increase in NAD levels in MCF-7G1P3 cells. Since NAD and mtROS are required for microtubule hyperacetylation, we hypothesized that G1P3-induced mtROS increase tubulin acetylation to confer metastatic potential in breast cancer cells. In western blot analysis there was a marked increase in tubulin levels in MCF-7G1P3 cells relative to MCF-7vector cells. Thi s was confirmed by immunostaining, which also identified altered tubulin structure in MCF-7G1P3 cells relative to vector control. Moreover, the acetylation of tubulin at lysine 40 was also markedly higher in MCF-7G1P3 than MCF-7vector cells. Based on these results and the ability of MCF-7G1P3 cells to migrate faster than MCF-7vector we postulate that G1P3 promotes metastasis by inducing tubulin acetylation through NAD dependent pathways.</p>		

Title: The Effect Of Maspardin Cortical Neurons And Progressive Spastic Paraplegia In SPG21-/- And SPG21 +/+ Mice		Presentation ID: C82 – AN
Author: Alexis Bivona	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Master’s	
Co-Authors: Will Latson, Anne Davenport and Venu Cheriyaath	Mentor(s): Venu Cheriyaath	
<p>Abstract Mast syndrome is a form of hereditary spastic paraplegia (HSP), an autosomal recessive disease caused by non-</p>		

sense mutations in the SPG21 gene which encodes for the maspardin protein. Since loss of lower limb function and increased spasticity are characteristics of mast syndrome, the role of maspardin in controlling the sensorimotor capabilities was investigated in SPG21^{+/+} (WT) and SPG21^{-/-} (KO) mice. Behavioral studies identified significant impairment and progressive loss of sensorimotor functions in KO mice. The 12 month KO cohorts exhibited a significant increase in foot slips as compared to the WT in the 12 month age group ($p < 0.05$). In the hind limb clasp and ledge tests KO mice scored 2 fold less than that of WT mice ($p \leq 0.05$). Since these results suggested progressive reduction in motor neuron functions in KO mice, we hypothesized that maspardin plays a critical role in the growth of cortical neurons. To test this hypothesis, the growth of WT and KO cortical neurons were compared in vitro. Relative to WT, there was a 3.6x reduction in the growth of KO neurons at 96 hours ($p < 0.05$). Based on these correlations, we hypothesized that there would be a significant increase in spastic paraplegia and progressive lower limb dysfunction in the KO mice over the age of six months. In summary, our results suggest that maspardin is indispensable for the growth of cortical neurons and the loss of maspardin may lead to impaired sensorimotor neuron functions in KO mice.

Title: G1P3-Induced Mitochondrial ROS Regulates Mitochondrial Biogenesis In Breast Cancer Cells		Presentation ID: C83 – AN
Author: Sirisha Chakkapalli	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Master’s	
Co-Authors: Ashjan F. Khalel	Mentor(s): Dr. Venu Cheriyaath	
<p>Abstract Drug resistance is major obstacle in breast cancer treatment and anti-apoptosis is major mechanism by which tumor cells develop resistance to hormonal-therapies. G1P3, a mitochondrial localized anti-apoptotic protein was suggested to cause anti-estrogen resistance in breast cancer cells. However, its anti-apoptotic mechanism remains unclear. G1P3 was localized onto inner mitochondrial-membrane in fractionation studies. Based on these results, we hypothesized that G1P3 play key role in elevating the mitochondrial ROS (mtROS) suppressing superoxide dismutase (SOD) activity to regulate mitochondrial biogenesis to antagonize apoptosis pathways. Consistent with this, mtROS levels were 3.3 folds higher in MCF-7G1P3 cells than the control MCF-7vector cells. This was confirmed in SOD activity assay that identified 2 fold decrease in MnSOD and Cu/ZnSOD in MCF-7G1P3 cells than MCF-7vector. Since mitochondrial Ca²⁺ regulates mtROS production and apoptosis, effects of ionomycin was tested. Increasing intracellular Ca²⁺ with ionomycin increased mtROS and fission in MCF-7vector but not in MCF-7G1P3 cells in which mitochondria undergone mitochondrial fusion. Pretreatment with CSA, an inhibitor of cyclophilin-D that controls mitochondrial permeability transition pore (MPTP), reversed the mitochondrial fusion in MCF-7G1P3 and fission in MCF-7 vector. In summary G1P3 regulates the elevated ROS level and SOD enzyme activity in MCF-7G1P3 cells to control mitochondrial biogenesis.</p>		

Title: Murine Micrnas Targeted By The Oncogenic Mouse Polyomavirus During Viral Infection		Presentation ID: C84 – AN
Author: Neethu Chokkalingam	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Master’s	
Co-Authors:	Mentor(s): Dr. Chang K Sung	
<p>Abstract microRNAs are non-coding small RNAs that regulate expression of many genes and have been proposed as useful biomarkers for diverse diseases including cancer. Studies of the highly oncogenic mouse polyomavirus (Py) have identified many pathways in tumor development. The pathways found altered in Py-induced tumors strongly overlap with those affected in various human cancers, highlighting the Py-mouse systems's broad applicability to oncology. We focused our investigation on murine microRNAs that may be targeted by Py during</p>		

viral infection to identify microRNAs that are functionally involved in Py-induced tumorigenesis. microRNA expression levels in uninfected and Py-infected mouse cells were compared using the microRNA Array kit. This qRT-PCR based screening and further validation assays revealed that the levels of certain cellular microRNAs were elevated in Py-infected cells. Our further research focuses on identification of genes target ed by these microRNAs and their roles during viral infection for the better understanding of microRNA involvement in tumor development and progression.

Title: The Trophic Ecology Of Porcelain Crabs Petrolisthes Spp. On Oyster Reefs		Presentation ID: C85 – AN
Author: Josette Delgado	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Master’s	
Co-Authors:	Mentor(s): Dr. Kim Withers, Dr. Paula Rose and Dr. Jennifer Pollack	
<p>Abstract Porcelain crabs are found in dense populations in tropical and subtropical estuaries worldwide and are important components in oyster reef ecosystems. They are thought to primarily consume phytoplankton, but in recent laboratory studies porcelain crabs also readily consumed zooplankton which provided as much as 200 times more energy than a mixed microalgae diet (McGlaun and Withers 2012). There is little known about the feeding behavior of porcelain crabs in their natural environment. Stable isotopes of carbon and nitrogen were used in this work to identify porcelain crab prey and their trophic level in Copano Bay, Texas. Muscle tissue from porcelain crabs taken from three sites in the bay were analyzed for their carbon and nitrogen isotopic ratios. Porcelain crab muscle tissue $\delta^{13}C$ mean value was $-16.4 \pm 0.3\%$, while the $\delta^{15}N$ mean was $8 \pm 0.1\%$, with no variation in porcelain crab isotopic composition within and among sites in the bay. Carbon ratios were similar to those of benthic microalgae (-16%) measured in other locations, which may suggest a diet of primarily diatoms. Nitrogen isotopic values of porcelain crabs will be compared to possible prey items in Copano Bay. These crabs may serve as a connection between producers and higher trophic levels.</p>		

Title: Early Ambulation In CABG Patients		Presentation ID: C86 – AN
Author: Michael Eddins	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Master’s	
Co-Authors:	Mentor(s): Dr. Sara Baldwin	
<p>Abstract Objective: Coronary artery bypass graft (CABG) surgeries are common with a 3.6% - 11.7% risk of developing postoperative pneumonia. The purpose of this integrative systematic review is to evaluate the effectiveness of early ambulation on the risk of developing postoperative pneumonia in CABG surgery patients. Methods: A database search using CINAHL, MEDLINE, Cochrane Library and Google Scholar was performed. The key search terms: coronary artery surgery, pneumonia, early ambulation, CABG surgery. Inclusion criteria included: full text, English language, coronary artery surgery, CABG, early ambulation, pneumonia, pulmonary complications and critically ill. Results: A total of 12 studies were collected for this review; 5 were used. Three studies were excluded due to a lack of relevance. All studies reported the benefits of early ambulation on decreasing the risk of pneumonia. Conclusions: The review indicated that early ambulation/mobilization decreases the risk of pneumonia by 45% and decreased the length of stay by 77.5 hours. There is a need for research focused on the effect of early ambulation on postoperative CABG patients and the risk of developing pneumonia. The maximum benefits of early ambulation intensity need further study. It is recommended that ambulation for post-operative CABG patients begin within the first 24 hours.</p>		

Title: Respiratory Physiology In Beluga Whales (<i>Delphinapterus Leucas</i>)		Presentation ID: C87 – AN
Author: Alexandra Epple	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Master’s	
Co-Authors:	Mentor(s): Andreas Fahlman	
<p>Abstract Breath duration, flow-rate, tidal volume, and expiratory gas composition were measured in nine beluga whales (<i>Delphinapterus leucas</i>) ranging from 7-50 years old and from 510-900+ kg. Both spontaneous breaths and chuffs (trained forced exhalations) were measured in animals maintaining their own buoyancy at the water surface. Respiratory variables were collected using a custom-designed pneumotachometer and fast response O₂ and CO₂ gas analyzers. The average expiratory duration was significantly shorter ($p < 0.001$) than the average inspiratory duration for chuffs. Maximal expiratory flow-rates were significantly higher for chuffs as compared with spontaneous breaths ($p < 0.001$), as were inspiratory flow rates ($p < 0.001$). Tidal volumes of spontaneous breaths were significantly lower as compared with chuffs ($p < 0.01$). In chuffs the end-expiratory O₂ was significantly higher and CO₂ lower than in spontaneous breaths ($p < 0.001$). Estimated metabolic rates ranged from 1.7 L O₂·min⁻¹ to 6.3 L O₂·min⁻¹, which yielded ratios of 1.04-5.11, based on Kleiber’s predicted metabolic rate. Improved understanding of cetacean pulmonary parameters and metabolic rates may be useful for elucidating the physiological implications of diving, as well as for developing an increased understanding of the energetic and ecological roles of beluga whales.</p>		

Title: Development Of Microsatellite Markers For Brown Recluse Spiders Using Next Generation Sequencing		Presentation ID: C88 – AN
Author: Tanya Garza	Discipline: Life Science	
Campus: Texas A&M University International	Student Level: Master’s	
Co-Authors:	Mentor(s): Dr. Michael Kidd	
<p>Abstract Brown recluse spiders, <i>Loxosceles devia</i>, are found throughout South Texas and are known for causing severe necrotic skin lesions. Despite their impact on human health, very little is known concerning the genetic diversity or population structure of this species. The development of a suite of molecular markers (microsatellites) would allow us to obtain genetic data and expand the resources available to study this venomous species. Microsatellites are long tandem repeats (1-6 nucleotides long) of DNA, also known as simple sequence repeats. Their codominant method of inheritance, wide spread distribution across the nuclear genome, ease of scoring, and high mutation rates make microsatellites an ideal molecular markers. Unfortunately the cost of developing microsatellites limits their availability. We used the Ion Torrent Personal Genome Machine to sequence libraries of genomic DNA derived from <i>L. devia</i>. The program MSATCOMMANDER was used to identify and design primers for di-, tri-, and tetra- microsatellite repeats from these shotgun sequences. Finally, polymerase chain reaction conditions were optimized of each primer to develop a suite of novel molecular markers for this species.</p>		

Title: Reduction Of Siderophore Production In Methanotrophy Of Methylosinus Trichosporium OB3b		Presentation ID: C89 – AN
Author: Shakti Gurung	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Master's	
Co-Authors: Jihyun Kim and Dr.DongWon Choi	Mentor(s): Dr. DongWon Choi	
<p>Abstract</p> <p>Siderophores are iron binding compounds secreted by many microorganisms as a part of their iron trafficking system. It has few similarities to copper binding methanobactin. It is synthesized in response to low bioavailable iron in the environment. It chelates insoluble ferric ions (Fe³⁺) and converts to water soluble ferrous ion for microorganisms to uptake. Methylosinus trichosporium OB3b needs ferric ions for its methanotrophy and seems to have siderophore as their iron acquisition system. However, excessive amount of siderophore acts as contaminating agent. The mb isolation from Methylosinus trichosporium (mb-OB3b; C45H58N10O16S5; Mw 1154.26) has been extensively studied as the archetype molecule [1]. Our preliminary results indicated that mb-OB3b used for previous studies was heavily contaminated with minimum 40% of methanotrophic siderophores. Now, the validity of earlier mb-OB3b studies is questionable. The presented study is the optimization of mb-OB3b production to reduce siderophore production. Methylosinus trichosporium OB3b was cultivated in Bioflo110 bioreactor, where agitation speed, gas flow, temperature, and copper availability were controlled in semi-continuous batch mode. Dissolved oxygen, pH, and cell density were monitored as potential indicators of in situ mb-OB3b productivity levels. Secreted mb-OB3b was isolated by tangential flow filtration followed by step-wise elution of reverse phase HP20 Diaion column over different concentrations of acetonitrile. Eluted fractions were analyzed by Waters Synaptic IM-MS.</p>		

Title: Identification Of Motifs Responsible For The Pro-Apoptotic Activity Of Bmrp		Presentation ID: C90 – AN
Author: Elizabeth Hager	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Master's	
Co-Authors: Cheryl J. Claunch and Viswanadh V. C. Edara	Mentor(s): Rafael Pérez-Ballester and Maribel González-García	
<p>Abstract</p> <p>Apoptosis, a programmed form of cell death, is essential for the development and the regulation of adult tissue homeostasis in animals. Deregulated levels of apoptosis can lead to cancer, autoimmune disorders, neurodegenerative diseases, as well as other health issues. Bcl-2 is an anti-apoptotic protein that plays an important role in the regulation of apoptosis. A novel binding partner for Bcl-2 was identified in our laboratory and was designated as BMRP (Bcl-2 interacting mitochondrial ribosomal protein L41). The interaction between Bcl-2 and BMRP was confirmed via co-immunoprecipitation studies, and functional analyses showed that BMRP exhibits pro-apoptotic activity. Six BMRP alanine substitution mutants have been generated in our laboratory and one has been found to lose binding activity to Bcl-2. Functional assays conducted with this mutant have shown that this mutant still exhibits pro-apoptotic activity. Preliminary data obtained with the five remaining alanine substitution mutants suggests that these mutants also induce cell death. Cell viability reduction assays will be conducted to confirm the preliminary data obtained. The results of these studies will be utilized to design and generate additional mutants with the goal of identifying the motifs and amino acid residues of BMRP responsible for its pro-apoptotic activity.</p>		

Title: Improving Access: The Role of Education in Children’s Oral Health in the Corpus Christi Area – Results and Recommendations		Presentation ID: C91 – AN
Author: Dr. Muhammad Haris	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Master’s	
Co-Authors: Yudelkys Leonard, Christopher Nguyen and Abiodun Subair	Mentor(s): Dr. Sherdeana Owens	
<p>Abstract</p> <p>To eliminate health disparities in children, programs must integrate oral health into other health and social programs. The “Improving Access” research project sought to incorporate dental hygiene education into preschool learning programs by targeting both students and parents. This presentation highlights the results and recommendation portion of the project.</p> <p>Understanding the importance of children’s oral health, our goal was to increase dental visits in our target group. It was imperative that we accomplish two secondary goals. The first was to provide dental education, direct hygiene instruction and nutritional guidelines for the targeted preschool/elementary student and to share the education materials with the family. Additionally, referral information detailing area dental practitioners who accept Medicaid was made available. The second was to collect data on the student’s current oral health with follow-up at the end of the semester; and to elicit family information via a start and end-of-school-year questionnaire.</p> <p>Two local daycare centers in under-resourced areas and several Corpus Christi Head Start Centers were selected as participants in the project. Direct hygiene instruction and dental care supplies were provided to 56 children. Parents received educational materials and resources identifying local Medicaid dentists. Data on dental visits and active caries was collected. The children were seen in the fall of 2011 and revisited six months later. Overall, there was an increase in dental visits and a decrease in active carious lesions for the children. Recommendations related to the areas of wellness, education, engagement, and resources. Future plans included program continuance and expansion.</p>		

Title: Family Participation And Satisfaction In Adult Intensive Care Unit		Presentation ID: D19 – LS
Author: Michelle Karys	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Master’s	
Co-Authors: Dr. Sara Baldwin	Mentor(s): Dr. Sara Baldwin	
<p>Abstract</p> <p>Background: A majority of US intensive care units (ICUs) follows restrictive visitation policy preventing families from participating in patient care.</p> <p>Purpose: To conduct integrated literature review to synthesize literature support of open visitation policy on family participation of patient care and satisfaction in adult ICU.</p> <p>Methods: Journal articles were searched from CINAHL, MEDLINE, Cochrane, and PubMed databases between 2000-2015. Key terms: Visitation policy, adult critical care unit, patient and family centered care, family role, family participation, family needs, and family satisfaction. The literature search initially yielded 22 results; 5 scholarly articles met inclusion criteria.</p> <p>Results: The five articles included indicated family members served as volunteer caregivers, providing select direct patient care. One systematic review revealed visiting hours as guidelines, not policy or rules, for the advantage of nurses and patients. This review indicated that when family involvement, closeness, comfort, and support needs were met, patient and family satisfaction increased.</p> <p>Conclusion: Nurses, patients, families and providers play an important role in incorporating patient-family-centered-care practice. Open visitation policy allows families to be active participants in patient care, thus increasing patient and family satisfaction. Nurses’ opinions on visitation policy were varied across work settings.</p>		

Title: A Highly Enantioselective [4+2] Cycloaddition Of Aldehydes And β,γ -Unsaturated- α -Keto Esters Using Enamine Catalysis		Presentation ID: D20 – LS
Author: Nanda Kumar Katakam	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Master's	
Co-Authors:	Mentor(s): Dr. Allan D. Headley	
<p>Abstract</p> <p>A stereoselective inverse electron demand oxo-Diels-Alder reaction between electron poor diene (γ-aryl-β,γ-unsaturated-α-keto ester) and electron rich dienophile has been studied in our lab. This type of cycloaddition is extremely useful for the construction of O-, N-, S-centered heterocycles, which has great importance in both organic and medicinal chemistry. The [4+2] hetero cycloaddition was carried out using chiral pyrrolidine based Catalysts. High selectivity (enantiomeric excess 98%) was obtained using such chiral pyrrolidine based Catalysts with higher bulky group at 2nd position of pyrrolidine ring. Owing to the bulkiness of catalyst at 2nd position, compared to the previously synthesized Catalysts, it is more efficient at catalyzing this reaction. The efficiency of Catalyst to catalyze a wide scope of reactants is presently being analyzed. Reactions will be carried out using this catalyst and stereochemical outcome determined.</p>		

Title: Comparison Of Soil Microbiomes Of Mesquite (<i>Prosopis Glandulosa</i>) And Texas Wintergrass (<i>Nassella Leucotricha</i>) Communities		Presentation ID: D21 – LS
Author: Emily Lansmon	Discipline: Life Science	
Campus: Tarleton State University	Student Level: Master's	
Co-Authors: Izhar A. Khan	Mentor(s): Dr. Darrell Murray, Dr. Roger Wittie and Dr. Jeff Brady	
<p>Abstract</p> <p>Depletion of soil microbial communities has detrimental effects on the entire ecosystem. Throughout Texas, mesquite trees (<i>Prosopis glandulosa</i>) and Texas wintergrass (<i>Nassella leucotricha</i>) have invaded and altered the production and diversity of native grasses. Why do they occur together? How are they changing the soil microbiome? Soil samples were collected at two sites to examine the microbial community structures of mesquite and wintergrass and how they compare to other native grasses. Three samples from 6 plots at each site were collected from four categories: mesquite with wintergrass beneath the canopy, mesquite with another grass or bare ground beneath the canopy, wintergrass that is beyond the canopy, and another grass or bare ground beyond the canopy. The samples were subjected to 16S metagenomics analysis to compare microbial community structures between the two species. Identifying microbial community dynamics will enable us to further understand the mesquite-Texas wintergrass association and aid in our efforts to return land to previous native grasses.</p>		

Title: The Effect Of Maspardin Cortical Neurons And Progressive Spastic Paraplegia In Spg21 ^{-/-} And Spg21 ^{+/+} Mice		Presentation ID: D22 – LS
Author: William Latson	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Master's	
Co-Authors: Alexis Bivona, Anne Davenport and Venu Cheriyaath	Mentor(s): Venu Cheriyaath	
<p>Abstract</p> <p>Mast syndrome is a form of hereditary spastic paraplegia (HSP), an autosomal recessive disease caused by non-</p>		

sense mutations in the SPG21 gene which encodes for the maspardin protein. Since loss of lower limb function and increased spasticity are characteristics of mast syndrome, the role of maspardin in controlling the sensorimotor capabilities was investigated in SPG21^{+/+} (WT) and SPG21^{-/-} (KO) mice. Behavioral studies identified significant impairment and progressive loss of sensorimotor functions in KO mice. The 12 month KO cohorts exhibited a significant increase in foot slips as compared to the WT in the 12 month age group ($p < 0.05$). In the hind limb clasp and ledge tests KO mice scored 2 fold less than that of WT mice ($p \leq 0.05$). Since these results suggested progressive reduction in motor neuron functions in KO mice, we hypothesized that maspardin plays a critical role in the growth of cortical neurons. To test this hypothesis, the growth of WT and KO cortical neurons were compared in vitro. Relative to WT, there was a 3.6x reduction in the growth of KO neurons at 96 hours ($p < 0.05$). Based on these correlations, we hypothesized that there would be a significant increase in spastic paraplegia and progressive lower limb dysfunction in the KO mice over the age of six months. In summary, our results suggest that maspardin is indispensable for the growth of cortical neurons and the loss of maspardin may lead to impaired sensorimotor neuron functions in KO mice.

Title: Zebrafish Oocyte Maturation Bioassay As A Screening Tool For Selected Environmental Contaminants		Presentation ID: D23 – LS
Author: Era Maskey	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Master’s	
Co-Authors: Izhar A. Khan	Mentor(s): Dr. Izhar A. Khan	
<p>Abstract Environmental contaminants are capable of acting as hormonal mimics or receptor blockers and may modify permanently the development of the reproductive system. This study evaluates an in vitro screening of selected potential toxins relevant to reproductive health of wildlife as well as human beings in a fish oocyte maturation bioassay. Zebrafish is suitable model organism to study oocyte maturation because they have transparent eggs and changes in eggs can be easily observed. Ovaries are obtained from adult females with eggs undergoing late vitellogenesis and washed with 60% Leibovitz L-15 medium (L-15). Approximately 20 oocytes are transferred to each well containing 1 ml of L-15 medium with or without the maturation inducing hormone in zebrafish (17α, 20β-dihydroxy-4-pregnen-3-one (DHP), and six different contaminants (iprodione, carbaryl, genistein, endosulfan, malathion and glyphosate) at a wide range of concentrations for 12 hours at 25$^{\circ}$C. The number of oocytes that undergo maturation as determined by germinal vesicle breakdown (GVBD) are counted and expressed as a percentage of the total. In control, approximately 30% of oocytes undergo GVBD at 12 h, while incubation with DHP for the same duration induces more than 80% GVBD. Oocyte maturation is expected to be stimulated by iprodione acting as a progestin receptor mimic whereas it is expected to be inhibited by carbaryl, genistein, endosulfan, malathion and glyphosate. This study extends the understanding of impacts of different groups of environmental contaminants on a process critical to the success of female reproduction in vertebrates.</p>		

Title: Diadzin-Rich Soy Isoflavone Extracts Increase Estrous Cycling In VCD-Induced Menopause Mouse Model		Presentation ID: D24 – LS
Author: Simbarashe Mazambani	Discipline: Life Science	
Campus: Texas A&M University – Commerce	Student Level: Master’s	
Co-Authors: Kailee Johnson, Sravan Vemuri, Sameerah Alshafi and Venu Cheriya	Mentor(s): Dr. Venu Cheriya	
<p>Abstract By 2025 postmenopausal women will make up 20% of the US population. Since traditional hormone replacement therapies increase the risk of breast cancer, alternative strategies are needed to delay and manage menopause. With this intention, we screened isoflavone (phytoestrogens) extracts of 54 commercially grown soybean</p>		

cultivars in a bioassay for their estrogenic activity. Extracts from 3 diadzin rich cultivars were highly estrogenic and promoted growth of an estrogen dependent breast cancer cell line by 2.59 to 4.64 folds ($P < 0.005$). Based upon these results, we hypothesized that soy isoflavone extracts high in diadzin will increase estrous cycling to delay menopause in mice. To test this hypothesis, the effects of highly estrogenic soyisoflavone extracts were tested on a VCD-induced menopause mouse model. Results showed that VCD treated mice receiving a diadzin fortified diet had a 2.2 fold increase ($p=0.0004$) in the number of estrous cycles compared to VCD treated mice on a diet not supplemented with isoflavones. At the end of the study period no breast tumors were evident in mice. In conclusion our study suggests that soy isoflavone extracts with high levels of daidzin may delay the onset of menopause by increasing the functional estrogen available during menopause transition.

Title: Characterization Of Transcriptional Control Of Derg, A Homolog Of A Causative GENE For LONG QT Syndrome		Presentation ID: D25 – LS
Author: Erick Palacios	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Master’s	
Co-Authors: Coy Bolton	Mentor(s): Dr. Rudolf Bohm and Dr. Enrique Massa	
<p>Abstract Neuronal and cardiac cell activity are regulated by various types of voltage-gated ion channels that conduct sodium, calcium, chloride or potassium ions. The hERG channel is a voltage-gated K⁺ channel crucially involved in neuronal and cardiac repolarization, thus mutation in this ion channel could render cells hyperexcitable by altering refractory time and shifting resting potential. We are investigating the Drosophila melanogaster ortholog of this mutant channel-mutant seizure, by measuring and quantifying seizure-like behaviors and characterizing the transcriptional regulation of these channels. In these current studies, we constructed serially deleted regions of the promoter(s) for DERG that should drive expression of the DERG mRNA and subsequent rescue of the seizure mutant phenotype. The transgenic flies, bearing the different serial deletions, will be evaluated for rescue of the DERG mutant phenotype, which in turn will aid in localization of the regulatory elements necessary for the expression of DERG in the nervous system.</p>		

Title: An Urban Street Tree Inventory In A Gulf Coast City: Corpus Christi, Texas		Presentation ID: D26 – LS
Author: Alexander Rahmlow	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Master’s	
Co-Authors:	Mentor(s): Dr. Weimin Xi and Dr. Ambrose Anoruo	
<p>Abstract The research herein intends to determine the statistical validity of a one percent random street tree sample inventory in the Gulf Coast city of Corpus Christi, Texas. A three percent random sample inventory will be conducted for the City's street tree population following the sample guidelines outlined on i-Tree’s Streets™ application as a means to establish Corpus Christi's first urban street tree inventory. Cost benefit analysis will be conducted using i-Tree™ applications and city derived data inputs, environmental services will be estimated in dollar amounts.</p> <p>A primary goal of the proposed research is to statistically assess the accuracy and precision of a diminutive sample percentage, such that future inventories can be designed and sampled as efficiently as possible. Findings will assess precision and accuracy of a one percent sample as compared to a three percent sample and the implications associated for managers operating on limited budgets will be discussed. Eight city development zones (and/or) five land uses will be evaluated for species composition, dbh distributions, and relative health metrics.</p>		

Title: Using Next Generation Sequencing To Characterize Of The Transcriptome Of Ptychochromis Oligacanthus, A Cichlid Fish From Madagascar		Presentation ID: D27 – LS
Author: Christopher Rosales	Discipline: Life Science	
Campus: Texas A&M University International	Student Level: Master’s	
Co-Authors:	Mentor(s): Dr. Michael Kidd	
<p>Abstract Cichlid fishes have become an important model system for studying morphological adaptation, explosive speciation, behavioral specialization, and sexual selection. Recently, whole genome sequences have become available for five species of East African cichlid, providing an incredible resource for examining the molecular basis of species diversity. Recent advances in benchtop next generation sequencing technology have allowed the field of transcriptomic analysis to become accessible beyond the domain of large sequencing centers, generating the opportunity to survey a wider range of cichlid species. This study aims to expand the availability of genetic resources for the cichlid model system by characterizing the transcriptome of Ptychochromis oligacanthus, a cichlid species from Madagascar that represents the basal lineage of cichlid fishes. This study has sequenced over five billion base pairs from pooled cDNA libraries derived from 11 tissues and 7 developmental time points.</p>		

Title: Species Diversity And Habitat Utilization Of Birds At Timberlake Ranch, Mills County, Texas		Presentation ID: D28 – LS
Author: Kalee Smith	Discipline: Life Science	
Campus: Tarleton State University	Student Level: Master’s	
Co-Authors: Philip Sudman	Mentor(s): Philip Sudman	
<p>Abstract The Timberlake Ranch property was donated to Tarleton State University in the Fall of 2012, and is positioned along an ecotone between the Cross Timbers and Edwards Plateau regions of central Texas, providing a unique ecosystem with many species characteristic of these ecoregions. With little to no data relating to the biodiversity of this region of Texas, a survey of this property can benefit future studies in avian communities. The purpose of this project is to use point counts and observational data of bird species at Timberlake Ranch to assess: overall avian diversity; differences in avian community structure in different habitats; and habitat importance in this region of Texas as determined by habitat usage coupled with species vulnerability. Point-counts were conducted for the breeding season within three land cover types: bottomland forest, open scrubland, and upper woodland. Analysis of preliminary data indicated that total richness and richness of insectivores were nearly identical in all three land covers for breeding season. Richness of non-migratory residents was higher overall than Neotropical migrants, with slightly more residents using open scrublands and upper woodlands and migrants more commonly encountered in bottomland forests. More information will be gathered this winter to identify any patterns.</p>		

Title: Improving Access: The Role of Education in Children’s Oral Health in the Corpus Christi Area – Research Methodology		Presentation ID: D29 – LS
Author: Abiodun Subair	Discipline: Life Science	
Campus: Texas A&M University – Corpus Christi	Student Level: Master’s	
Co-Authors: Dr. Muhammad Haris, Christopher Nguyen and Yudelkys Leonard	Mentor(s): Dr. Sherdeana Owens	
<p>Abstract To eliminate health disparities in children, programs must integrate oral health into other health and social programs. The “Improving Access” research project sought to incorporate dental hygiene education into</p>		

preschool learning programs by targeting both students and parents. This presentation highlights the research methodology portion of the project.

The research methodology is PAR (Participatory Action Research). This modality is first of all participatory; additionally it engages participants and community members and provides a learning opportunity for both the researcher and the community. Ultimately it is a balance of research and action. Data collection was based on a twice administered (fall and spring) parental questionnaire. The questionnaire was preceded by appropriate consent forms. Parents were queried on demographics, family ethnicity, language, income, education, dental insurance, and child dental visits. This was coupled with direct teaching of the children who gave individual assent. Materials were available in both English and Spanish.

Data from the two series of questionnaires was collected and compared. In this way the effectiveness of the project could be assessed and barriers identified while providing baseline statistics for future projects and programs. Results showed an overall increase in dental treatment for children in the research population.

Title: Evaluating Extreme Drought Induced Tree Mortality In East Texas Using FIA Data		Presentation ID: D30 – LS
Author: Mukti Subedi	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Master’s	
Co-Authors: Weimin Xi	Mentor(s): Weimin Xi, Sandra Ridehout Hanzak and Chris Edger	
Abstract		
<p>Forests in East Texas are important for lumber production, ecosystem services, and sustainable development. East Texas has experienced frequent severe drought in last year, the latest one being the 2011. Analyzing drought-induced tree mortality and biomass changes is critical in the region as forests are considered viable means to mitigate climate change impacts. We used National Oceanic and Atmospheric Administration (NOAA) weather station data, with USDA provided Forest Inventory and Analysis (FIA) data in evaluation of spatio-temporal pattern of drought induced tree mortality based on the repeated measured plots in east Texas. General Linear Mixed Model (GLMM) was used to understand the drought induced mortality trends.</p> <p>We found significant increase in tree mortality and associated decrease in regional aboveground biomass as a consequence of the 2011 drought. The effects of the drought on forest growth and productivity, however, varied and were less significant. The spatial variation of the tree mortality and biomass loss were highly correlated with spatial drought distribution pattern. Our findings suggest that irrespective of diameter and height class mortality of trees were induced by severe drought, however, mortality of trees due to direct and carryover effects were related to survival strategies of tree species</p>		

Title: Molecular Gender Identification Of Porcupines (Erethizon Dorsatum) In The Texas Panhandle		Presentation ID: D31 – LS
Author: Erica Thomas	Discipline: Life Science	
Campus: West Texas A&M University	Student Level: Master’s	
Co-Authors:	Mentor(s): Dr. Rocky Ward	
Abstract		
<p>The North American porcupine (<i>Erethizon dorsatum</i>) is a polygynous mammal for which evidence suggests an atypical female biased juvenile dispersal pattern. This species does not exhibit any external sexual traits, making gender identification by visual inspection difficult. A molecular technique has been developed for DNA sex determination in mammals involving the analysis of sex-linked zinc finger protein genes. Discrimination of sex is based on either the presence of a heterozygous zinc finger sequence for males (Zfx and Zfy) or a homozygous zinc finger sequence for females (Zfx). The objective of this study is to use this molecular technique to determine</p>		

gender and gender differences of the North American porcupine in the Texas panhandle. I expect to find genetic parameters that support female-biased sex ratios and dispersal tendencies, as well as genetic parameters of females that are less variable than that of males. DNA tissue samples consist of hairs, quills, and muscle. Genomic DNA is extracted using the DNeasy® Blood & Tissue Kit, amplified through polymerase chain reaction, and visualized through gel and capillary electrophoreses. Of 45 samples visualized, 43 identified as female and 2 identified as male. Samples produced a female Zfx sequence at ~218bp or a male Zfx and Zfy sequence at ~218bp and ~70bp respectively. Preliminary results currently suggest support of a female biased sex ratio. In order to determine genetic variation and gender differences, the next step in this research is to assess DNA samples for deviations from Hardy-Weinberg equilibrium.

Title: Isolation And Amplification Of The Androgen Alpha Receptor Gene In The Brains Of Cichlid Fishes With Alternative Mating Strategies		Presentation ID: D32 – LS
Author: David Vazquez	Discipline: Life Science	
Campus: Texas A&M University International	Student Level: Master's	
Co-Authors:	Mentor(s): Dr. Michael Kidd	
<p>Abstract African cichlid fishes display a wide range of alternative mating strategies. The repeated evolution of alternative mating strategies requires the complex modification of male and female sexual behavior, including the temporal disassociation of territory acquisition, mate choice and spawning. Since androgens are critical for regulating agonistic and sexual behavior in most vertebrates, differences in mating strategies may be associated with differences in steroid sensitivity within regions of the social behavior network, which are responsible for modulating complex social behavior. We have used degenerate primers and PCR to isolate and amplify the gene for the Androgen alpha receptor from brain derived cDNA in species of cichlid fish that exhibit alternative mating strategies. The Androgen alpha receptor gene has been amplified from eight cichlid species and has been cloned and sequenced in preparation for in situ hybridization to examine the localization and distribution of these receptors within the brains of species with alternative mating strategies.</p>		

Title: Designing Genetic Markers For A Regional Endemic Species Of Freshwater Mussels		Presentation ID: D33 – LS
Author: Aldo Vazquez	Discipline: Life Science	
Campus: Texas A&M University International	Student Level: Master's	
Co-Authors:	Mentor(s): Dr. Michael Kidd	
<p>Abstract Texas is home to 53 species of freshwater mussels. Unfortunately, factors associated with an increase in urbanization, such as decreasing water levels in lakes and rivers, have greatly affected the populations of many species. Currently, 15 species are classified as threatened by the state. Of these species, 11 have been petitioned to be covered under The Endangered Species Act (ESA), which can offer protection under federal law. In this project, we have used next generation sequencing technology to develop a suite of species-specific genetic markers, known as microsatellites, to assess the genetic diversity of the populations of <i>Popenaias popeii</i>, one of the candidates for protection under the ESA. Microsatellites are regions of DNA distributed across a species genome that are comprised of 2-6 nucleotides repeated in tandem. To date, we have tested the utility of 15 microsatellite markers and have optimized the PCR conditions for 5 of these. These markers will provide genetic data on population structure, gene flow, and existing levels of genetic diversity for this critically threatened species, which is endemic to the Rio Grande in Texas, Black River in New Mexico, and several Mexican tributaries of the Rio Grande.</p>		

Title: Generation Of Recombinant Bcl-2 Constructs To Be Utilized In Characterization Studies Of The Pro-Apoptotic Protein BMRP		Presentation ID: D34 – LS
Author: Victor Villarreal	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Master’s	
Co-Authors: Ashoka C. Bandla	Mentor(s): Rafael Pérez-Ballesteros and Maribel González-García	
<p>Abstract</p> <p>Apoptosis is a physiological type of cell death that is essential for metazoan organisms (animals). Apoptosis is essential for both development and for the maintenance of tissue homeostasis within an adult organism, and is therefore highly regulated. Deregulated apoptosis has been linked to the pathogenesis of various human diseases such as cancer, autoimmune disorders, neurodegenerative diseases (such as Alzheimer’s and Parkinson’s), as well as cardiac arrest and stroke damage. The Bcl-2 protein was first characterized in B-cell lymphomas, which is where the name for the protein is derived. Bcl-2 exhibits anti-apoptotic activity and it plays a major regulatory role in the process of apoptosis. Our laboratory has identified BMRP (Bcl-2 interacting Mitochondrial Ribosomal Protein) as a novel Bcl-2 interacting protein with pro-apoptotic activity. We have generated a recombinant construct encoding wild-type (WT) Bcl-2 fused to green fluorescent protein (GFP). We have prepared another Bcl-2 construct that encodes a Bcl-2 protein with enhanced anti-apoptotic activity relative to that of WT Bcl-2. These constructs will help us further characterize the role that BMRP plays in apoptosis signaling pathways.</p>		

Title: Two Novel C-Type Lectins, Hellericetin 1 And 2, From The Southern Pacific Rattlesnake As Therapeutic Agents For Blood Clotting Disorders		Presentation ID: D35 – LS
Author: Robert Walls	Discipline: Life Science	
Campus: Texas A&M University – Kingsville	Student Level: Master’s	
Co-Authors: Robert I. Walls, Esteban Cantu, Elizabeth Guerra, Jacob Valdez, Esteban Cuevas, Sara E. Lucena, Montamas Suntravat and Elda E. Sánchez	Mentor(s): Elda E. Sánchez	
<p>Abstract</p> <p>Several protein groups including C-type lectin-like proteins (CTLs) constitute many snake venoms. CTLs have been shown to inhibit platelet function, coagulation factors, cell adhesion, cell migration, and cell invasion. The disruption of blood clot formation is biomedically useful for the treatment of strokes and heart attacks, whereas cancer cell activity inhibition is biomedically useful for cancer treatments. Two CTLs, hellericetin 1 and 2, from the venom of the Southern Pacific rattlesnake (<i>Crotalus oreganus helleri</i>), were purified by cationic exchange chromatography. To test their effects on blood clotting, ADP-, ristocetin-, and collagen-induced platelet aggregation inhibition assays were carried out using human whole blood. The ability of CTLs to inhibit cell adhesion was tested on three different cell lines, two of which were cancerous. Hellericetin 1 and 2 had IC50s of 138 and 125 nM, respectively, for the inhibition of ristocetin-induced platelet aggregation. Neither hellericetin had activity for the inhibition of ADP- or collagen-induced platelet aggregation. Hellericetin 2 had IC50s of 794 nM and 7,191 nM for the inhibition of fibronectin adhesion to HUVEC and SK-MEL-28, respectively, and no inhibition for HT1080 cells.</p>		

Title: Development Of A Differentiation Assay To Study The Effects Of Zrich And CAP23 On The Neuroplastic Abilities Of PC12 Cells		Presentation ID: D36 – LS
Author: Sara Zarate	Discipline: Life Science	
Campus: Texas A&M University-Kingsville	Student Level: Master's	
Co-Authors: Ashoka C. Bandla	Mentor(s): Maribel González García and Rafael Pérez Ballesteró	
<p>Abstract Teleost fish, e.g. zebrafish, are capable of axonal regeneration in their central nervous system (CNS). After assault to the optic nerve there is an increase in expression of genes involved in axonal regeneration and repair, such as the zebrafish Regeneration Induced CNPase Homolog (zRICH) gene. The encoded zRICH protein is similar in sequence and enzymatic capabilities to CNPase, a mammalian myelin enzyme that interacts with actin and tubulin. Differential assays of stably transfected PC12 cells expressing zRICH protein have shown an increase in neurite branching. Another gene upregulated during axonal regeneration and repair encodes the axonal growth associated protein CAP23, a protein known to interact with the actin cytoskeleton and its potential effects on neuritogenesis or neurite branching. The main focus of this project is to develop an optimized differentiation assay using PC12 cells and fluorescence microscopy to detect neuritogenesis and to elucidate the effects of CAP23 on neuronal plasticity in transfected PC12 cells. Constructs expressing GFP or the fusion protein CAP23-GFP will be generated and utilized as vectors for future morphological analysis of neurite outgrowth and branching of stably transfected PC12 cells.</p>		

Doctoral

Title: Novel Bioreactor To Study Mechanical Forces Effect On Atherosclerosis		Presentation ID: D37 – LS
Author: Caleb Davis	Discipline: Life Science	
Campus: Texas A&M University	Student Level: Doctoral	
Co-Authors: Steve Zambrano and Michael R. Moreno	Mentor(s): Michael R. Moreno	
Abstract <p>Atherosclerosis is the leading cause of death in the developed world. Development of atherosclerosis depends on responses of endothelial cells (which line the arteries) to the mechanical environment. Changes in fluid shear stress (FSS) or cyclic stretching (CS) have been shown to evoke cell changes associated with atherosclerosis. Fewer investigators consider interactions with both forces applied to cells simultaneously. For example, no group has studied changing the spatial angle between FSS and CS (“stress angle”), even though that angle often varies widely between healthy and disease-prone areas.</p> <p>We developed a benchtop bioreactor allowing endothelial cell culture which simultaneously applies FSS and CS. Spatial angle between the two forces can be changed to any arbitrary angle. Porcine endothelial cells cultured in the bioreactor were subjected to physiological flow and stretch for 24 hours, with stress angle at 0 or 90 degrees. Brightfield imaging demonstrated qualitative differences in cell shape and alignment depending on stress angle.</p> <p>These results suggest that spatial angle between FSS and CS affects endothelial cell morphology, meriting further study using quantitative methods. Thus, the bioreactor we developed represents an effective tool to study an aspect of mechanical forces effect on atherosclerosis which has never before been researched.</p>		

Title: Embryonic Spacing In The C3h Mouse: A Model For Monochorionic Pregnancies In Mammals?		Presentation ID: D38 – LS
Author: Samantha Fletcher	Discipline: Life Science	
Campus: Texas A&M University	Student Level: Doctoral	
Co-Authors: Kinder Meghan and Threadgill Deborah	Mentor(s): Deborah Threadgill	
Abstract <p>Previous research has indicated tightly regulated and even spacing of embryos during implantation is the accepted phenotype not only in the mouse and rat but also in other polytocous species such as the pig. This critical event is described as embryos spaced evenly along the uterine horns of these polytocous species, and is an important factor in the health of both the pregnancy and the embryos. The importance of the proper spacing of embryos has also been suggested from human studies where human fetuses sharing the same placenta are at increased risk of perinatal mortality and morbidity, selective intrauterine growth restriction (sIUGR), and a higher incidence of congenital heart malformations.</p> <p>The current study utilizes both wild type C3H and wild type B6 mice for the purpose of comparison and crosses. Previous studies suggested that wild type C3H mice displayed reproducibly uneven spacing of their embryos while wild type B6 mice displayed even spacing of embryos. The overall objective of the study is to determine the genetic factors for the uneven spacing in the C3H mice. The use of recombinant inbred lines will allow us to determine which crosses display the phenotype and to identify potential candidate genes.</p>		

Title: The Effect Of Beetroot Juice Supplementation On Combined Thermal/Hypoxic Stress		Presentation ID: D39 – LS
Author: Jorge Granados	Discipline: Life Science	
Campus: Texas A&M University	Student Level: Doctoral	
Co-Authors: Weston Castillo, Lisa Jansen, Trevor Gillum and Kevin Christmas	Mentor(s): Matthew Kuennen	
<p>Abstract</p> <p>INTRODUCTION: Skeletal muscle(SM) perfusion and thermoregulation place simultaneous demands on cardiac output(Q) during work in hot ambient environments, leading to significant cardiovascular(CV) strain and reduced perfusion of the splanchnic vasculature, potentially causing exertional heat illness(EHI). Beet root juice(BR) has been shown to improve time to exhaustion in fixed workload, incremental, and hypoxic exercise conditions. Given that Q is prioritized to deliver O₂ to active SM, we hypothesized that if O₂ delivery to active SM could increase independent of an increase in Q, the etiology of EHI could be mitigated. PURPOSE: Determine if BR supplementation reduces the physiological strain associated with work in a hot/hypoxic environment. METHODS: Six males (25.9±3.4yrs; 11.8±3.2%body fat; VO₂peak 51.6±3.9ml/kg/min) completed randomized, double-blind, placebo-controlled, crossover study. BR(8.4mmol NO₃⁻/140ml) or placebo(PL)(NO₃-depleted BR) was ingested for 6 days. Treadmill military march (45min, 3.1mph, 1%grade) was performed on 6th day of supplementation in hot(40°C,30%RH), hypoxic(altitude=2,743m) environment while wearing full military gear. Prior to exercise, subjects underwent passive heating (40°C) to increase core temperature (TC) to 38.5°C. TC, skin temperature(TSK), heart rate(HR), O₂ consumption(VO₂), CO₂ production(VCO₂), ventilation(VE), tidal volume(VT), and respiratory rate(RR), were monitored every 10s. Ratings of perceived exertion(RPE), thermal comfort(THC), overall comfort(OAC), and O₂ saturation(SPO₂) were measured every 5min. RESULTS: BR condition significantly increased values over PL for TC,TSK,HR,RPE, and THC. Other measured variables were not altered. CONCLUSION: Contrary to expectations, preliminary data suggest BR supplementation does not reduce CV strain associated with a military march in hot/hypoxic environments, but may intensify EHI by increasing TC, TSK, and HR.</p>		

Title: Physician Nutrition Education Program (Pnep): “Physician Opinion Survey”		Presentation ID: D40 – LS
Author: Kristen Hicks	Discipline: Life Science	
Campus: Texas A&M University	Student Level: Doctoral	
Co-Authors: Dr. Peter Murano	Mentor(s): Dr. Peter Murano	
<p>Abstract</p> <p>The Physician Nutrition Education Program (PNEP) was developed as a two phase initiative. Phase 1 organized current nutrition knowledge and practices derived from an online survey, while in phase 2 we will focus on webinar development. Each webinar will feature research-based nutrition topics of importance, to be made available to physicians for continuing medical education (CME) credits. A “Physician Opinion Survey” was constructed and validated to determine current nutrition knowledge and practices of Texas physicians. Using this information, the webinars will ultimately be developed. An online survey of 20 questions was distributed through medical contacts and listservs across Texas. Our sample, n=54, included 44 MD’s, 6 DO’s and 4 MD/PhD’s in over 15 different areas of practice. Most respondents (89%) usually/always or sometimes see patients who require that the physician have a background in nutrition education. Furthermore, only (46%) usually/always or (35%) sometimes engage patients in a manner that requires nutrition knowledge; whereas only 15% feel highly confident in performing nutrition counseling to their patients. The majority of respondents (56%) have never attended a nutrition seminar, webinar or conference. In conclusion, the need for nutrition knowledge is high in our study sample, creating a demand for nutrition topics in physician continuing education. We hypothesize that providing nutrition education opportunities to physicians will increase knowledge of nutrition and improve</p>		

confidence in performing nutrition counseling to patients, which may ultimately decrease recurring visits and improve health outcomes.

Title: Four Genome Sequences For Campylobacter Rectus: An Emerging Pathogen		Presentation ID: D41 – LS
Author: Meghan Kinder	Discipline: Life Science	
Campus: Texas A&M University	Student Level: Doctoral	
Co-Authors: Samantha Peeler-Fletcher	Mentor(s): Deborah Threadgill	
<p>Abstract Campylobacter rectus is a poorly described gram-negative oral anaerobe and a pathogen of periodontitis. C. rectus strain ATCC 33238 was the original strain sequenced by JCVI in 2008 and is considered the reference genome. Four other C. rectus strains were obtained from CCUG in Sweden and sequenced at North Carolina State University in 2011. Objectives of this research include: 1) to provide publishable and useful genome sequences; 2) to compare the five genomes and identify regions of variation; and 3) to identify potential pathogenesis-associated genomic regions and determine which strains retain these regions. The four genomes were sequenced using Illumina sequencing and the raw data assembled into scaffolds and contigs. The RAST server was used to initially compare the five sequenced genomes to one another with C. rectus 33238 used as the reference. Additional genomic analysis was done (and is continuing) to look at similarities and differences between pairs of genomes. Genomic comparisons thus far demonstrate conserved regions, but also some regions displaying potentially missing or additional genes. In particular, several conserved secretion systems have been noted and will be further examined. This research has the potential to illuminate the C. rectus species at a genetic level using comparative genomics.</p>		

Title: Incorporating Multiscale Modeling With Drug Effects For Cancer Therapy		Presentation ID: D42 – LS
Author: Wasiu Opeyemi Oduola	Discipline: Life Science	
Campus: Prairie View A&M University	Student Level: Doctoral	
Co-Authors: Xiangfang Li and Lijun Qian	Mentor(s): Lijun Qian	
<p>Abstract In this study, we examine multiscale modeling for cancer treatment with drug effects consideration from an applied systems pharmacology perspective. Classical pharmacology and systems biology are both quantitative inherently; systems biology however focuses more on networks and multi-factorial controls over biological processes rather than on drugs and targets in isolation. Systems pharmacology on the other hand has a strong focus of studying drugs in relation to the pharmacokinetic (PK) and pharmacodynamic (PD) relations accompanying drug interactions with multiscale physiology as well as the prediction of dosage-exposure responses and economic potentials of drugs. Thus it requires multiscale methods to address the need for integrating models from the molecular levels to the cellular, tissues and organisms levels. It is common belief that tumorigenesis and tumor growth can best be understood and tackled by employing and integrating a multifaceted approach that includes in vivo, in vitro experiments, in silico models, multiscale tumor modeling, continuous/discrete modeling, agent based modeling, and multiscale modeling with PK/PD drug effect inputs. We provide an example application of multiscale modeling employing stochastic hybrid system for a colon cancer cell line HCT-116 with drug Lapatinib applied. It is observed that the simulation results are similar to those observed from the setup of the wet-lab experiments at Translational Genomics Research Institute.</p>		

Title: Changes In Reproductive Tract Morphology Of Bottlenose Dolphins Across Age Class, Reproductive State, And Stock		Presentation ID: D43 – LS
Author: Dara Orbach	Discipline: Life Science	
Campus: Texas A&M University – Galveston	Student Level: Doctoral	
Co-Authors:	Mentor(s): Bernd Würsig, Christopher D. Marshall and Sarah L. Mesnick	
<p>Abstract</p> <p>Cetaceans exhibit unusual foldings of their vaginal walls, the functions of which are unknown. Inconsistent terminology and a lack of anatomical landmarks in past publications have impeded tests of functional hypotheses. Reproductive tracts were obtained from deceased female bottlenose dolphins (<i>Tursiops truncatus</i>) that stranded in the USA. A protocol was developed to collect up to 15 morphometrics using calipers and rulers. Distinguishing attributes within the species were assessed across age class, reproductive state, and stock (n=18 specimens). Dolphins had one large vaginal structure (depth=16% vagina length) that divided the lumen into upper (19% vagina length) and lower chambers. There was no variation in vaginal morphology between sexually-mature and immature specimens or between pregnant and lactating/resting females. Inter-stock differences were variable without clear trends. Within bottlenose dolphins, vaginal morphology appears to be relatively fixed. Our standardized protocol and baseline measurements enable future analyses of the selective forces driving the evolution of vaginal structures (e.g. sexual selection, natural selection, phylogeny).</p>		

Title: Use of innocuous natural products to modulate membrane - cytoskeletal dependent Ras signaling.		Presentation ID: D58 – LS
Author: Natividad R. Fuentes	Discipline: Life Science	
Campus: Texas A&M University – College Station	Student Level: Doctoral	
Co-Authors: Rola Barhoumi & Ilya Levental	Mentor(s): Dr. Robert S. Chapkin	
<p>Abstract</p> <p>The relationship between plasma membrane order and Ras activation is dictated by interactions involving transmembrane receptor signaling, membrane biophysical properties and cytoskeletal components. Using intestinal models, we investigated how chemoprotective n-3 polyunsaturated fatty acids (PUFA), e.g., docosahexaenoic acid (DHA, 22:6^{Δ4,7,10,13,16,19}) and eicosapentaenoic acid (EPA, 20:5^{Δ5,8,11,14,17}), affect (i) membrane order in cytoskeletal dependent and independent models, and (ii) single cell spatial and temporal activation of Ras. Using a membrane order sensitive dye, C-laurdan, we subsequently quantified membrane order in whole cells and isolated cytoskeletal free membranes, i.e., giant plasma membrane vesicles (GPMVs) following treatment with n-3 PUFA vs control. n-3 PUFA increased membrane order in GPMVs, while exhibiting the opposite effect in whole cells, indicating a critical role for the cytoskeleton. In complementary experiments, the functional significance of n-3 PUFA modulation was assessed by monitoring Ras activation using fluorescence resonance energy transfer (FRET) biosensors targeted to specific membrane ordered (H) or disordered (K) domains. Interestingly, only DHA and not EPA suppressed the temporal activation of membrane ordered and disordered targeted Ras following stimulation with epidermal growth factor. These data demonstrate that chemoprotective n-3 PUFA uniquely modulate cell membrane order and Ras activation in a cytoskeletal-dependent manner.</p>		