22nd Annual

UNT | HEALTH SCIENCE CENTER

Research Appreciation Day

March 21
2014

RESEARCH APPRECIATION DAY

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Posters by Category

Aging/Alzheimer's Disease (Abstracts in the 100s)

101 Poster **Classification:** TCOM DO Student
Presenter: Linda M. Cao **Department:** UNT Health Internal Medicine
Authors: Linda Cao, University of North Texas Health Science Center at Fort Worth; Melissa Edwards, University of North Texas Health Science Center at Fort Worth; Sid O' Bryant, PhD, University of North Texas Health Science Center at Fort Worth; Leigh Johnson, PhD, LMSW, University of North Texas Health Science Center at Fort Worth

THE LINK BETWEEN METABOLIC RISK FACTORS AND COGNITIVE AND AFFECTIVE FUNCTIONING

Purpose: Metabolic syndrome (MetS) is a group of risk factors that collectively affects cardiovascular functioning. Some research studies have shown a negative association between metabolic risk factors and cognitive and affective functioning. There is a limited amount of literature examining the implication of MetS on affective and cognitive functioning. The current study sought to address this gap in the literature and specifically explore the relationship between MetS and affective status as well as the MetS –cognition link.
Methods: Data were analyzed on 431 participants (With MetS n=366; without MetS n=165) from Project FRONTIER (Facing Rural Obstacles Now to health Through Intervention, Education, and Research). Metabolic syndrome was determined based on if participants met three of the five risk factors (yes/no). Risk factors for MetS include abdominal obesity, dyslipidemia (elevated serum triglycerides, low HDL), elevated fasting glucose, and elevated blood pressure. Cognitive functioning was measured utilizing the RBANS (Repeatable Battery for the Assessment of Neuropsychological Status), MMSE (Mini Mental Status Exam), Executive Interview 25-iteMetS (EXIT25) and affective status using the GDS (Geriatric Depression Scale) and BAI (Beck Anxiety Inventory). Independent sample T-tests were utilized to explore the relationship between MetS and affective functioning as well as examine the MetS-cognition link.
Results: The analyses revealed significant mean group differences between those who meet criteria for MetS compared to those who do not.
Conclusions: The result of this study suggests that the metabolic risk factors are related to cognitive and affective symptoms. It is important to investigate the relationship between factors related to cardiovascular disease and cognition as well as affective functioning in an effort to enhance a physician's clinical diagnosis and enable better treatment of patients with chronic diseases.
Sponsor
IRB/IACUC# 2012-071

102 Poster **Classification:** SPH Student
Presenter: Tony Dickensheets **Department:** Behavioral & Community Health
Authors: Tony Dickensheets, UNT Health Science Center; Leigh Johnson, UNT Health Science Center; James Hall, PhD, FABMP, UNT Health Science Center; Sid O'Bryant, PhD, UNT Health Science Center

COMORBID DIABETES AND DEPRESSION AND INCREASED RISK FOR COGNITIVE IMPAIRMENT IN MEXICAN AMERICANS

Purpose: To determine whether there is a connection between depression, diabetes and Alzheimer's disease in the Mexican American population.
Methods: Methods: This study used data from three separate cohorts: HABLE, TARCC, and Project FRONTIER. In HABLE data was collected from 208 MA (AGE= 62years; EDU=7years); TARCC had 2080 Non- Hispanic white (AGE=75; EDU=15years) and 543 MA (AGE=70; EDU=11); Project FRONTIER had 330 non-Hispanic white (AGE=65; EDU=13) and 233 MA (AGE=55; EDU=7years). Logistic regression analyses were conducted to examine comorbid diagnosis of depression and diabetes on Alzheimer's disease diagnosis or a diagnosis of Mild Cognitive Impairment. Covariates entered into the model were age, education, and gender
Results: Results: Comorbid diagnosis of diabetes and depression was significantly related to diagnosis of Mild Cognitive Impairment in Mexican Americans across all three cohorts: TARCC (odds ratio [OR]= 8.6, 95% CI=1.5 to 2.7); HABLE (odds ratio [OR]= 2.4, 95% CI= 1.3-3.2), and FRONTIER (odds ratio [OR]= 2.6, 95% CI=1.2 to 6.4). TARCC was the only cohort with a large enough sample of AD patients to run the analyses split by ethnicity. In TARCC, comorbidity was related to AD diagnosis in MA (odds ratio [OR]= 10.4, 95%=1.2-2.7), and narrowly related in Non-Hispanic Whites (odds ratio [OR]= 8.3, 95%=.14 to 1.4)
Conclusions: Discussion: Comorbid diagnosis of depression and diabetes increases risk for diagnosis of cognitive impairment, and Mexican Americans were found to be at greater risk than non- Hispanic whites for Mild Cognitive Impairment. These findings were validated across multiple cohorts, and could have significant clinical implications
Sponsor N/A
IRB/IACUC# 2012-083

103 Oral **Classification:** GSBS Student

Presenter: Marjana Sarker **Department:** Pharmacology & Neuroscience
Authors: Marjana Sarker, University of North Texas Health Science Center at Fort Worth; Susan Franks, PhD, University of North Texas Health Science Center at Fort Worth; Nathalie Sumien, PhD, University of North Texas Health Science Center at Fort Worth; Frank Filipetto, DO, University of North Texas Health Science Center at Fort Worth; Michael Forster, University of North Texas Health Science Center at Fort Worth

CURCUMIN SUPPLEMENTATION IMPROVES CERTAIN ASPECTS OF COGNITION AND ALLEVIATES INFLAMMATION, INDEPENDENT OF ADIPOSITY

Purpose: Midlife obesity has been recently associated with cognitive impairment that may be attributed to chronic, obesity-related inflammation and oxidative stress. Commonly used laboratory mice fed ad libitum are an analogue of weight gain in middle aged humans, since accumulating fat is more often the result of food intake exceeding energy expenditure and not solely because of a high fat diet. The current study addressed the hypothesis that curcumin supplementation, by attenuating obesity and adiposity -related inflammation, would improve cognition in a midlife obesity animal model.
Methods: C57BL/6J male mice were maintained under ad libitum (AL) feeding until they reached peak weight at 15 months of age, as a model of inactivity-related weight gain. The mice were subsequently assigned in groups of 19 to: (i) remain on AL, (ii) receive 30% caloric restriction (CR) or (iii) receive curcumin in their AL diet (1000 mg/kg diet, CURC) for 12 weeks. Mice underwent tail bleeds for the inflammatory markers, interleukin 6 (IL-6) and C-reactive protein (CRP) and, after 8 weeks of dietary treatment, spatial cognitive function was tested using a Morris water maze, followed by testing for cognitive flexibility using a discriminated avoidance, serial reversal task. Visceral (VAT) and subcutaneous (SAT) adipose tissue was collected after 12 weeks of the treatments.
Results: Mice maintained on CR weighed significantly less than mice on the CURC and AL diets by the third week of treatment. Food intake of the CURC group was significantly higher than AL. Mice on CR and CURC diets took fewer trials than AL to reach criterion during the second reversal session of discriminated avoidance, suggesting that both conditions improved cognitive flexibility. However, there were no significant differences between the groups in their spatial cognitive performance. Mice maintained on CR had significantly less VAT and SAT compared to mice on CURC and AL. Curcumin supplementation did not significantly impact IL-6 levels but it did reduce CRP relative to AL mice.
Conclusions: Results suggest that in a midlife obesity animal model, curcumin supplementation has positive effects on frontal cortical functions that may be linked to an anti-inflammatory action. It appears that these effects may be independent of adiposity. Curcumin intake may also facilitate energy expenditure or diminish efficiency, as suggested by the increase in energy intake in the absence of weight loss in the CURC mice. Future studies will determine the metabolic and cognitive consequences of higher curcumin doses.

Sponsor N/A
IRB/IACUC# 2011/12-30-A04

104 Poster **Classification:** GSBS Student

Presenter: Akram Sidhu **Department:** Pharmacology & Neuroscience
Authors: Akram Sidhu, University of North Texas Health Science Center at Fort Worth; Philip Vann, University of North Texas Health Science Center at Fort Worth; Jessica Wong, University of North Texas Health Science Center at Fort Worth; Nathalie Sumien, PhD, University of North Texas Health Science Center at Fort Worth

EFFECT OF ANTIOXIDANTS SUPPLEMENTATION AND MODERATE EXERCISE ON MOTOR FUNCTION IN YOUNG AND OLD MICE

Purpose: Aging is associated with a decline in psychomotor functioning and ability to learn new motor learning skills. Interventions such as exercise and antioxidants supplementation when investigated independently seem to have a beneficial impact on motor function in both human and animal subjects. A large number of health conscious individuals often combine exercise with vitamin supplementation, anticipating a synergistic effect maximizing their performance. Recent studies have also indicated a potential for an antagonistic action of the antioxidants on the beneficial effects of exercise. To date, it has not been well established what the nature of the interaction between antioxidant supplementation and exercise is in terms of functional outcomes and whether age will influence the outcomes. This study investigated the effects of moderate exercise and antioxidant supplementation on the motor performance of young and old mice.
Methods: Separate groups of young (4 months), and old (20 months) male C57BL/6J mice were placed under one of the following treatments: Sedentary/control diet (SedCon), Sedentary/antioxidant-rich diet (vitamin E (128 IU/kg/d of body weight) and vitamin C (189 mg/kg/d of body weight); SedEC); Exercise/control diet (ExCon); Exercise/antioxidant-rich diet (ExEC). After 8 weeks of pre-treatment, the mice underwent a series of behavioral tests while remaining on their respective condition (elevated plus maze, spontaneous activity; coordinated running, wire suspension, and bridge walking).
Results: Our preliminary data suggested that the time spent in the closed arms was increased in all treated mice compared to controls, and that the increase seemed more evident in the young mice. The latency to fall from a rotating rod seemed to be increased in the ExEC young and old mice when compared to all the other groups. The ExCon group had higher latency to fall while the other treatment groups seemed to have lower latencies when compared to SedCon within the young group. In the old group, only the ExEC group had higher latencies that the SedCon group while the others did not seem to differ. Latencies to fall from the bridge were increased in young groups where mice exercised (ExCon and ExEC), while they were decreased in SedEC and ExCon old mice compared to controls.
Conclusions: Our data indicated that exercise and antioxidant supplementation can affect motor performance of young and old mice. Though preliminary, there seemed to be a differential effect dependent on the age of the mice. Lastly, there seem to be some type of interaction between antioxidant supplementation and exercise that may increase their beneficial outcomes.

Sponsor PO1 AG22550; IAADR seed grant.
IRB/IACUC# 2012/13-41

105 Poster **Classification:** TCOM DO Student

Presenter: Stephen Regina **Department:** Institute for Aging & Alzheimer's Disease Research
Authors: Stephen Regina, University of North Texas Health Science Center at Fort Worth; Leigh Johnson, University of North Texas Health Science Center at Fort Worth

ELEVATED SERUM CREATININE LEVELS DIFFERENTIALLY IMPACT COGNITIVE FUNCTIONING AMONG MEXICAN AMERICAN ELDERS AND NON-HISPANIC WHITES: A PROJECT FRONTIER STUDY

Purpose: Objective: Kidney function decreases with age and is commonly observed in the elderly. Even mildly decreased kidney function is associated with increased vascular disease and cerebrovascular disease, and is believed to influence risk of Alzheimer's disease (AD). Mexican Americans are reported to exhibit a decreased serum creatinine (SCr) distribution relative to that of Non-Hispanic Whites . It has been suggested that blood-based measures of kidney function may have a predictive role in the future for identifying patients who may benefit from detailed cognitive screening . The aim of this study was to determine the effects of impaired renal function as assessed by elevated SCr on cognition among Mexican American and Non-Hispanic White elders.
Methods: Method: Data were analyzed from 487 participants (n= 192, Mexican American; n= 295, Non-Hispanic White) enrolled in Project FRONTIER, a community-based study of health issues in rural-dwelling adults and elders. Cognition was assessed using the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS). Serum creatinine was reported by CMP. Linear regressions were utilized to examine the relationships between decreased measures of cognitive functioning and ethnicity when SCr level is elevated.
Results: Results: Among those who are Non-Hispanic white, elevated SCr levels were associated with poorer performance on tasks related to immediate memory (RBANS Immediate Memory Index, B[SE]= -3.12[1.32], t=-2.36, p=0.019) and language (RBANS Language Index, B[SE]=-2.04[0.79], t= -2.56, p=0.011). Concerning those who were Hispanic and of Mexican American decent, elevated SCr levels were found to be significantly negative associated with attention (RBANS Attention Index, B[SE]= -4.57[2.18], t=-2.08, p=0.038) and executive functioning (EXIT25, B[SE]= 1.90[0.82], t=2.29, p=0.023).
Conclusions: Conclusions: This study emphasizes the ethnic differences observed with elevated levels of serum creatinine, which is a marker of kidney function. The results supported a differential relationship between creatinine and cognitive functioning, implicating that among Non-Hispanic Whites, elevated levels were associated with decreased performance on tasks of memory and language; whereas, among Hispanic Mexican Americans, there was a relationship between decreased performance on tasks of attention and executive functioning with elevations in the level of creatinine in serum.

Sponsor NA
IRB/IACUC# 2012-071

106 Oral **Classification:** GSBS Student

Presenter: Kiran Chaudhari **Department:** Pharmacology & Neuroscience
Authors: Kiran Chaudhari, University of North Texas Health Science Center at Fort Worth; Jessica Wong, University of North Texas Health Science Center at Fort Worth; Philip Vann, University of North Texas Health Science Center at Fort Worth; Nathalie Sumien, PhD, University of North Texas Health Science Center at Fort Worth

INTERACTION OF APOE GENOTYPE, ANTIOXIDANTS AND EXERCISE ON BRAIN FUNCTION.

Purpose: The ε4 allele of apolipoprotein E (ApoE) has been associated with increased risk for the development of late-onset Alzheimer's disease (AD). To prevent or reduce the appearance of brain dysfunction, a healthy lifestyle, such as exercising and eating antioxidants, is often recommended. Physical activity has been shown to have an allele-specific beneficial effect on cognition in humans and rodents. Antioxidant therapy is often suggested to improve brain function, as increased oxidative stress has been correlated with brain dysfunction, especially in ε4 carriers. Health conscious individuals are likely to combine exercise with antioxidant intake to increase protection; however recent studies have indicated a potential negative interaction of these two factors. In some cases, antioxidant intake abolished the beneficial effects of exercise. Our study aimed at determining the nature of the interaction between exercise and antioxidants on functional outcomes in a model of increased AD risk.
Methods: Male and female mice (12month), expressing the human ApoE3 or E4, were placed under one of the treatment: Sedentary/control diet (SedCon), Sedentary /antioxidant-rich diet (Vitamins E-195mg/kg body weight/day and C-287mg/kg body weight/day; SedEC), Exercise/control diet (ExCon), Exercise/ antioxidant-rich diet (ExEC), for 8 weeks prior to behavioral testing including coordinated running (rotorod), spatial learning and memory (Morris water maze) and discriminated avoidance (T-maze).
Results: Overall, ApoE3 mice performed better than ApoE4 mice on the rotorod test and ExEC treatment improved the performance of the male ApoE3 only. The ExEC treatment improved spatial learning in both male and female ApoE4 mice, whereas ExCon improved performance only in the ApoE4 females. Maximum spatial learning was improved with ExEC in males regardless of genotype but only in the ApoE3 females. In the discriminated avoidance task, initial learning was improved with ExCon treatment in ApoE3 mice regardless of gender. Cognitive flexibility was improved by ExEC treatment in ApoE3 male and female and in ApoE4 females but not in male ApoE4.
Conclusions: These results indicate that genotype and sex are critical determinants in the functional outcomes of the treatment regimens.

Sponsor Alzheimer's Association NIRG-10-173988, Pine Family Foundation, NIH/NIA P01 AG02250
IRB/IACUC# 2012/13-41 A04

107 Poster **Classification:** Faculty (Not for Competition)

Presenter: Judith O'Jile, PhD **Department:** Internal Medicine

Authors: Judith O'Jile, PhD, University of North Texas Health Science Center at Fort Worth; Debra Aaron, DPT, University of North Texas Health Science Center at Fort Worth; Brielle Buckley, PA, University of North Texas Health Science Center at Fort Worth; Donna Sallee University of North Texas Health Science Center at Fort Worth, NP; Stephanie Large, NP, University of North Texas Health Science Center at Fort Worth; Leigh Johnson, PhD, LMSW, University of North Texas Health Science Center at Fort Worth; Sid O'Bryant, PhD, University of North Texas Health Science Center at Fort Worth

MOBILE INTERDISCIPLINARY GERIATRIC HEALTHCARE IN THE COMMUNITY

Purpose: This is a community-based geriatric primary care model designed to reach Medicaid eligible elders as well as childless adult “near elders” (ages 50-64) using mobile teams and clinics to reduce hospitalizations, increase access to care, and improve patient quality of life. This is a new initiative for UNTHSC that utilizes mobile teams and clinics to increase access to care by providing appropriate care within the community. Medical teams, led by physician assistants (PAs) or nurse practitioners (NPs), that incorporate Community Health Workers (CHWs) and others (pharmacy, physical therapy, social work), will provide care to patients within community settings and clinics. Additionally, CHWs will educate elders about Medicaid and assist with enrollment when necessary. The Community Health Workers will also provide case management to high risk patients.To meet the urgent care needs of our patients and reduce ER utilization, a nurse advice telephone line has been created for patients to call when they have urgent care issues or questions. This enhancement of geriatric primary care services will expand encounters to a significant portion of Medicaid- eligible elders within RHP 10.

Methods: The MIGHTY Care program will see 3071 patients and roughly 15,000 encounters over the five year grant. Our program goals include decrease in admission rates, decrease in 30 day re-admission rates for preventable causes, increase in patient satisfaction regarding patient involvement in medical decision making, and increases in quality of life. The team identified several steps that must be completed in order to achieve the project goals, which included identifying stakeholders, geocoding population demographics in order to determine the best sites for our standing clinics, proper training on tenets ofshared decision making and customer service, community outreach, and others.

Results: The primary community stakeholders identified were Senior Citizen Services, Goodwill Industries, and the Community Food Bank. We had several meetings with these facilities to discuss the potential of setting a community based clinic in their locations. Additionally, the team has conducted community talks, flu shot clinics, and other community outreach presentations. In preparation for seeing patients at these sites, we are deepening our relationships by providing educational programs for patients and staff members. At this time we are continuing to develop other possible candidates for alliances.

Conclusions: The MIGHTY Care program offers an innovative solution to many of the issues that plague our current system. We will provide cost-saving community-based care that will improve patient outcomes and the patients’ satisfaction with their care.

Sponsor Medicaid 1115 Waiver

IRB/IACUC# n/an/a

108 Poster **Classification:** Staff (Not For Competition)
Presenter: Daniel Metzger **Department:** Pharmacology & Neuroscience
Authors: Daniel Metzger, University of North Texas Health Science Center at Fort Worth; Hriday Das, PhD, University of North Texas Health Science Center at Fort Worth; Marianna Jung, PhD, University of North Texas Health Science Center at Fort Worth

PRESENILIN-1 IS INVOLVED IN THE AGE-PROVOKING EFFECT OF REPEATED ETHANOL WITHDRAWAL.

Purpose: In this study, we intended to characterize the effects of repeated EW on the expression of age-related protein presenilin-1 (PS1) and PS1's relationship with p38. PS1 has been shown to be over-expressed in the brain with Alzheimer's disease.
Methods: Young adult or old rats received a control diet or an ethanol diet for 4 weeks and withdrawn for two weeks. This procedure was repeated once more. Rats were then humanely sacrificed at the end of the ethanol program and whole brains were collected to measure PS1 level using an immunoblot method. Separately, HT22 cells were exposed to glutamate (5 mM) for 24 hours with or without the inhibitor of p38 (SB203580) treatment and then tested for PS1 levels.
Results: PS1 expression was significantly higher in old rats than young rats and in repeated EW rats than control diet rats. Glutamate treatment dramatically increases PS1 level in a manner that is attenuated by cotreatment with p38 inhibitor. These data suggest that repeated EW acts as an age-provoking stressor through PS1-upregulation. The increase in PS1 appears to be mediated through glutamate-induced p38.
Conclusions: These observations provide a new mechanistic insight into glutamate-p38-PS1 link underlying the aging-like effect of repeated EW.
Sponsor NIH/AA018747 and IAADR
IRB/IACUC# 2012 13-04-A04 05

109 Poster **Classification:** GSBS Student
Presenter: Jessica Manheim **Department:** Pharmacology & Neuroscience
Authors: Jessica Manheim, University of North Texas Health Science Center at Fort Worth; Nataliya Rybalchenko, University of North Texas Health Science Center at Fort Worth; Meharvan Singh, PhD, University of North Texas Health Science Center at Fort Worth

RBAP48 AS A POTENTIAL MEMORY GENE

Purpose: With aging, there is a tendency for humans to experience cognitive decline. These variations in cognitive functioning provide an opportunity to investigate the reasons why some individuals age successfully versus those that do not. In a comprehensive analysis of gene regulation in the normal aging processes, it was recently shown that the histone binding protein, RbAp48, is implicated in age-related memory loss. Given the suggested role of RbAp48 in cognitive function, we sought to determine if, in animal models of aging currently being used in our laboratory, RbAp48 declines with age.
Methods: We evaluated the expression of RbAp48 in the hippocampus of female C57Bl/6 mice that were 7.5 months and 25.5 months of age, representing young adult and old mice. RbAp48 mRNA was assessed using reverse transcriptase (rt) conversion of RNA to cDNA, followed by real time polymerase chain reaction (PCR). In parallel, the levels of GAPDH, a “housekeeping” gene, was measured to take into consideration variation in starting material. Differences in expression of RbAp48 were based on the delta-delta CT methodology published by Livak and Schmittgen (2001). Statistical evaluation of differences between experimental groups was determined using a two-tailed t-test.
Results: Our data revealed an approximate 21% reduction in the levels of RbAp48 mRNA in the 25.5 month mice, compared to the 7.5 month mice. While not statistically significant (n=3, p=0.0791), we anticipate that these data warrant further analysis and expansion of our sample size to more reliably ascertain differences as a function of chronological age.
Conclusions: These studies suggest that the expression of RbAp48, a presumptive “memory gene”, declines with age. Our future studies will determine if the steroid hormones, estrogen and progesterone, which have known influences on cognitive function, regulate the expression of RbAp48.
Sponsor The work presented was supported, in part, by funding from the NIH (AG022550, AG027956)
IRB/IACUC# 2011/12-41

110 Poster **Classification:** GSBS Student

Presenter: Maninder Malik **Department:** Pharmacology & Neuroscience

Authors: Maninder Malik, University of North Texas Health Science Center at Fort Worth; Claudia Rangel-Barajas, University of North Texas Health Science Center at Fort Worth; Suzy Griffin, University of North Texas Health Science Center at Fort Worth; Nathalie Sumien, PhD, University of North Texas Health Science Center at Fort Worth, ; Meharvan Singh, PhD, University of North Texas Health Science Center at Fort Worth; Tangui Maurice, University of Montpellier; Robert Mach, University of Pennsylvania; Robert Luedtke, University of North Texas Health Science Center at Fort Worth

THE EFFECT OF LS-1-137, A NOVEL PHENYLACETAMIDE SIGMA 1 RECEPTOR SELECTIVE AGONIST ON SCOPOLAMINE-DEPENDENT COGNITIVE DEFICIT IN C57BL/6J MICE.

Purpose: Cognitive deficits are observed in patients with Alzheimer's Disease, Parkinson's Disease, traumatic brain injury and stroke. These deficits often involve alterations in cholinergic signaling. Currently available therapeutic drugs provide only symptomatic relief and generally become ineffective as a neurodegenerative disorder progresses. Therefore, novel therapeutic agents are needed to retard and/or arrest the progressive loss of memory forming cells.

Methods: A filtration-binding assay was used to characterize the binding properties of a novel sigma compound at D2-like dopamine receptors, muscarinic receptors and at sigma receptors. Co-immunoprecipitation assay was used for the quantification of Sigma 1 receptor-binding immunoglobulin protein (BiP) complex formation. LS-1-137 mediated brain-derived neurotrophic factor (BDNF) release was analyzed using enzyme-linked immunosorbent assay (ELISA). In this study, male C57BL/6J mice injected with scopolamine were used as experimental model to evaluate the in vivo cognitive properties of the test drug. The neuroprotective properties were evaluated using water maze and active avoidance test.

Results: LS-1-137 binds with high affinity (Ki = 3.2 nM) at sigma 1 receptors and is 80-fold selective for sigma 1 compared to sigma 2 receptor. LS-1-137 binds with low affinity at D2-like (D2, D3 and D4) dopamine and muscarinic receptors. LS-1-137 was found to partially reverse the learning and memory deficits associated with scopolamine administration using a water maze test and an active avoidance task. LS-1-137 treatment modulates sigma 1 receptor- BiP complex formation and also triggers the release of BDNF from rat astrocytes.

Conclusions: LS-1-137 may represent a novel candidate cognitive enhancer for the treatment of cholinergic muscarinic-dependent cognitive deficits.

Sponsor Sigma Xi- GIAR

IRB/IACUC# 2011/12-16-A04

111 Poster **Classification:** TCOM DO Student

Presenter: Spencer Septien **Department:** Pharmacology & Neuroscience

Authors: Spencer Septien, University of North Texas Health Science Center at Fort Worth; Robert Barber, University of North Texas Health Science Center at Fort Worth; Rebecca Cunningham, PhD, University of North Texas Health Science Center at Fort Worth

THE ROLE OF OXIDATIVE STRESS, INFLAMMATION, AND METABOLIC FACTORS IN ALZHEIMER'S DISEASE RISK AMONG NON-HISPANIC WHITE AND MEXICAN AMERICAN MALES

Purpose: Research suggests that the biological marker profile associated with Alzheimer's disease (AD) differs between non-Hispanic whites and Mexican Americans. High levels of oxidative stress are thought to precede the development of classical AD pathology including that of neurofibrillary tangles and senile plaques.

Methods: Assuming a relationship between levels of oxidative stress and the pathogenesis of AD, we chose to analyze the serum biological markers of male Mexican American and non-Hispanic white AD patients under conditions of high or low oxidative stress. We stratified the sample based on the level of oxidative stress, using a cut point of 12 µM serum homocysteine. Special consideration was given to markers associated with inflammation and metabolic disease, which have been shown to impact AD pathophysiology. Baseline levels of testosterone and glutathione s transferase (GST) were also measured for each demographic.

Results: Inflammatory involvement was apparent in both Mexican American men and non-Hispanic white males, with a much more profound affect among non-Hispanic whites. Metabolic factor involvement did not appear to be as significant among non-Hispanic white males in contrast to a clear involvement in Mexican American men. Levels of oxidative stress did not appear to alter the inflammatory or metabolic profile relationship in either demographic. Baseline levels of testosterone and GST were higher in Mexican Americans.

Conclusions: Analysis suggests that ethnicity and oxidative stress impact AD pathophysiology and associated serum markers.

Sponsor This study was made possible by the Texas Alzheimer's Research and Care Consortium (TARCC) funded by the state of Texas through the Texas Council on Alzheimer's Disease and Related Disorders

IRB/IACUC# 2007-137

112 Poster **Classification:** TCOM DO Student

Presenter: Heinz Schwarzkopf **Department:** Internal Medicine

Authors: Heinz Schwarzkopf, University of North Texas Health Science Center at Fort Worth; Melissa Edwards, University of North Texas Health Science Center at Fort Worth; Leigh Johnson, PhD, University of North Texas Health Science Center at Fort Worth

VIGOROUS PHYSICAL ACTIVITY ASSOCIATED WITH HIGHER SCORES ON THE MMSE IN AN OLDER HISPANIC MEXICAN AMERICAN POPULATION: A HEALTH & AGING BRAIN AMONG LATINO ELDERS (HABLE) STUDY

Purpose: Physical activity has been shown to delay the onset and effects of cognitive decline, dementia and Alzheimer's disease in the elderly. Few studies have evaluated the effects of physical activity among Hispanic Mexican Americans, a minority segment of the population, which has been shown to be less active when compared to non-Hispanic Whites. This study serves to evaluate the relationship between physical activity and cognition among Hispanic Mexican American, adults and elders

Methods: Preliminary data was analyzed on 19 Hispanic Mexican Americans enrolled in the Health and Aging Brain Study among Latino Elders (HABLE), a recently developed community-based study of factors related to aging. The International Physical Activity Questionnaire (IPAQ) was utilized to assess physical activity and global cognitive functioning was evaluated with the Mini Mental Status Exam (MMSE). Separate linear regressions were conducted to analyze the relationship between hours spent engaging in either vigorous, moderate, or walking forms of physical activity and global cognitive functioning. Covariates included age, gender, education and language of test administration.

Results: The results indicated that level of physical activity among Hispanic Mexican Americans differentially impacted cognitive functioning. Among those in the sample who engaged in vigorous activity, there was a significant relationship on global cognition such that increased hours of vigorous activity was positively related to global cognition ($p=0.04$). There was no significant association found between hours of moderate ($p=0.74$) or walking ($p=0.70$) physical activity and cognition.

Conclusions: This study demonstrated the impact of level of physical activity on cognitive functioning among Hispanic Mexican Americans. . Vigorous physical activity was significantly related to better cognition among Hispanic Mexican Americans and more research is needed to further explore this relationship.

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113 Poster **Classification:** TCOM DO Student

Presenter: Horacio Sosa **Department:** Internal Medicine

Authors: Horacio Sosa, University of North Texas Health Science Center at Fort Worth; Leigh Johnson, PhD, University of North Texas Health Science Center at Fort Worth; James Hall, University of North Texas Health Science Center at Fort Worth; Melissa Edwards, University of North Texas Health Science Center at Fort Worth; Sid O'Bryant, PhD, University of North Texas Health Science Center at Fort Worth

RELATIONSHIP BETWEEN WORRY AND DEPRESSION IN ELDERLY MEXICAN-AMERICANS

Purpose: Research has found a strong correlation between worry and mental and physical health. Later stages of life particularly entail increased stress related to multiple health problems, financial matters, etc., which often are associated with increased worry, anxiety and/or depression. In addition, worry has been linked to cognitive decline in the elderly. Our research has demonstrated that specific symptoms of depression (called the DepE) are related to cognitive impairment and can be used to identify a subgroup of individuals at greater risk for developing Mild Cognitive Impairment (MCI) and Alzheimer's disease (AD). The goal of this study was to examine the relationship between DepE and worry in an elderly Mexican-American population.

Methods: Data was collected from 253 Mexican-Americans (198 women, 60 men) enrolled in the Health and Aging Brain Study among Latino Elders (HABLE), a recently developed community-based study of factors related to aging. The mean age of the sample was 60 years, and the average years of education were 8. Worry was assessed using the Penn State Worry Questionnaire, and DepE was calculated using items from GDS30. The sample was divided into two groups based on DepE scores (high- and low-risk). Independent sample t-test was used to analyze the data.

Results: The independent sample t-test showed a significant difference between the two groups ($t = -10.4$, $p < 0.05$). Individuals with higher DepE scores have significantly higher scores in the PSWQ (Mean [SD] = 54 [16]), than those with low DepE scores (32 [13]). PSWQ items endorsed by the high-risk group include high worry under pressure (57%), an inability to dismiss worry (53%), consciousness about generalized worry (52%), a general tendency to worry (48%), and an inability to control worry (47%).

Conclusions: DepE has been validated in multiple independent cohorts. Higher scores on the DepE are related to poor cognition and diagnosis of Mild Cognitive Impairment and Alzheimer's disease (4). The results of this study suggest individuals with higher DepE scores have significantly higher worry, almost indicative of Generalized Anxiety Disorder according the PSWQ interpretation. This is consistent with literature linking worry to cognitive decline.

Sponsor American Federation for Aging Research

IRB/IACUC# 2012-083

200 Poster **Classification:** TCOM DO Student
Presenter: Melodie Minter **Department:** Pediatrics
Authors: Melodie Minter, University of North Texas Health Science Center at Fort Worth; W Bowman, MD, University of North Texas Health Science Center at Fort Worth; Lisa Bashore, PhD, RN, Cook Children's Hematology Oncology Department

CARDIAC FUNCTION IN CHILDHOOD CANCER SURVIVORS TREATED WITH ANTHRACYCLINES: THE ROLE OF ECHOCARDIOGRAPHIC AND ELECTROCARDIOGRAPHIC SCREENING

Purpose: Anthracyclines have been a mainstay in cancer treatment because of their proven effectiveness in many children with acute leukemia, but have a dose limiting toxicity on cardiac function, in particular cardiomyopathy and potential arrhythmias. This cardiotoxicity is correlated with age at treatment, total cumulative dose of anthracyclines administered, and delivery of radiation therapy to the mediastinum. Current Children's Oncology Group (COG) treatment guidelines recommend that childhood cancer survivors who received anthracyclines be monitored for long-term cardiotoxic effects using echocardiograms (ECHO) and electrocardiograms (ECG). To date there has been little research on whether following COG guidelines prevent any morbidity or mortality in these cancer survivors.
Methods: A retrospective chart review of the anthracycline treated survivors seen in the Cook Children's Life After Cancer Program (LACP) who received cardiac screening ECHOs and ECGs between January 1, 2011, through June 30, 2013, was performed in order to examine the clinical utility of screening ECHOs and ECGs.
Results: Initial results from this retrospective chart review study showed that most Acute Lymphoblastic Leukemia survivors displayed no signs of cardiotoxicity on ECHOs or ECGs. Only three subjects required further cardiac evaluation from the results of their cardiac screening. Of those three, only one subject was advised to undergo interventional therapy.
Conclusions: Preliminary results from this study suggest that these survivors who show little change in their cardiac function could benefit from less frequent screening, which would result in less time away from school and/or work and prevent extra medical cost.
Sponsor Leukemia Texas
IRB/IACUC# 2013-200

201 Poster **Classification:** GSBS Student
Presenter: Bhavani Saranya Conjeevaram Nagarajan **Department:** Biomedical Sciences
Authors: Bhavani Saranya Conjeevaram Nagarajan, University of North Texas Health Science Center at Fort Worth; Nirupama Sabnis, University of North Texas Health Science Center at Fort Worth; Andras Lacko, University of North Texas Health Science Center at Fort Worth

CHARACTERIZATION AND OPTIMIZATION OF MRNA ENTRAPPED PEPTIDE NANOPARTICLES FOR TARGETED GENE DELIVERY

Purpose: Generally, mRNA is considered to be very labile and unstable and has not been significantly used for therapeutic purposes. However, compared to DNA based gene expression, mRNA is safer as it is does not integrate with the host genome, and it does not require nuclear localization. The main aim of this project is to entrap the mRNA inside a targeted nanoparticle to increase its stability and the tissue specificity of the gene delivery.
Methods: The particles were assembled using heat denatured mRNA and a cationic oligomer or detergent to neutralize the negative charge of the polynucleotide. Subsequently phospholipid and a protein/peptide component are added to form the stable mRNA nanoparticle. In order to minimize the size of the particles, the preparation was carried out with several cationic detergents, including Hexadecyltrimethyl ammonium bromide (HTAB), Tetrabutyl ammonium hydroxide (TBAH), and DOTAP. The peptide/protein components were 10-100µg of either Apolipoprotein A-I, or A-I mimetic peptide Myr-5A/ 5A. The incorporation efficiency of the polynucleotide is determined by separating the unincorporated mRNA using OligodT beads and lysing the particles using Trizol reagent to release the entrapped mRNA.
Results: The yield of the entrapped mRNA analyzed using Ribogreen assay was 17-20%. Based upon the size analysis measurements made using Dynamic Light Scatterer, it was observed that the particles prepared with 5A peptide (10µg) and DOTAP (10µg) resulted in 48% of 268nm particles.
Conclusions: Further optimization of this formulation may be achieved to produce more homogenous nanoparticles with higher mRNA incorporation efficiency, using DOTAP as the neutralizer and 5A as the peptide.
Sponsor N/A
IRB/IACUC#

202 Poster **Classification:** TCOM DO Student
Presenter: Abraham E. Rodriguez **Department:** Surgery
Authors: Abraham Rodriguez, University of North Texas Health Science Center at Fort Worth; Albert Yurvati, University of North Texas Health Science Center at Fort Worth

CLEAR CELL "SUGAR" TUMOR OF THE LUNG: BENIGN OR MALIGNANT?

Purpose: Purpose of this study was to present a case study describing the presentation of a very rare lung tumor, a sugar cell clear cell tumor. There have only been around 50 reported cases. Our hope is to educate primary care physicians about this tumor.
Methods: The main method used was conducting full literature search to look for the same tumor and compare and contrast the different presentations. We also searched for articles describing how benign and malignant lung tumors present so that we can differentiate this tumor from others.
Results: Our results found that the patient's tumor is overall benign, but because sugar cell tumors are so hard to diagnose and differentiate from malignant tumors, the best treatment is surgical excision.
Conclusions: Sugar cell tumors are rare benign lung tumors. Due to the difficulty with diagnosing this particular type of tumor, surgical excision is both diagnostic and curative.
Sponsor N/A
IRB/IACUC# 2013-145

203 Poster **Classification:** GSBS Student
Presenter: Urmimala Raychaudhuri **Department:** Biomedical Sciences
Authors: Urmimala Raychaudhuri, University of North Texas Health Science Center at Fort Worth; Jamboor Vishwanatha, PhD, University of North Texas Health Science Center at Fort Worth

EFFECT OF 4-HYDROXYNONENAL ON MIGRATION AND INVASION ENHANCER PROTEIN 1 (MIEN1) IN COLORECTAL CANCER

Purpose: Colorectal cancer (CRC) is the second leading cause of death in the United States. It is believed that the intestinal mucosa is constantly challenged with diet- and bacterial-derived oxidants and carcinogens. Chronic exposure of such challenging conditions may lead to the generation of reactive oxygen species (ROS). ROS initiate an autocatalytic chain of lipid peroxidation (LPO) of polyunsaturated fatty acids, resulting in the formation of large amounts of toxic electrophilic species and free radicals that may play important roles in various human diseases, including carcinogenesis. Consequently, even a minimal transient exposure of cells to ROS causes substantial lipid peroxidation, leading to a significant rise in the level of LPO end product, 4-hydroxynonenal (4-HNE), which is considered to be one of the most abundant cytotoxic aldehydes. HNE reacts not only with DNA but also with proteins and other molecules containing thiol and other nucleophilic groups and can alter the protein structure and functions. We have identified a novel protein called Migration and Invasion Enhancer protein 1 (MIEN1), is highly overexpressed in cancer cells and modulates the AKT activity as a membrane bound adaptor protein. Ectopic expression of MIEN1 activates Akt mediated downstream signaling through NF-kB pathway and induces the expression of several migratory and invasive proteins. However, 4-HNE has also been reported to induce the expression of various proteins involved in cell proliferation and migration. We hypothesize that 4-HNE mediated oxidative stress plays an important role in the etiology of colorectal cancer by modulating the expression and function of MIEN1. In the present studies, we have addressed this question by investigating the effect of 4-HNE on MIEN1 expression in colorectal cancer cell lines SW480 and HT29.
Methods: Colorectal cancer cell lines, SW480 and HT29 were grown in RPMI-1640 medium containing 10% fetal bovine serum, in a humidified incubator at 37°C with 5% CO2. The toxicity of 4HNE in SW480 cells was determined by MTT assay. The effect of 4HNE on MIEN1 expression was determined by Western blotting in HT29. The effect of 4HNE on SW480 cell migration was examined by scratch wound assay. The LigandFit docking program available in the Accelrys molecular modeling software – Discovery studio, was used to carry out a docking study for the protein MIEN1 and substrate 4HNE. The 3D structure of the protein was obtained from PDB.
Results: Our results demonstrated that exposure of 4HNE to SW480 cells is toxic. 4HNE concentrations ranging from 0 to 250 µM gradually decreased cell viability in SW480 cells corresponding to an IC50 value of 160 µM. Furthermore, our Western blot analysis demonstrated that treatment of 4HNE increased the expression of MIEN1 at the protein level in HT-29 cells. The scratch wound healing assay showed an increase in migration after treatment with low doses of 4HNE. The docking study produced 10 top scoring(dock score) poses. The poses indicate a possible interaction between the protein binding sites and the substrate (4HNE) including formation of hydrogen bonds between them.
Conclusions: Together, these results suggest that 4HNE induced cell migration could be mediated via MIEN1.
Sponsor N/A
IRB/IACUC#

204 Poster **Classification:** Postdoctoral Fellow
Presenter: Xiangyang Liu **Department:** Pharmaceutical Science
Authors: Xiangyang Liu, University of North Texas Health Science Center at Fort Worth; Hui Zhu, University of North Texas Health Science Center at Fort Worth; Santosh Thapa, University of North Texas Health Science Center at Fort Worth; Yi-Qiang Cheng, University of North Texas Health Science Center at Fort Worth

GENOMICS-GUIDED DISCOVERY OF POTENT ANTICANCER NATURAL PRODUCTS FROM EXOTIC BACTERIAL SPECIES

Purpose: We hypothesize that exotic Gram-negative bacterial species can be a good source of diverse natural products. The purpose of the research is thus to discover new bioactive natural products from exotic bacterial species.
Methods: Burkholderia thailandensis E264, a Gram-negative-proteobacterium strain originally isolated from a rice paddy in central Thailand, was purchased from the American Type Culture Collection (ATCC); Burkholderia thailandensis MSMB43, another Gram-negative-proteobacterium strain originally isolated from a water source in north Australia, was obtained from the US Centers for Disease Control (CDC). Bacterial genome analysis and natural product discovery and identification were performed according to standard procedures.
Results: Mining the genome of B. thailandensis E264 revealed a hybrid nonribosomal peptide synthetase-polyketide synthase (NRPS–PKS) biosynthetic gene cluster that resembles that of FK228 (romidepsin, drug name Istodax) in Chromobacterium violaceum No. 968, which led us to discover thailandepsins A–F, natural analogues of FK228, and potent histone deacetylase inhibitors and antiproliferative agents with GI_{50} values in the sub-nM range. Mining the genome of B. thailandensis MSMB43 revealed at least 13 biosynthetic gene clusters. Among them one hybrid NRPS–PKS gene cluster is highly homologous to that of FR901464 (a prototype spliceosome inhibitor) in Pseudomonas sp. No. 2663, which led us to discover thailanstatins A–D, natural and more stable analogues of FR901464, and potent pre-mRNA splicing inhibitors and antiproliferative agents with GI 50 values in the low nM range. Selected members of those natural products are under intensive collaborative investigations as anticancer drug candidates, and preliminary results are encouraging. Metabolic engineering approach is being undertaken to increase the yield of those potent compounds that are often produced in minute amounts by the wild-type bacteria.
Conclusions: Potent new anticancer natural products have been discovered from exotic bacterial species via a genomics-guided discovery approach, which is effective and particularly suitable for small research laboratories with limited resources. We seek additional collaborations for identifying the best possible use of our small collection of potent natural products; we also seek to establish a "Texas Network for Collaborative Natural Product Discovery and Development" for sharing the resources, risks and rewards.
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205 Poster **Classification:** GSBS Student
Presenter: Marilyne Kpetemey **Department:** Molecular & Medical Genetics
Authors: Marilyne Kpetemey, University of North Texas Health Science Center at Fort Worth; Subhamoy Dasgupta, Baylor College of Medicine; Jamboor Vishwanatha, University of North Texas Health Science Center at Fort Worth

MIEN1 PROMOTES CANCER CELL MIGRATION AND INVASION THROUGH ENHANCED ACTIN DYNAMICS

Purpose: Migration and Invasion Enhancer 1 (MIEN1), previously known as C35, C17orf37, RDX12 and MGC14832, is a novel gene located in the chromosomal region 17q12-21. While absent or low in normal tissues, MIEN1 is abundantly expressed in multiple cancers; including breast, prostate, oral and gastrointestinal carcinomas. A membrane-bound signaling adaptor, MIEN1 localizes to the leading edge of migrating cells and promotes migration and invasion by increasing filopodium formation. MIEN1 contains several functional motifs including a prenylation motif and an immunoreceptor tyrosine-based activation motif (ITAM). While prenylation of MIEN1 is shown to be important for its functions, little is known about the importance of its ITAM. The overall goal of the present study is to dissect the mechanisms by which MIEN1 regulates breast cell motility and whether the ITAM is important.
Methods: Using site-directed mutagenesis, we introduced point mutations in amino acid sequences in MIEN1-ITAM domains. We established NIH3T3 stable cell lines over-expressing the wild type or mutant proteins. We performed immunofluorescence, migration and invasion assays using the established stable cell lines and breast cancer cells to investigate the mechanisms by which different domains of MIEN1 potentiate cell motility.
Results: Analyses of in vitro migration and invasion assays showed that stable cells over-expressing MIEN1 phosphorylation mutants failed to induce significant migration and invasion compared to cells over-expressing MIEN1 wild type protein. Immunofluorescence staining with rhodamine conjugated-phalladoin confirmed that MIEN1 induced- migration is associated with actin filaments; and post-translational modifications at the ITAM domains is critical for eliciting MIEN1 functions.
Conclusions: Our results confirm that MIEN1 regulates cancer cell migration and invasion through filopodia formation. Furthermore we showed that MIEN1 is involved in cell-cell adhesion, a process required for cell motility. MIEN1 is a prime regulator of cancer cell motility; hence understanding the molecular mechanisms by which it is aiding the invasion-metastasis cascade will enable the design of novel and effective treatments for metastatic tumors.
Sponsor National Institutes of Health Grant 1P20MD006882
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206 Poster **Classification:** GSBS Student
Presenter: Rutika Kokate **Department:** Cell Biology and Immunology
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MIMICKING INFECTION FOR IMMUNOTHERAPY AGAINST BREAST CANCER-FOOLING THE IMMUNE SYSTEM

Purpose: The purpose of this study was to develop "bacteriomimetic nanoparticles" to enhance adaptive cell-mediated immune responses (CD4+and CD8+ T cell responses) against tumor antigen as a therapeutic option for cancer treatment.
Methods: NPs were prepared by modified solid/oil/water solvent evaporation method using an ultrasonic processor UP200H system (Hielscher Ultrasonics GmbH, Germany). We used membrane preparations of the 4T1 mouse mammary cancer cell line as a tumor antigen and CpG ODN's as a "bacteriomimetic" stimulant. Fourteen days before tumor challenge BALB/c female mice (6-8 weeks) were pre-immunized with CpG followed by secondary immunization using respective NPs encapsulated with the membrane antigen preparation. Subsequently, mice (n=4) were challenged with 105 tumor cells intravenously (IV). Mice were sacrificed and tumors were harvested at days 3, 7 and 14 respectively. CD4 >+ and CD8+ T cell responses were measured in lower respiratory node and spleen using flow cytometry. In another experimental set, following the same immunization schedule as mentioned above, mice (n=5) were challenged subcutaneously (SC) with 10^5tumor cells. Primary tumor size was monitored using vernier caliper and bioluminiscence imaging (Caliper Life Sciences Inc., MA, USA). Mice were sacrificed on day fourteen after tumor challenge; spleen cells were used for flow cytometric analysis and primary tumor tissue was used to evaluate CD4+ and CD8+ T cell via immunohistochemistry.
Results: We found significant reduction in progression of tumor growth in mice immunized with CpG coated NPs containing tumor antigen (CpG-NP-Tag). Histological analysis confirmed that tumors in CpG-NP-Tag mice were relatively well differentiated and of lower grade in contrast to CpG-Blank tumors. Immunofluorescence (IF) data further revealed that CpG-NP-Tag tumors had lesser proliferation and higher apoptotic activity. Tumor CD4+T cell infiltration as well as T cell response in spleen was found be higher in CpG-NP-Tag NP immunized mice as compared to the controls.
Conclusions: Primary tumor size, IHC, IF and flow cytometry analysis indicate that CpG-NP-Tag NPs were successfully employed to boost the immune response against tumor cells.
Sponsor N/A
IRB/IACUC# 2010/11-25-A04

207 Poster **Classification:** TCOM DO Student
Presenter: Warren Redfearn **Department:** Pharmaceutical Science
Authors: Warren Redfearn, University of North Texas Health Science Center at Fort Worth; Yi Shi, University of North Texas Health Science Center at Fort Worth; Bhuvaneswari Koneru, University of North Texas Health Science Center at Fort Worth; Anthony Di Pasqua, University of North Texas Health Science Center at Fort Worth

PREPARATION OF A CISPLATIN PRODRUG FOR USE AGAINST NON-SMALL CELL LUNG CANCER

Purpose: Lung cancer is the leading cause of cancer-related death in the United States, and non-small cell lung cancer (NSCLC) the most common type. NSCLC is extremely difficult to treat, resulting in a poor prognosis for patients. Platinum (Pt) anti-cancer agents, such as cisplatin, remain a mainstay in the clinic; however, these Pt complexes act nonspecifically, and thus result in serious side-effects. Development and delivery of a Pt complex with an improved therapeutic index would be highly advantageous to the fight against NSCLC. We prepared trans, cis, cis-bis(heptanoato)amine(cyclohexylamine)dichloridoplatinum(IV), referred to here as PtC, and studied its DNA binding and toxicity toward normal lung and NSCLC cells.
Methods: A lipophilic Pt(IV) complex, PtC, was synthesized and characterized, and its binding to DNA and toxicity toward various cancer and normal cell lines determined.
Results: We confirmed that the synthesized Pt complex binds to DNA in a manner similar to that of cisplatin, which suggests that it is cisplatin prodrug; however, probably due to its lipophilic nature and improved stability, PtC is much more toxic toward NSCLC cell lines than is cisplatin, and has a much improved therapeutic index.
Conclusions: PtC shows promise as a therapeutic agent against NSCLC, and, furthermore, its lipophilic nature allows for us to incorporate it into mesoporous silica nanoparticles for fine-controlled release and the targeting of tumors.
Sponsor N/A
IRB/IACUC#

208 Poster **Classification:** GSBS Student

Presenter: Smrithi Rajendiran **Department:** Molecular & Medical Genetics

Authors: Smrithi Rajendiran, University of North Texas Health Science Center at Fort Worth; Anil Parwani, University of Pittsburgh Medical Center; Richard Hare, Plaza Medical Center; Timothy Treuren University of North Texas Health Science Center at Fort Worth; Jamboor Vishwanatha, University of North Texas Health Science Center at Fort Worth

REGULATION OF MIEN1 IN PROSTATE CANCER

Purpose: The overall objective of this study is to identify the deregulated mechanisms leading to the differential regulation of MIEN1 between normal and cancer cells. Commonly deregulated mechanisms encompass alterations at DNA (chromosome) to destabilization at protein (translational) levels. Our study focuses on regulation by microRNA (miR) and methylation. Our hypothesis is that MIEN1 is post-transcriptionally regulated by a specific miR and its proximal putative promoter region is hypermethylated in normal cells. Deregulation of these mechanisms together explain the aberrant increased expression of MIEN1 in cancer.
Methods: To validate the role of miR in MIEN1 regulation, we have performed various in vitro studies. To determine the global role of the miR, we ectopically expressed it in cancer cells. Additionally, we have used human tissue and serum samples to predict the use of miR-MIEN1 as biomarkers. To demonstrate the importance of methylation in the regulation of MIEN1, we performed global methylation inhibition and specific methyltransferase knockdown.
Results: Our data indicate that MIEN1 is post-transcriptionally regulated by a specific miR which is highly expressed in normal cells compared to various cancer cells, inversely correlating with MIEN1. Ectopic expression of the miR led to decrease in MIEN1 expression, migratory and invasive potential and anchorage dependent growth of cells and impeded mesenchymal transition. Additionally, the miR expression was higher in the normal glands of prostate tissue compared to the tumor; while the secreted/circulating miR was higher in serum from cancer patients, much like PSA expression patterns; but with more significance than PSA. Inhibition of methylation by pharmacological inhibitors or by individually knocking down the methyltransferases increased MIEN1 in normal cells, indicating the role of methylation in the regulation of this gene.
Conclusions: After proving our results in a larger cohort of patient specimen, this miR could be a useful non-invasive diagnostic biomarker. Additionally, understanding the regulation of MIEN1 by methylation will provide reasons to revisit the current strategies of methylation inhibition for cancer treatment. Overall, since the importance of MIEN1 as a key signaling molecule in cancer is well established, understanding the mechanisms involved in the regulation will aid in designing more effective therapeutic strategies to treat cancer patients.

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209 Poster **Classification:** SPH Student

Presenter: Olusegun Oyewole **Department:** Biostatistics

Authors: Olusegun Oyewole; Kim Linnear, Center for Community Health, Texas Prevention Institute, University of North Texas Health Science Center at Fort Worth; Kathryn Cardarelli, Center for Community Health, Texas Prevention Institute, University of North Texas Health Science Center at Fort Worth; Marcus Martin 2M Research Services LLC; Karin Petties, Center for Community Health, University of North Texas Health Science Center at Fort Worth; Angela Williams, Center for Community Health, University of North Texas Health Science Center at Fort Worth; Camille Lafayette, Center for Community Health, University of North Texas Health Science Center at Fort Worth; Erika Martinez, Center for Community Health, University of North Texas Health Science Center at Fort Worth; Phyllis Harris, Center for Community Health, University of North Texas Health Science Center at Fort Worth

REMOVING BARRIERS TO BREAST CANCER SCREENING AMONG ETHNIC MINORITIES IN TEXAS

Purpose: This project seeks to reduce breast cancer mortality among ethnic minorities in Dallas County, Texas through an integrated breast cancer prevention program that includes outreach and education, delivery of screening services, follow-up navigation and screening behavior maintenance. While perceived susceptibility, perceived severity, perceived benefits and cues to action are important predictors of health-seeking behaviors, removal of perceived barriers has been found to be the most important factor in moving people from inactivity to action. This research seeks to answer the question: Does this program significantly reduce the perceived barriers to mammography screening among the participants?
Methods: Participants had a pre-survey assessing their knowledge, attitude and behavior about breast cancer determinants and prevention as well as their perceived severity of breast cancer, perceived susceptibility to it, perceived benefit of regular screening and perceived barriers to regular screening. This was followed by up to 8 weeks of education and a post-survey. McNemar's tests were done to compare the pre- and post-surveys on questions relating to perceived barriers to screening and mammogram use.
Results: A significant reduction in perceived barrier to breast cancer screening was found among study participants. There was also a significant improvement in mammogram use among them during the intervention.
Conclusions: The integrated breast cancer prevention program leads to a significant reduction in perceived barriers to screening with consequent improvement in mammogram use in study participants.

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210 Poster **Classification:** TCOM DO Student
Presenter: Tabitha Davies **Department:** Rural Medicine
Authors: Tabitha Davies, University of North Texas Health Science Center at Fort Worth; Ana Chiapa-Scifres, University of North Texas Health Science Center at Fort Worth; John Bowling, University of North Texas Health Science Center at Fort Worth; L. Brown, University of North Texas Health Science Center at Fort Worth

SURVEY OF ATTITUDES AND BELIEFS OF ADULTS OF VARIOUS ETHNIC BACKGROUNDS REGARDING COLORECTAL CANCER SCREENING IN OCHILTREE COUNTY

Purpose: With barriers to health care in rural areas in mind, the purpose of this study was to evaluate the existing attitudes about colorectal cancer (CRC) screening and to determine the correlation with screening compliance and behavior.
Methods: A survey was used that included questions from the Group-Based Medical Mistrust Scale (GBMMS), colorectal cancer screening behaviors, and demographic information. Inclusion criteria included age ≥ 35 years, residence or employment within Ochiltree County, and ability to answer questions in English or Spanish. The GBMMS consists of three sub-scales: Suspicion, Group Disparities in Healthcare, and Lack of Support from Healthcare Providers.
Results: A total of 74 surveys were used for analysis: respondents included 67.6% women, 78.4% Caucasian, and 21.6% Hispanic. The average age of respondents was 53.4 ± 10.5 years. Hispanics scored consistently higher on all three sub-scales measuring medical mistrust, indicating they are more suspicious and feel a lack of support from their healthcare providers. While 48.7% of Caucasians over the age of 50 have received colonoscopy or sigmoidoscopy, only 12.5% of Hispanics admitted to having ever been screened for CRC using these methods . Though not significant, Hispanics also had higher raw scores on the Predetermination sub-scale of Fatalism, or a greater sense that obtaining medical care does not play a significant role in one's ability to live a healthy life.
Conclusions: Hispanics had lower levels of CRC screening, which may be related to their higher levels of medical mistrust and feelings of ethnic disparities. This group may benefit from CRC screening and prevention education, and efforts should be focused to increase screening compliance.
Sponsor n/a
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211 Poster **Classification:** GSBS Student
Presenter: Lee D. Gibbs **Department:** Molecular & Medical Genetics
Authors: Lee Gibbs, University of North Texas Health Science Center at Fort Worth; Pankaj Chaudhary, University of North Texas Health Science Center at Fort Worth; Jamboor Vishwanatha, PhD, University of North Texas Health Science Center at Fort Worth

TETRANDRINE INDUCED INHIBITION OF SIGNAL TRANSDUCER AND ACTIVATOR OF TRANSCRIPTION (STAT) 3 CAUSES THE REDUCTION OF CELL SURVIVAL, PROLIFERATION, AND ANGIOGENESIS IN TNBC

Purpose: The most successful therapies for breast cancer target the estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (Her-2). Hormonal therapies are not useful in combating triple negative breast cancer (TNBC), which lacks these targeted hormonal receptors. In fact, some of these patients that undergo hormone deprivation and/or Herceptin therapy acquire resistance. The triple negative breast cancer (TNBC) phenotype, which lacks the presence of Her-2, ER, and PR are even more aggressive and resistant. Therefore, there is an urgent clinical need to identify novel agents that can kill tumor cells with no additional toxicity to normal cells and this would have great impact on treatment of such patients.
Tetrandrine, a bis-benzylisoquinoline alkaloid isolated from the root of Stephania tetrandra, is a calcium channel blocker used in Chinese medicine for the treatment of silicosis and arthritis. Studies have shown that tetrandrine also has anti-tumor and anti-growth activities. Our objective is to study the effects of tetrandrine on STAT3 signaling that plays an important role in cell proliferation, survival, chemoresistance and angiogenesis. STAT3 protein is highly expressed in breast cancer tissues compared to non-malignant breast tissues. We hypothesize that tetrandrine treatment inhibits the phosphorylation of STAT3 and its associated downstream signaling lead to the reduction of cell survival, proliferation, and angiogenesis in TNBC cells.
Methods: TNBC cell lines, MDA-MB-231 and HCC70, and non-tumorigenic epithelial cell line MCF-10A were cultured in ATCC recommended medium. MTT assays were carried out to determine the effect of tetrandrine on cell viability. Additionally, cells were subjected to various concentrations of tetrandrine and Western blotting was performed for analysis of protein expression and phosphorylation.
Results: Our data indicate that tetrandrine selectively inhibits the growth of MDA-MB-231 and HCC70 cells compared to non-tumorigenic MCF-10A cells. In the MTT assay, Tetrandrine concentrations ranging from 0 to 40μM gradually decreased MDA-MB-231, HCC70 and MCF-10A cell viability, corresponding to IC_{50} values of 25, 20 and 75 μM (n = 8), respectively, after 48 hours of treatment. Our results show that tetrandrine inhibited the phosphorylation of STAT3 in a concentration dependent manner. Furthermore, the inhibition of STAT3 activation by tetrandrine led to the suppression of proteins involved in proliferation (cyclin D1), survival (Bcl-2, Bcl-xL, and Mcl-1), and angiogenesis (VEGF). This effect correlated with the inhibition of proliferation and apoptosis in TNBC cells.
Conclusions: Our preliminary results suggest that tetrandrine inhibits the proliferation of TNBC cells through inhibition of constitutive STAT3 phosphorylation and it's associated down stream signaling and has therapeutic potential in the treatment of TNBC.
Sponsor *This work was supported by National Institutes of Health Grants 1P20 MD006882 and R25 GM04365.
IRB/IACUC#

212 Poster **Classification:** Postdoctoral Fellow
Presenter: Pankaj Chaudhary **Department:** Molecular & Medical Genetics
Authors: Pankaj Chaudhary, University of North Texas Health Science Center at Fort Worth; Jamboor Vishwanatha, PhD, University of North Texas Health Science Center

TETRANDRINE INDUCES ROS-DRIVEN CASPASE-DEPENDENT APOPTOSIS OF PROSTATE CANCER CELLS VIA MITOCHONDRIAL AND CELL DEATH RECEPTOR PATHWAY

Purpose: Tetrandrine, a bisbenzylisoquinoline alkaloid, isolated from the root of Stephania tetrandra is used in traditional Chinese medicine as an anti-rheumatic, anti-inflammatory, and anti-hypertensive agent for the past several years. During recent years, increasing number of studies have focused on the potential of tetrandrine in cancer therapy. Despite its great potential as an anti-cancer agent, the effect of tetrandrine in prostate cancer has not been studied. Therefore, in the present study, we demonstrate the cytotoxic efficacy of tetrandrine in human androgen-independent prostate cancer cells, PC3 and DU145, and delineate the mechanism of this effect.
Methods: Prostate cancer cell lines, PC3 and DU145, and normal prostate PWR-1E cells were cultured in ATCC recommended medium. The toxicity of tetrandrine was analyzed by MTT assay and a Vybrant Apoptosis Assay Kit. Western blotting was used to detect the expression of proteins involved in apoptosis.
Results: Our results indicate that tetrandrine selectively inhibits the growth of PC3 and DU145 cancer cells compared to normal prostate PWR-1E cells. Treatment of cancer cells with tetrandrine caused the upregulation of Fas and Bax, downregulation of Bcl-2, cleavage of Bid, and release of cytochrome c, which were accompanied by activation of caspases-9, -3 and -8 and subsequently poly(ADP-ribose) polymerase cleavage. Pre-incubation with caspase-8 inhibitor significantly blocked the tetrandrine-induced Bid cleavage, reduction in mitochondrial membrane potential, and activation of caspase 3, and cell death. Together, these results suggest that the mitochondrial pathway is primarily involved in tetrandrine-induced apoptosis. Additionally, our results demonstrated that tetrandrine-induced apoptosis was caused by the generation of reactive oxygen species (ROS) and most of the signaling effects were attenuated with the preincubation of cells with N-acetylcysteine, thereby further confirming the involvement of ROS in these events.
Conclusions: Our results demonstrated that treatment of prostate cancer cells with tetrandrine induces caspase-dependent apoptosis via Fas-mediated Bid cleavage and cytochrome c release.
Sponsor N/A
IRB/IACUC#

213 Oral **Classification:** GSBS Student
Presenter: Nathan Horton **Department:** Graduate School of Biomedical Sciences
Authors: Nathan Horton, University of North Texas Health Science Center at Fort Worth; Porunelloor Mathew, PhD, University of North Texas Health Science Center at Fort Worth

NOVEL USE OF PROLIFERATING CELL NUCLEAR ANTIGEN AS A BIOMARKER OF METASTATIC CANCER

Purpose: Primary tumors account for 10% of cancer related deaths. Thus, identifying novel biomarkers on tumor cells which resist treatment or potentially become metastatic is vital. Proliferating Cell Nuclear Antigen (PCNA) has traditionally been used as a biomarker to identify and grade tumor biopsies based on PCNA's involvement in DNA replication. Typically located intracellularly, we have recently identified PCNA at the cell surface. When recognized by the Natural Killer (NK) cell receptor, NKp44, PCNA inhibits NK cell effector functions, allowing tumor cells to escape immunosurveillance. We have characterized tumor cells expressing cell surface PCNA to evaluate the use of cell surface PCNA as a potential marker of cancer stem cells, believed to be responsible for relapse and metastasis.
Methods: We analyzed extracellular PCNA expressing tumor cells for expression of vimentin by confocal microscopy and expression of CD44 and CD24 by flow cytometry, which mark cancer stem cells. We also analyzed these cells for expression of genes which can induce formation of cancer stem cells or maintain stem cell characteristics by real time PCR. Finally, since stem cells are often quiescent, we analyzed cell cycle progression of these cells using propidium iodide and flow cytometry analysis.
Results: Expression of vimentin is exclusive to cells expressing extracellular PCNA. These cells also express intermediate levels of CD44, which marks metastatic cells in vivo, and differentially express genetic markers of cancer stem cells. Populations of tumor cells expressing PCNA at the cell surface were enriched for cells in the G2/M phase of the cell cycle.
Conclusions: Extracellular PCNA may be a marker for metastatic cancer stem cells based on intermediate expression of CD44, concomitant expression of vimentin, and expression of genetic markers. Alternatively, extracellular PCNA marks cells in the G2/M phase. Further studies in mouse models will be needed to confirm extracellular PCNA as a marker for cancer stem cells.
Sponsor UNT HSC PhD Bridge Funding Grant
IRB/IACUC#

300 Poster **Classification:** GSBS Student
Presenter: Katelynn Faulk **Department:** Integrative Physiology & Anatomy
Authors: Katelynn Faulk, University of North Texas Health Science Center at Fort Worth; J. Cunningham, University of North Texas Health Science Center at Fort Worth; Thekkethil Nedungadi, University of North Texas Health Science Center at Fort Worth

ANGIOTENSIN CONVERTING ENZYME 1 (ACE1) KNOCKDOWN IN THE MEDIAN PREOPTIC NUCLEUS (MNPO) ATTENUATES SUSTAINED DIURNAL HYPERTENSION FOLLOWING CHRONIC INTERMITTENT HYPOXIA

Purpose: Chronic Intermittent Hypoxia (CIH) is a model for the arterial hypoxemia seen in sleep apnea and is associated with a sustained increase in blood pressure throughout the diurnal cycle. Studies indicate that the MnPO contributes to this sustained component of CIH hypertension that persists during normoxia. MnPO neurons from rats show increased expression of the transcription factor FosB following CIH. Dominant-negative inhibition of a FosB splice variant in MnPO attenuates the sustained hypertension in CIH. We identified the pro-hypertensive ACE1 as a possible FosB target gene that may contribute to the sustained hypertension seen in CIH.
Methods: We tested this hypothesis using a viral vector to knockdown ACE1 in the MnPO. Isoflurane anesthetized adult male rats were microinjected in the MnPO with 500nl of an adeno-associated virus containing GFP and either shRNA against ACE1 (shACE1) or a scrambled shRNA (shSCM). Changes in Mean arterial blood pressure (MAP) were recorded using radio telemetry. Rats were then exposed to CIH for 7 days through 3 minute periods of hypoxia (10% oxygen) and 3 minute periods of normoxia (21% oxygen) for 8 hours per day (0800-1600 h). Normoxic controls were exposed to room air. Laser capture microdissection followed by qRT-PCR showed that shACE1 significantly decreased ACE1 message in MnPO.
Results: During CIH exposure, MAP significantly increased in both shACE1 and shSCM treated rats. During the normoxic dark phase, knockdown of ACE1 in the MnPO statistically decreased the sustained MAP component of CIH as compared to shSCM controls ($P<0.001$).
Conclusions: These results show that ACE1 in the MnPO contributes to the sustained hypertension seen in our CIH model.
Sponsor P01 HL88052
IRB/IACUC# 2011/12-36-A05

301 Oral **Classification:** GSBS Student
Presenter: Ashwini Saxena **Department:** Integrative Physiology & Anatomy
Authors: Ashwini Saxena, University of North Texas Health Science Center at Fort Worth; Joel Little, University of North Texas Health Science Center at Fort Worth; Thekkethil Nedungadi, University of North Texas Health Science Center at Fort Worth; J. Cunningham, University of North Texas Health Science Center at Fort Worth

ANGIOTENSIN II RECEPTOR TYPE-1A KNOCKDOWN IN SUBFORNICAL ORGAN PREVENTS SUSTAINED INCREASE IN MEAN ARTERIAL PRESSURE ASSOCIATED WITH CHRONIC INTERMITTENT HYPOXIA

Purpose: Sleep apnea (SA) is associated with a sustained increase in mean arterial pressure (MAP) even during waking hours. Chronic intermittent hypoxia (CIH) models the hypoxemia associated with SA and produces elevated MAP during CIH and normoxia. Angiotensin II (Ang II) is implicated in the CIH associated increase in MAP. Subfornical organ (SFO), a forebrain circumventricular organ, lacks blood brain barrier and is a major site for the central effects of circulating Ang II. We investigated the effects of Ang II type 1a receptor knockdown (AT1aRKD) in the SFO on CIH hypertension in adult male rats.
Methods: Adeno-associated viral vectors carrying GFP and either AT1aR shRNA or scrambled shRNA (SCM) were injected in SFO. Continuous measurements of mean arterial pressure, heart rate, respiratory rate, and activity were measured using radio-telemetry device implanted in abdominal aorta. Rats were exposed to cyclic hypoxia (3 min 21% O_2 - 3 min 10% O_2) for 8 hours/day for 7 days. Rats were sacrificed on Day 8.
Results: Using laser-capture microdissection and qRT-PCR of amino-allyl RNA, AT1aRKD rats showed decreased SFO AT1aRmRNA in comparison with SCM rats. During intermittently-hypoxic light phase, the AT1aRKD rats exposed to CIH (3 min 10% O_2 and 3 min room air cycles for 8 h during light phase for 7 d) exhibited significant increases in MAP vs. AT1aRKD-Normoxia group ($p<0.05$). During the normoxic dark phase, there was no difference in MAP between CIH and normoxic AT1aRKD rats ($p=0.69$). SCM-CIH group showed significant increase in MAP from SCM-Normoxia group during light phase CIH ($p<0.001$) and the normoxic dark phase ($p<0.001$).
Conclusions: Our data indicate that AT1aRs in SFO may play a role in the sustained increases in MAP during normoxia associated with CIH.
Sponsor P01 HL088052
IRB/IACUC#

302 Poster **Classification:** TCOM DO Student
Presenter: Lindsey Welch **Department:** Integrative Physiology & Anatomy
Authors: Lindsey Welch, University of North Texas Health Science Center at Fort Worth; Olivia Bentkowski, University of North Texas Health Science Center at Fort Worth; Noah Jouett, University of North Texas Health Science Center at Fort Worth; Peter Raven, PhD, University of North Texas Health Science Center at Fort Worth

APPLICATION OF TREATMENT SUCCESS INDEX ON MULTIPLE VARIABLES IMPLICATED IN SLEEP APNEA

Purpose: The goal of this study was to evaluate the relationship between various health indicators and the success of using PAP with a Treatment Success Index (TSI), a measured value of treatment success based on PAP compliance and treatment efficacy. The literature demonstrates quite clearly that untreated OSA issues in a wide array of physical malady, ranging from obesity to cardiovascular disease. Therefore, we hypothesize that Obstructive Sleep Apnea (OSA) patients treated with Positive Airway Pressure (PAP) will demonstrate more favorable values of health indicators as compared to untreated patients (classified by Treatment Success Index).
Methods: Data collection was performed at an office visit for each subject. PAP machines were brought from home to provide at-home data. Health indicators collected included Epworth score, heart rate, systolic and diastolic blood pressure and BMI. Subjects were assigned a Treatment Success Index (TSI) percentage based on compliance and at-home effectiveness data. Analysis was completed to determine the relationship between TSI score and the health indicators collected. Subjects with a TSI greater than or equal to 85 were considered treated, while subjects with a TSI less than 85 were considered untreated. Analysis was run on these groups to compare health indicators to their treated or untreated status.
Results: The Epworth score was found to be decreased in the treated group, determined by the Mann-Whitney U Test results of a median value of 5 in the treated group and 7 in the untreated group ($p<0.001$). Systolic blood pressure was increased in the treated group, with a Mann-Whitney U Test demonstrating a median of 130 for the treated group and 124 for the untreated group ($p <0.001$). BMI was also increased in the treated group at 33.6, compared to 31.7 in the untreated group ($p=0.002$, Mann-Whitney U). There were no significant findings related to changes in heart rate of diastolic blood pressure.
Conclusions: While Epworth score showed a favorable response to PAP treatment as determined by TSI values, systolic blood pressure and BMI were found to be higher in the treated groups. This does not indicate a negative effect of PAP use on these variables, but rather suggests other underlying mechanisms.
Sponsor NLBHI R21 grant #HL106431
IRB/IACUC# 2013-063

303 Poster **Classification:** TCOM DO Student
Presenter: Gabriel Hanson **Department:** Texas College of Osteopathic Medicine
Authors: Gabriel Hanson, University of North Texas Health Science Center at Fort Worth; Luke Cielonko, University of North Texas Health Science Center at Fort Worth; Michael Smith, University of North Texas Health Science Center at Fort Worth

BASELINE SYMPATHETIC ACTIVITY IS ELEVATED IN PATIENTS WITH ATRIAL FIBRILLATION

Purpose: Most cardiovascular diseases are associated with high sympathetic nerve activity (SNA), and elevations in SNA are known to increase the progression of many forms of cardiovascular disease. Atrial fibrillation (AF) is a serious cardiac dysrhythmia that afflicts a substantial percentage of the population and is known to result in increased risk of blood clotting. This results in a higher risk for pulmonary emboli and stroke. These complications tend to be associated with a generalized fatigue and reduced exercise capacity due to decreased cardiac output. However, the effect of atrial fibrillation on SNA is unknown, thus the purpose of this study was to determine the effect of AF on baseline SNA independent of other factors.
Methods: Two studies were performed in patients with AF. First, eight patients with drug-refractory AF were studied before and after completion of an AV nodal ablation to normalize the ventricular rate. Microneurographic recordings of SNA were obtained continuously during and after completion of the procedure. Upon effective AV nodal ablation, the patient was immediately paced with a temporary pacemaker inserted in the ventricular apex via vascular access. Ventricular pacing was conducted at the same rate as the patients ventricular rate during their episodes of AF. Baseline SNA was determined prior to ablation and during ventricular pacing. A comparison of SNA was made between the AF state and during the artificially paced ventricular rate, which as stated above was conducted at the mean of their ventricular rate during AF. Second, nine patients with paroxysmal AF were studied during AF and after cardioversion of AF during sinus rhythm. Microneurographic recordings of SNA were obtained continuously during AF and during sinus rhythm. Statistical comparisons were performed for each study with a paired Student's T test to determine the difference in SNA between conditions with AF and without AF.
Results: For study 1, mean ventricular rates during AF were 93 + 4 bpm (range= 82-128 bpm) and the post-ablation pacing rates were the same and were maintained at a constant regularity with no inter-beat difference. Baseline SNA decreased significantly from 2836 + 332 units to 2291 + 298 units ($p < 0.03$). For study 2, mean ventricular rates during AF were 98 + 3 bpm (range= 78-140 bpm) and the post-cardioversion sinus rhythm rates were 77 + 2 bpm (range= 62-91 bpm). The baseline SNA decreased significantly from 3755 + 401 units to 2329 + 339 units ($p < 0.01$). In each case, the measurement of SNA was based on 100 heartbeats, and thus was independent of the rate.
Conclusions: These data support the hypothesis that baseline SNA is elevated in atrial fibrillation and appears to be independent of rate. These findings support the hypothesis that AF may also increase the risk of progression of other cardiovascular disease states including potentially fatal ventricular dysrhythmias.

304 Poster **Classification:** GSBS Student
Presenter: Brent Shell **Department:** Integrative Physiology & Anatomy
Authors: Brent Shell, University of North Texas Health Science Center at Fort Worth; Tom Cunningham, PhD, University of North Texas Health Science Center at Fort Worth

CONTRIBUTION OF THE MNPO ANGIOTENSIN RECEPTORS TO BRAIN STEM ACTIVITY AND HYPERTENSION

Purpose: The repeated bouts of hypoxia experienced by sufferers of sleep apnea results in persistent blood pressure elevation. This pathophysiological increase in pressure exists in both the hypoxic night phase and the normoxic period. Neurological mechanisms that drive this maladaptive blood pressure increase are not well understood. Our lab has shown that knockdown of the Angiotensin type 1a (At1a) receptor in a forebrain nucleus, the median preoptic nucleus (MnPO), prevents the normoxic blood pressure increase. How the MnPO At1a receptors affect downstream nuclei to maintain normal pressure is not known. In the current study, rats were exposed to chronic intermittent hypoxia (CIH) to simulate the hypoxic effects of sleep apnea. We then examined the activity of downstream nuclei by performing immunohistochemistry for ΔFosB, a marker for neuronal activity.
We hypothesize that knockdown of AT1a in the MnPO results in decreased ΔFosB expression in downstream hypertensive nuclei such as the caudal ventrolateral medulla (CVLM), the rostral ventrolateral medulla (RVLM), and the nucleus tractus solitaries (NTS).
Methods: After exposure to chronic intermittent hypoxia (CIH), rats are sacrificed, perfused with 4% paraformaldehyde, dehydrated with sucrose, and serial sectioned at 40 microns on a cryostat. Sections are split into three groups; one group is used for immunohistochemistry. Sections are processed with primary goat antibody for ΔFosB, a secondary biotinilated anti-goat, and finally visualized using diaminobenzidine. Localization of the NTS, CLVM, and RVLM was performed by double labeling for dopamine-β-hydroxylase (DβH), an enzyme used in the production of catecholamines. DβH was visualized using a CY3 fluorophore. Cell counts utilized at least 3 brain sections per nucleus.
Results: A significant difference was found between the AT1a knockdown rats and the scramble rats in the subpostremal region of the NTS. This region has neurons that are responsible for processing both baroreceptor and chemoreceptor information.
Conclusions: The MnPO is connected to this region through the paraventricular nucleus. Decreased MnPO activity could cause a decrease in the quantity of inputs to the hindbrain. These results, coupled with the prevention of the normoxic blood pressure increase, indicate that angiotensin acting through the MnPO is affecting the activity of neurons in the brainstem that are directly controlling blood pressure regulation
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305 Poster **Classification:** Dual Degree student
Presenter: Anh Quynh Nguyen **Department:** Integrative Physiology & Anatomy
Authors: Anh Nguyen, University of North Texas Health Science Center at Fort Worth; Brandon Cherry, University of North Texas Health Science Center at Fort Worth; Myoung-Gwi Ryou, University of North Texas Health Science Center at Fort Worth; Arthur Williams University, University of North Texas Health Science Center at Fort Worth; Roger Hollrah, University of North Texas Health Science Center at Fort Worth; Charla Baker, University of North Texas Health Science Center at Fort Worth; Gourav Choudhury, University of North Texas Health Science Center at Fort Worth; Albert Olivencia-Yurvati, University of North Texas Health Science Center at Fort Worth; Robert Mallet, University of North Texas Health Science Center at Fort Worth

DELAYED NEURONAL DEATH IN SWINE FOLLOWING CARDIAC ARREST AND RESUSCITATION

Purpose: Cardiac arrest, a leading cause of death in the U.S., kills >90% of its victims, and survivors often are disabled by permanent brain injury inflicted by ischemia-reperfusion. Purkinje cells of the cerebellum and CA1 neurons of the hippocampus are especially vulnerable to post-ischemic neuronal death. We tested the hypothesis that cardiac arrest in a swine model caused delayed neuronal death.
Methods: Yorkshire swine (25-35 kg) were subjected to cardiac arrest-resuscitation (n = 9) or non-arrest sham (n = 5) protocols. Ventricular fibrillation was induced by electrical pacing. Precordial compressions (100/min) were given at 6-10 min arrest, and then sinus rhythm was restored with transthoracic countershocks. NaCl was infused iv at 0.1 mmol/kg/min during CPR and the first 60 min after return of spontaneous circulation (ROSC). At 7 d ROSC, brain regions were fixed in 4% paraformaldehyde and H&E stained.
Results: More than 70% of the Purkinje cells were shrunken, lacked dendrites and displayed condensed cytoplasm at 7 d ROSC; in contrast, in shams the majority of Purkinje cells retained the characteristic thick dendrites and well-defined nuclei.
Conclusions: Thus, cardiac arrest-resuscitation produced marked changes in cerebellar neurons evident 7d after acute insult.
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306 Poster **Classification:** GSBS Student
Presenter: Gilbert Moralez **Department:** Integrative Physiology & Anatomy
Authors: Gilbert Moralez, University of North Texas Health Science Center at Fort Worth; Daniel White, University of North Texas Health Science Center at Fort Worth; Peter Raven, University of North Texas Health Science Center at Fort Worth

EFFECTS ANTIOXIDANTS ON CEREBROVASCULAR HEMODYNAMICS DURING MODERATE AND HIGH INTENSITY EXERCISE

Purpose: To test the hypothesis that during dynamic leg cycling exercise, antioxidants would increase middle cerebral artery blood velocity (MCAv) and cerebrovascular conductance (CVCi).
Methods: Five healthy subjects performed back supported semi-recumbent dynamic leg cycling with antioxidant cocktail (AxT) and without AxT (placebo – Pl). Arterial pressures (AP) and MCAv were measured continuously during moderate intensity dynamic leg exercise at heart rates (HR) of 120 bpm (e120) and heavy intensity at HR of 150 bpm (e150).
Results: No differences in AP were observed between Pl and Axt at e120 and e150 ($P \geq 0.50$). MCAv during AxT at e120 and e150 was increased above Pl at rest ($P=0.03$) and during exercise ($P<0.05$). Additionally, the calculated CVCi was significantly greater at rest, e120 and e150 between CT and Pl ($P=0.05$).
Conclusions: From these data we conclude that Axt scavenged exercise induced central ROS resulting in increased central/peripheral NO induced cerebrovascular vasodilation during exercise.
Sponsor TEXAS CHAPTER OFTHE AMERICAN COLLEGE OF SPORTS MEDICINE
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307 Poster **Classification:** TCOM DO Student
Presenter: Olivia Bentkowski **Department:** Integrative Physiology & Anatomy
Authors: Olivia Bentkowski, University of North Texas Health Science Center at Fort Worth; Lindsey Welch, University of North Texas Health Science Center at Fort Worth; Noah Jouett, University of North Texas Health Science Center at Fort Worth; Michael Smith, PhD, University of North Texas Health Science Center at Fort Worth

EVALUATION OF HEART RATE VARIABILITY IN THE TREATMENT OF OBSTRUCTIVE SLEEP APNEA

Purpose: Obstructive Sleep Apnea (OSA) patients treated with Positive Airway Pressure (PAP) (classified by a Treatment Success Index) will have a lower LF/HF ratio as compared to the untreated group.
Methods: Subjects were instrumented for 30-45 minutes with a 3-lead ECG, which exported raw data into our data acquisition software. Using WinCPRS, we performed spectral analysis on the calculated R-R intervals, which were derived from raw data. LF/HF Heart Rate Variability (HRV) ratios were then calculated and reported for each subject group. Subjects were stratified into treated and untreated groups depending on their Treatment Success Index (TSI) scores. Subjects with TSI's greater than or equal to 85 were considered treated, while subjects with TSIs less than 85 were considered untreated.
Results: There was no statistical difference in the low frequency to high frequency ratio (LF/HF) between the treated and untreated subjects (Mann Whitney U, $p = 0.175$). SDNN was determined to show no statistical difference between the treated and untreated subjects (Student's t-test, $p = 0.273$). There was no statistical difference in pNN50 between the treated and untreated subjects (Mann Whitney U, $p = 0.254$). RMSSD demonstrated no statistical difference between the treated and untreated subjects (Mann Whitney U, $p = 0.205$).
Conclusions: RMSSD and pNN50 were not found to be significantly higher in the treated subjects. LF/HF ratio and SDNN were not significantly lower in the treated subjects. However, this does not suggest ineffectiveness of PAP treatment in OSA, but rather inadequate sample size.
Sponsor N/A
IRB/IACUC# 2013-152

308 Poster **Classification:** TCOM DO Student
Presenter: Shamyal Khan **Department:** Rural Medicine
Authors: Shamyal Khan, University of North Texas Health Science Center at Fort Worth; Omar Hussain, University of North Texas Health Science Center at Fort Worth; Ana Chiapa-Scifres, University of North Texas Health Science Center at Fort Worth

HYPERCOAGULATION IN THE POST-ATRIAL FIBRILLATION CATHETER ABLATION PATIENT

Purpose: A 72 year old Caucasian female with a past medical history of stroke and treated atrial fibrillation presented to the emergency room with swelling and discomfort in her left leg. The patient denied chest pain, shortness of breath, or hypoxemia. Physical examination was remarkable for edema in the left lower extremity with palpable pulses and no ischemic changes.
Methods:
Results: Laboratory findings demonstrated a D-dimer of 4230, prompting a CT angiogram which showed a nonocclusive embolus in the posterior basilar right lower lobe of the pulmonary artery. Ultrasound of the left leg showed thrombus throughout the venous system. She was admitted for deep vein thrombosis and treated with Lovenox 80 mg twice a day as well as Coumadin 5mg daily. After her diagnosis of stroke and non-valvular atrial fibrillation in 2003, the patient had been taking anti-coagulants until her ablation six months ago. At that time the patient had received an AF catheter ablation and her anticoagulation medication was discontinued after she was stable in sinus rhythm.
Conclusions: While being treated in the hospital, the patient offered a family history of Factor V Leiden mutation in a cousin. Due to present symptoms, testing for clotting factor mutations was not practical given necessary treatment with anticoagulation medication. Hematology recommended treatment with Coumadin for six months, holding medication for two weeks, and testing for protein C, protein S, antithrombin III, and Factor V Leiden. With completion of blood draw, the patient would resume Coumadin and results discussed for long term therapy versus discontinuation of medication.
Sponsor N/A
IRB/IACUC# 2014-015

309 Poster **Classification:** Faculty (Not for Competition)
Presenter: Eugenia B. Manukhina **Department:** Integrative Physiology & Anatomy
Authors: H Downey, University of North Texas Health Science Center at Fort Worth; Eugenia Manukhina, Institute of General Pathology and Pathophysiology, Moscow, Russia; Anna Goryacheva, Institute of General Pathology and Pathophysiology, Moscow, Russia; Ludmila Belkina Institute of General Pathology and Pathophysiology, Moscow, Russia; Olga Terekhina, Institute of General Pathology and Pathophysiology, Moscow, Russia; Robert Mallet, University of North Texas Health Science Center at Fort Worth
INTERMITTENT HYPOXIA CONDITIONING REDUCES INOS AND ENOS EXPRESSION IN RAT MYOCARDIUM: A MECHANISM FOR PROTECTION FROM ISCHEMIA AND REPERFUSION INJURY
Purpose: Recently we demonstrated that intermittent, normobaric hypoxia conditioning (IHC) prevented injuries of myocardium and coronary blood vessels induced by myocardial ischemia and reperfusion (IR). This cardio- and vasoprotection of was associated with alleviation of nitric oxide overproduction. The aim of this study was to identify specific NO synthases responsible for the IR-induced NO overproduction and to determine the effects of IHC on these NO synthases.
Methods: This research was approved by the Animal Care and Use Committee of the Institute of General Pathology and Pathology. IHC of rats was performed in a normobaric chamber (5-8 cycles/d for 20 d, FIO_2 9.5 - 10% for 5 - 10 min/cycle, with intervening 4-min normoxia). IR was produced by ligation of the left anterior descending coronary artery for 30 min followed by 60-min reperfusion. The protein nitration marker, nitrotyrosine (3-NT) and neuronal (nNOS), inducible (iNOS), and endothelial (eNOS) nitric oxide synthases were measured by immunoblot.
Results: IR induced appreciable 3-NT accumulation in the left ventricular free wall, increasing the 3-NT content by 42% ($p<0.01$), but not in septum. In IHC rats, 3-NT after IR was similar to that of control rats without IR. IHC decreased iNOS by 71% ($p<0.05$) and eNOS by 41% ($p<0.05$) in the left ventricular myocardium; the myocardial content of nNOS remained unchanged.
Conclusions: IHC prevents IR-induced NO overproduction in myocardium by restricting myocardial expression of iNOS and eNOS.
Sponsor Russian Foundation for Basic Research Grant 10-04-00980.
IRB/IACUC# 2/9-2006

310 Poster **Classification:** GSBS Student
Presenter: Janhavi Nagwekar **Department:** Cell Biology and Immunology
Authors: Janhavi Nagwekar, University of North Texas Health Science Center at Fort Worth; Divya Duggal, University of North Texas Health Science Center at Fort Worth; Krishna Midde, University of California - San Diego; Katarzyna Kazmierczak Miller School of Medicine, University of Miami; Weiwen Huang, Miller School of Medicine, University of Miami; Rafal Fudala, University of North Texas Health Science Center at Fort Worth; Ignacy Gryczynski, University of North Texas Health Science Center at Fort Worth; Zygmunt Gryczynski, University of North Texas Health Science Center at Fort Worth; Danuta Szczesna-Cordary, Miller School of Medicine, University of Miami

MYOSIN REGULATORY LIGHT CHAIN A13T MUTATION ASSOCIATED WITH CARDIAC HYPERTROPHY IMPOSES DIFFERENCES ON KINETICS AND SPATIAL DISTRIBUTIONS OF CROSS-BRIDGES IN HEALTHY AND DISEASED VENTRICLES

Purpose: Muscle is organized into regular periodic thick myosin and thin actin filaments. Myosin tails interact with each other to form a tight coiled coil rod, and the heads protrude out to interact with actin. Myosin head referred to as cross-bridge has ATPase activity and actin binding domain. The tail has a site (Regulatory Light Chain (RLC) domain) which when mutated at A13T site cause myosin heads to bind slowly to the actin molecules affecting the overall ATPase cycle and power strokes necessary for a muscle to contract in the process.

Methods: Rabbit ventricle muscle is the source of sample for experiments in this project. Glycerinated muscle bundles were homogenized and myofibrils were extracted. Myofibrils were labeled with 0.1 nM rhodamine-phalloidin (RP) + 10 μM unlabeled-phalloidin (UP) in Ca^{2+}-rigor solution in the the ratio of 1:100,000 fluorescent to non-fluorescent phalloidin to ensure 1 in ~10^5 actin monomers carry a fluorophore. Labeled myofibrils were analyzed for error of the mean of polarized fluorescence to determine kinetic rate constants in the ATPase cycle and distribution of orientations emanating from myosin cross-bridges.

Results: Histograms were plotted from the polarized fluorescence data and the Full Width at Half Maximum (FWHM) of the mean was calculated. The mean polarization of a contracting WT myofibril was -0.176±0.018 and that of contracting A13T Mutated myofibril was -0.247±0.017. Significant differences in rate constants k1, k2 and k3 of the ATPase cycle were observed with WT values being 325±34, 0.16±0.03, 0.32±0.08 and A13T mutated values being 54±80*, 0.25±0.04, 0.57±0.12 respectively. On comparing the peaks of the fit of the data, peak 1 assumed to be the pre power stroke was lost in the A13T mutated myofibrils while peak 2 (post power stroke) almost remained constant in both muscle types.

Conclusions: The study suggest that the functional differences between ventricles containing WT myosin and myosin in which the RLC contains the A13T mutation are caused by a change in the rate of binding of myosin cross-bridges to the thin filaments. Differences in the polarization, FWHM and peaks indicate that pre-power strokes are necessary for myosin cross-bridges and that any alterations in its functions may lead to cardiomyopathy.

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IRB/IACUC# A 37 11-01

311 Poster **Classification:** TCOM DO Student
Presenter: Margaret Mou **Department:** Pediatrics
Authors: Margaret Mou, University of North Texas Health Science Center at Fort Worth; Don Wilson, MD, Cook Children's Hospital

PEDIATRIC CARDIOVASCULAR SCREENING RESEARCH

Purpose: The objective of this project is to understand general pediatricians' screening and treatment processes in children with a variety of cardiovascular disease risk factors, including what steps could be taken to ensure universal cholesterol screening of children ages 9-11.

Methods:

Recruitment: Participants will be recruited via NLA pediatricians, contacted via email directly from the directors of these networks in order to maintain anonymity.

Data and Storage: Only the primary investigator will have access to the participating pediatrician's responses to the questionnaire. The information will be imported directly from the submitted questionnaires, collated and stored on a secure online excel spreadsheet. .

Procedures to Maintain Confidentiality: Because the directors of the participating networks are sending out the questionnaire on behalf of the study investigators, there is no direct trail from the primary investigator to the respondents. Thus, anonymity is maintained, and all the submitted information will remain confidential to the individual.

Data Security: Access to the excel spreadsheet will be password restricted to only the study's primary investigator(s).

Results: Briefly speaking, the majority of respondents do not currently order cholesterol screenings for their patients. However, 83% of the respondents do think that universal screening of cholesterol of children ages 9-11 years old is important. The major barriers seen by providers included family hesitancy and financial restrictions.

Conclusions: There are opportunities to capitalize on the barriers for universal cholesterol screening in children ages 9-11, including provider education on current NIH guidelines, insurance policy, and family education.

Sponsor
IRB/IACUC# 7266314

312 Poster **Classification:** TCOM DO Student
Presenter: Charla L Baker **Department:** Integrative Physiology & Anatomy
Authors: Charla Baker, University of North Texas Health Science Center at Fort Worth; Anh Nquyen, University of North Texas Health Science Center at Fort Worth; Brandon Cherry, University of North Texas Health Science Center at Fort Worth; Albert Olivencia-Yurvati University of North Texas Health Science Center at Fort Worth; Robert Mallet, University of North Texas Health Science Center at Fort Worth

PYRUVATE'S ANTI-INFLAMMATORY EFFECTS IN LUNG TISSUE POST CARDIAC ARREST

Purpose: To identify a new pharmacological strategy to protect the lungs from ischemia-reperfusion injury due to cardiac arrest
Methods: Yorkshire swine (30-40 kg) were subjected to cardiac arrest-resuscitation or non-arrest sham protocols. Ventricular fibrillation was induced by a train of electric impulses transmitted to the right ventricle via a pacing wire. Precordial compressions (100/min) were given from 6-10 min arrest, and then sinus rhythm was restored with defibrillatory transthoracic countershocks. NaCl or Na-pyruvate was infused iv at 0.1 mmol/kg/min during chest compressions and the first 60 min post-defibrillation. After 4 h recovery, lung tissue was excised, fixed in 4% paraformaldehyde and embedded in paraffin wax. Sections were cut and stained with H&E. Twenty random high power fields independently were scored in a blinded fashion. Scoring: No neutrophils in the alveolar space= 0; 1-5 neutrophils= 1; >5 neutrophils= 2. Interstitial neutrophils were counted, averaged, and compared among the three experimental groups.
Results: H&E staining showed no statistically significant difference of interstitial (P=0.49) and alveolar (P=0.65) neutrophil infiltrate among the sham, CPR and CPR + Pyruvate.
Conclusions: There was no statically significant difference in pulmonary neutrophil infiltration at 4 hour post cardiac arrest and resuscitation in CPR and pyruvate treated CPR compared to sham. Further analysis of longer post-arrest recoveries are necessary to better understand the anti-inflammatory effect of pyruvate in lung tissue in this experiment model.

Sponsor Honors Research Practicum Grant
IRB/IACUC# 2012/13-29-A10

313 Poster **Classification:** GSBS Student
Presenter: Brina D Snyder **Department:** Pharmacology & Neuroscience
Authors: Brina Snyder, University of North Texas Health Science Center at Fort Worth; J Cunningham, University of North Texas Health Science Center at Fort Worth; Rebecca Cunningham, University of North Texas Health Science Center at Fort Worth

SLEEP APNEA AND ITS ROLE IN OXIDATIVE STRESS AND INFLAMMATION

Purpose: Inflammation has been linked with sleep apnea. Sleep apnea is a common comorbidity associated with Parkinson's disease. Furthermore, both sleep apnea and Parkinson's disease have been linked with inflammation. A possible mechanism underlying increased inflammation in these disorders is oxidative stress, a hallmark of many neurodegenerative disorders. To examine the role of oxidative stress on inflammation, we used chronic intermittent hypoxia (CIH), an established model for the hypoxemia associated with sleep apnea. CIH consists of recurring events of low oxygen followed by reoxygenation. We hypothesize that CIH causes oxidative stress, which induces inflammation.
Methods: To test this hypothesis, plasma from adult male rats subjected to 7 days of CIH (3 minute periods of hypoxia (10% oxygen) and 3 minute periods of normoxia (21% oxygen) for 8 hours per day) or normoxia (room air) was tested for AOPP, an indicator of oxidative stress, and circulating inflammatory markers (IL-10, IL-4, IL-6). Our results showed that CIH significantly increased circulating oxidative stress. These results were then correlated with inflammatory markers in the plasma and statistically analyzed for positive associations.
Results: IL-6 was found to be significantly increased in CIH, although not associated with oxidative stress. However, CIH did increase IL-4 and IL-10, and these effects were positively associated with circulating oxidative stress.
Conclusions: Inflammatory markers IL-4 and IL-6 are generally associated with macrophage-mediated inflammation. Therefore it is possible that CIH-induced oxidative stress underlies macrophage mediated inflammation. These findings suggest that sleep apnea increases oxidative stress and consequently inflammation.

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IRB/IACUC# 2011/12-36-A05

314 Poster **Classification:** Dual Degree student
Presenter: Noah Jouett **Department:** Integrative Physiology & Anatomy
Authors: Noah Jouett, University of North Texas Health Science Center at Fort Worth; Michael Smith, PhD, University of North Texas Health Science Center at Fort Worth, Sleep Consultants, Inc

THE EFFECT OF CONTINUOUS POSITIVE AIRWAY PRESSURE TREATMENT ON CARDIOVASCULAR REACTIVITY IN OBSTRUCTIVE SLEEP APNEA.

Purpose: To investigate whether or not well-treated obstructive sleep apnea (OSA) subjects will have a decreased Δ systolic blood pressure (SBP) response to voluntary apnea than untreated subjects
Methods: 21 OSA patients were stratified into treated (n=15) and untreated (n=6) groups based on their Treatment Success Index (TSI). The TSI takes into account a patient's continuous positive airway pressure (CPAP) compliance and reduction in apnea-hypopnea index (AHI). Patients with TSIs of less than 85 (out of 100) were considered "untreated" while those over 85 were considered "treated." This study took place at Sleep Consultants, Inc (Fort Worth, TX). Patients were instrumented with 3-lead ECG, pulse oximeter and a Finometer, which recorded beat-to-beat blood pressure. After respiring normally 3 times, the patient was asked to initiate a voluntary apnea for 20 seconds and the SBP response was recorded. An unpaired t-test was performed on group averages, where a p2values were calculated where indicated with ANOVAs to determine significance.
Results: The untreated mean Δ SBP was 24.04 ± 7.271 mm Hg and the treated mean was 12.23 ± 3.57 mm Hg, which was significantly different (p=0.00165). TSI and ΔSBP were inversely and significantly correlated (P= -0.69, p=0.00119). The different treatment groups did not desaturate differently (p>0.05), and greater desaturations did not produce greater Δ SBP responses (R^2=0.003, p> 0.05).
Conclusions: The SBP response to voluntary breath-holds decreases with adequate CPAP treatment independently from SaO2. Therefore, the underlying increase in sympathetic nervous activity (SNA) that drives the Δ SBP response is likely attenuated with adequate CPAP treatment. This study proves the utility of this maneuver in evaluating treatment efficacy (i.e. reduction in SNA reactivity) in OSA patients in a clinical setting.
Sponsor N/A
IRB/IACUC# 2013-152

315 Poster **Classification:** GSBS Student
Presenter: Divya Duggal **Department:** Cell Biology & Immunology
Authors: Divya Duggal, University of North Texas Health Science Center at Fort Worth; Janhavi Nagwekar, University of North Texas Health Science Center at Fort Worth; Ryan Rich, University of North Texas Health Science Center at Fort Worth; W Huang Miller School of Medicine, University of Miami; Krishna Midde, University of California-San Diego; Rafal Fudala, University of North Texas Health Science Center at Fort Worth; Ignacy Gryczynski, University of North Texas Health Science Center at Fort Worth; Danuta Szczesna-Cordary, Miller School of Medicine, University of Miami; Julian Borejdo, University of North Texas Health Science Center at Fort Worth

THE K104E MUTATION OF THE MYOSIN REGULATORY LIGHT CHAIN ALTERS KINETICS AND DISTRIBUTION OF ORIENTATIONS OF CROSS-BRIDGES IN TRANSGENIC CARDIAC MYOFIBRILS

Purpose: The purpose of my study is to examine the cross-bridge (XB) kinetics and the degree of order in contracting myofibrils from the ex-vivo left ventricles of transgenic (Tg) mice expressing Familial Hypertrophic Cardiomyopathy (FHC) Regulatory Light Chain (RLC) mutation K104E.
Methods: 1. Myofibrils were prepared from the frozen hearts of Tg-WT mice and newly generated Tg-K104E mice.
2. Since the kinetics and degree of order are best studied when an individual cross bridge (XB) makes a significant contribution to the overall signal, the number of observed XBs was minimized to ~20 by sparsely labeling the Essential Light Chain(ELC) of myosin. Autofluorescence and photobleaching were minimized by labeling ELC with a relatively long-lived red-emitting dye containing a chromophore system encapsulated in a cyclic macromolecule, SeTau 647.
3. Myofibrils were crosslinked with a cross linker prior to labeling.
4. Following labeling, fluorescence was measured by PicoQuant MT 200 inverse time-resolved fluorescence instrument coupled to Olympus IX 71 microscope.
Results: We show that the K104E mutation, when compared with Wild Type (WT) ventricles, had significant effect on both the kinetics of the interaction between actin and myosin and on the degree of order of the myosin lever arm. In particular, the K104E mutation increased the rate of XB binding to thin filaments and the rate of execution of the power stroke, while decreasing the rate of XB dissociation from actin. Mutated XBs were significantly better ordered during steady-state contraction and during rigor but mutation had no effect on the degree of order in relaxed myofibrils.
Conclusions: This implies that the mutated ventricle may be prone to decreased maximal tension and increased muscle relaxation time suggesting a potential for diastolic dysfunction in patients.
Sponsor R01
IRB/IACUC# A 3711-01

316 Poster **Classification:** GSBS Student

Presenter: Victoria Kay **Department:** Integrative Physiology & Anatomy
Authors: Victoria Kay, University of North Texas Health Science Center at Fort Worth; Caroline Rickards, University of North Texas Health Science Center at Fort Worth

THE ROLE OF CEREBRAL OXYGENATION ON TOLERANCE TO CENTRAL HYPOVOLEMIA

Purpose: Tolerance to central hypovolemia varies between individuals, and recent studies have shown that protection of absolute cerebral blood flow is not an underlying mechanism. We hypothesized that subjects with high tolerance (HT) to central hypovolemia maintain cerebral oxygenation (ScO_2) at higher levels of lower body negative pressure (LBNP) compared to their low tolerant (LT) counterparts, despite similar reductions in absolute flow.
Methods: 15 healthy human subjects (10 male; 5 female) were instrumented for assessment of ScO_2 (via near-infrared spectroscopy, NIRS) and mean middle cerebral artery velocity (MCAv; via transcranial Doppler, TCD). All subjects completed a presyncopal-limited lower body negative pressure (LBNP) protocol with an onset rate of 3 mmHg/min. Subjects who made it to ≥80mmHg LBNP were classified as HT, and subjects who made it to ≤70 mmHg LBNP were classified as LT.
Results: The minimum difference in LBNP tolerance between the HT (N=6) and LT (N=9) group was 206 s (LT=1400±104 s vs. HT=2080±65 s; P=0.0003). Up to -45 mmHg LBNP, ScO_2 was maintained in HT subjects (P≥0.538), while the LT (N=9) subjects had a progressive decrease in ScO_2 (P≤0.016) from baseline. MCAv decreased from baseline in both HT and LT subjects (P≤0.022). There was a strong linear relationship between %Δ MCAv and %Δ ScO_2 within the LT group (R^2=0.98; P=0.013), whereas a weaker association between perfusion and oxygenation (R^2=0.53; P=0.271) was observed in the HT group.
Conclusions: In support of our hypothesis, higher tolerance to progressive central hypovolemia was associated with the protection of ScO^2, despite an early and significant reduction in cerebral blood flow. This may have important clinical implications for the monitoring of cerebral perfusion and oxygenation in trauma patients.
Sponsor US Army Medical Research Materiel Command
IRB/IACUC# 2012-163

317 Poster **Classification:** GSBS Student

Presenter: Qiong Wu **Department:** Integrative Physiology & Anatomy
Authors: Qiong Wu, University of North Texas Health Science Center at Fort Worth; Steve Mifflin, University of North Texas Health Science Center at Fort Worth

TIME COURSE OF CHANGES IN GLUTAMATERGIC TRANSMISSION WITHIN NTS DURING CIH EXPOSURE AND THE ROLE OF ΔFOSB

Purpose: ΔFosB is a transcription factor induced by chronic intermittent hypoxia (CIH), a model of the arterial hypoxemia seen in sleep apnea patients. We reported that 7 days of CIH increases the amplitude of mEPSCs recorded in 2nd order arterial chemoreceptor NTS neurons. We hypothesize that NTS injection of a dominant-negative construct of ΔFosB (provided by Dr. E. Nestler) to block the function of ΔFosB will block the CIH increase in mEPSC.
Methods: A brain slice preparation was used to record mEPSCs from second order NTS neurons by whole cell patch clamp in a normoxia group and in rats exposed to CIH of differing durations.
AAV-GFP-ΔJunD construct was microinjected into NTS to block the function of ΔFosB, then GFP labeled second order NTS neurons were recorded after 1 day and 7 days CIH exposure.
Results: mEPSC amplitude in normoxia group and after 1, 3, 5, and 7 days CIH exposure averaged 12.3±0.8 pA (n=12), 19.6±1.3 pA (n=11), 17.5±1.6 pA (n=11), 16.7±1.2 pA (n=21), 18.2±0.8 pA (n=7), respectively (all p
ΔFosB inhibition decreased the amplitudes of mEPSCs to normoxia levels in both 1 day and 7 days CIH groups, 13.9±0.6 pA (n=10), 13.0±0.6 pA (n=19), respectively.
Conclusions: CIH rapidly enhances the post-synaptic response to glutamatergic synaptic transmission within the NTS and ΔFosB plays a role in mediating this enhancement.
Sponsor HL088052
IRB/IACUC# 2010/11-35-A05

318 Poster **Classification:** GSBS Student

Presenter: Brandon H Cherry **Department:** Integrative Physiology & Anatomy

Authors: Brandon Cherry, University of North Texas Health Science Center at Fort Worth; Anh Nguyen, University of North Texas Health Science Center at Fort Worth; Arthur Williams Jr., University of North Texas Health Science Center at Fort Worth; Gary Scott University of North Texas Health Science Center at Fort Worth; Roger Hollrah, University of North Texas Health Science Center at Fort Worth; Myoung-Gwi Ryou, University of North Texas Health Science Center at Fort Worth; Besim Hoxha, University of North Texas Health Science Center at Fort Worth; Albert Olivencia-Yurvati, University of North Texas Health Science Center at Fort Worth; Robert Mallet, University of North Texas Health Science Center at Fort Worth

VASOPRESSIN INSTEAD OF EPINEPHRINE ENHANCES EFFICACY OF CPR WITHOUT CAUSING TACHYCARDIA

Purpose: The purpose of this study was to test the hypothesis that the adrenoceptor-independent vasoconstrictor vasopressin increases arterial pressure as effectively as epinephrine without producing tachycardia during cardiopulmonary resuscitation (CPR).
Methods: After 6 min pacing-induced cardiac arrest, domestic swine (25-35 kg; 10 boars, 11 sows) received precordial compressions (100/min) for 4 min, and either epinephrine (0.1 mg; n=5) or vasopressin (10 U; n=24) was injected iv at 1 min CPR.
Results: Epinephrine and Vasopressin similarly increased mean arterial pressure from 31±3 to 66±4 mmHg vs. 34±3 to 59±3 mmHg after 4 min CPR. The vasopressin-treated pigs required less countershock energy (12±2 J) to achieve defibrillation vs epinephrine-treated pigs (16±4 J). Post-arrest tachycardia was less intense in vasopressin- (133±11 bpm) than epinephrine-treated (174±14 bpm) pigs.
Conclusions: Vasopressin is as effective as epinephrine at enhancing CPR, but avoids epinephrine-induced tachycardia.

Sponsor National Institute of Neurological Disorders and Stroke N5076975; National Institute on Aging, Training in the Neurobiology of aging T32AG020494

IRB/IACUC# 2012/13-29-A10

Case Presentation (Abstracts in the 400s)

400 Poster **Classification:** TCOM DO Student

Presenter: Rhema S. Jacob, DO **Department:** Texas College of Osteopathic Medicine

Authors: Albert Yurvati, DO, University of North Texas Health Science Center at Fort Worth; D. Rohan Jeyarajah, MD, Methodist Dallas Medical Center; Shirali Patel, MD, Methodist Dallas Medical Center; Rhema Jacob, DO, University of North Texas Health Science Center at Fort Worth

ADULT ANNULAR PANCREAS: A CASE REPORT

Purpose: In modern medicine, annular pancreas remains a rare congenital abnormality yet it is the second most common kind of pancreatic fusion abnormality after pancreas divisum. Annular pancreas is more often seen in the pediatric patient population so it is an uncommon find among adults. In the adult population, it usually presents between 20 and 50 years of age. Only 737 reported cases of annular pancreas are found in English scientific literature. Imaging modalities often have their limitations in the management of this anomalyl. In addition, treatment is still not entirely straightforward in adults as this condition can mimic many other conditions that have to be ruled out. Treatment is always surgical once the diagnosis of symptomatic annular pancreas is clearly formulated. Surgical options include duodenoduodenostomy, gastrojejunostomy with vagotomy, duodenojejunostomy, or very rarely, pancreatic resection. In the following case, the patient underwent a duodenoduodenostomy, which is the treatment of choice.

Methods: A 61 year-old Caucasian male presented to an outside facility with a one month history of intermittent, postprandial right upper quadrant pain and a knot-like sensation and fullness after meals. He arrived at the facility after one week of increasing pain precipitated after eating a Reuben sandwich. Though the patient did not have a history of dyspepsia, he described a burning pain much like indigestion that had become severe and was now located in the epigastric region. He reported no nausea, vomiting, or change in bowel movements. However, he did state an increase in eructation. Laying supine aggravated the pain while belching alleviated the pain. He had no fever, chills, shortness of breath, cough or chest pain. Nevertheless, his initial lab work indicated a white count of 12,600 with left shift. He also had no jaundice and labs indicated normal liver function tests (LFTs). His past medical history included hypertension, high cholesterol, and benign prostatic hyperplasia. Past surgical history included three orthopedic surgeries. At the outside facility he received computerized tomography (CT) of the abdomen and pelvis with IV and p.o. contrast. CT revealed an annular pancreas with no free air or free fluid in the pancreas along with a moderately dilated stomach, and nondilated fluid-filled small bowel loops in the right lower quadrant potentially suggesting gastroenteritis. After transfer to our facility, he was seen in clinic and admitted. His symptoms had abated by this point and his white blood count had fallen to 9,400. Next, he was seen by a gastroenterologist. An upper gastrointestinal series unmistakably revealed moderate to severe stricture of the second part of the duodenum. Repeat CT again indicated an annular pancreas with no free air or free fluid in the pancreas along with a moderately dilated stomach, nondilated fluid-filled small bowel loops in the right lower quadrant potentially suggesting gastroenteritis along with a normal appendix. Moreover, the gastroenterologist performed an esophagogastroduodenoscopy (EGD) that denoted gastritis in the antrum, food debris in the bulb of the duodenum, and stenosis in the descending portion of the duodenum. The endoscope could not be passed distally. Furthermore, the esophagus and gastroesophageal junction had a normal appearance. Surgery was recommended. The patient's preoperative diagnoses were annular pancreas and gastric outlet obstruction. He consented to either a duodenoduodenostomy or duodenojejunostomy for bypass of the duodenal obstruction and he understood the risks involved. The patient was taken to the operating room, placed under general anesthesia in the supine postion, and the abdomen was prepped and draped sterilely. An upper midline incision was made, adhesions present in the right upper quadrant were removed, and the gallbladder was noted to be intact. Afterward, the duodenum was kocherized and isolated. An annular pancreas was noted that was causing obstruction. The duodenum was entirely mobilized and a side-to-side duodenoduodenostomy was created. This was done by making a transverse incision in the first portion of the duodenum followed by a longitudinal incision in the distal duodenum. A single layer anastomosis was created in a running fashion. Air leaks were checked for by threading the nasogastric (NG) tube through the anastomosis and insufflating air under water immersion. No bubbling was present. Subsequently, the omentum was placed over the right upper quadrant, an On-Q pain pump was positioned in the preperitoneal area and Seprafilm was applied. Finally, the abdomen was closed. The patient tolerated the procedure well and was discharged on the fifth postoperative day. The patient made a complete recovery and was in good health at his two week follow-up visit.

Conclusions: Despite the fact that annular pancreas is extremely rare in an adult patient population, annular pancreas deserves to be a part of a clinician's differential when a patient presents with abdominal pain, nausea and vomiting, and other signs of gastric outlet or duodenal obstruction. Certainly, other probable conditions like peptic ulcer disease and acute and chronic pancreatitis have to excluded. CT is the imaging modality that is most frequently utilized to derive a diagnosis of annular pancreas but modalities like EUS, MRCP, and ERCP are also viable options. In symptomatic patients, treatment remains strictly surgical. Duodenoduodenostomy or duodenojejunostomy remain as the preferred bypass techniques to relieve obstruction. Gastrojejunostomy with vagotomy is another potential surgical option.

Sponsor N/A

IRB/IACUC# 2014-026

401 Poster **Classification:** TCOM DO Student
Presenter: Emmanuel C. Mantilla Jr. **Department:** Neurology
Authors: Emmanuel Mantilla Jr., University of North Texas Health Science Center at Fort Worth; Peggy Smith-Barbaro, PhD, University of North Texas Health Science Center at Fort Worth; Allene Brown, MSN, MBA; Saud Khan, MD, John Peter Smith Hospital

ANTI-NMDA RECEPTOR ANTIBODY ENCEPHALITIS: A CASE STUDY

Purpose: To describe a patient with anti-NMDA Receptor Antibody Encephalitis, discuss the clinical features based on this case study, and explore the management options for this condition.
Methods: This is a case study on a 25 year old Hispanic female with no history of childhood seizures, who presented to the ED with status epilepticus. She has had frequent hospital admissions since her seizures started six months ago, described as tonic clonic jerking. Her episodes have been associated with intermittent receptive and expressive aphasia, changes in personality, aggression, and flat affect. During these admissions, all of her work-up, including MRI, CT scan, and CSF analysis have been negative for causing seizures. Her EEG has showed seizure focus and slowing of waves during these episodes. She has been followed by an outpatient neurologist, who has placed her on several anti-seizure medications, including Depakote, Tegretol, and Zonegran.
On her latest admission, she presented to the ED with partial complex status epilepticus, exhibited generalized tonic-clonic movements, with associated tongue biting and urinary incontinence. Two days prior, she had bouts of nausea and vomiting. She was given Ativan and Cerebryx, which eventually resolved seizure activity. Further work up later revealed a normal MRI, intermittent slowing on repeat EEG, and lymphocytic pleocytosis with 4+ oligoclonal bands.
Results: NMDA receptor antibody encephalitis was highly suspected. She was given Intravenous Solumedrol, minimal improvement was noted. Abdominal and pelvic CT were negative any neoplastic disease, including ovarian teratoma. Serology sent later came back positive for NMDA receptor antibodies.
Conclusions: Anti-NMDA receptor antibody diagnosis should be high suspected in a young person presenting with seizures, psychiatric symptoms, speech disturbance, orofacial dyskinesias, and autonomic instability. Work-up should include serum and CSF titers for antibodies to NMDA receptors (NR1/NR2), as well as an extensive screen for any neoplasitic diseases, most especially ovarian teratomas in females.
Sponsor NA
IRB/IACUC# 2014-017.

402 Poster **Classification:** School of Health Professions Student
Presenter: Brittany Balcar **Department:** Physical Therapy Program
Authors: Brittany Balcar, University of North Texas Health Science Center at Fort Worth; Kayla Crocker, University of North Texas Health Science Center at Fort Worth; Hesper Fang, University of North Texas Health Science Center at Fort Worth; Howe Liu, University of North Texas Health Science Center at Fort Worth

BILATERAL APPEARANCE OF THE ABDUCTOR DIGITI MINIMI ACCESSORIUS ORIGINATING FROM THE PALMARIS LONGUS MUSCLES: A CASE STUDY

Purpose: The purposes of this case study were to 1) examine the bilateral variations of the PL in a male cadaver at the University of North Texas Health Science Center (UNTHSC), and 2) determine the potential clinical significance of this variation.
Methods: During a routine dissection of a 59-year old male cadaver in year 2005, an unusual PL muscle was discovered in both right and left upper extremities. The dissection was performed by physical therapy students at UNTHSC.
Results: The PL muscle originated at the medial epicondyle of the humerus and split into two connected tendon bundles at the upper one-fourth of the anterior forearm. The tendon bundles then passed down into the lower one-third of the anterior forearm and separated completely, forming a proper PL tendon and a variant muscle mass –the belly of the ADMA muscle. The PL tendon passed through, as normally seen, to fuse with the palmar aponeurosis, while the ADMA continued distally and medially, passing underneath the palmaris brevis muscle but immediately anterior to Guyon's canal. The ADMA joined, but did not fuse with, the intrinsic abductor digiti minimi muscle, to insert into the medial base of the proximal phalanx of the little finger.
Conclusions: This case presents a novel bilateral appearance of the ADMA originating from the PL. This is relevant to surgeons who perform operations on or using the PL tendon, and to clinicians diagnosing and treating afflictions of the distal forearm, especially with regard to issues concerning Guyon's canal.
Sponsor
IRB/IACUC# Not Appliciable

403 Poster **Classification:** TCOM DO Student
Presenter: Rita Golikeri **Department:** Obstetrics and Gynecology
Authors: Marianne Ebrahim, MD, John Peter Smith Hospital; Rita Golikeri, University of North Texas Health Science Center at Fort Worth; Kollier Hinkle, MD, University of North Texas Health Science Center at Fort Worth; Hayley Marshall, University of North Texas Health Science Center at Fort Worth; Bimal Patel, DO, John Peter Smith Hospital
CERVICAL PREGNANCY: A LIFE-THREATENING GESTATION

Purpose: The purpose of this case report is to share our experience with a less common but possibly fertility-sparing therapy. Our case is of a 35 year-old G3P2 woman with a CEP who presented with profuse vaginal bleeding. Since the patient desired future fertility, she was treated with an ultrasound-guided UAE instead of a hysterectomy, followed by use of methotrexate (MTX) and leucovorin.
Methods: The patient's chart was reviewed to gather information regarding her history and hospital management course. This 35 year-old G3P2 female presented with a two week history of active vaginal bleeding, symptomatic anemia, and a positive home pregnancy test. Transvaginal ultrasound (TVUS) revealed an 8-week pregnancy within the endocervical canal, consistent with a CEP. Definitive treatment for a CEP is hysterectomy, but as the patient desired future fertility, a less invasive option of UAE followed by MTX and leucovorin was chosen. She received three doses of MTX and leucovorin, and her serum b-hCG was followed to zero.
Results: The patient underwent successful UAE. CEP was not seen on TVUS five days after treatment began. She showed appropriate decreases in serum b-hCG and transitioned to outpatient care. With successful non-invasive elimination of the CEP, this patient avoided a potentially fatal hemorrhage and possibly retained fertility. The patient was still awaiting spontaneous menses one month after the procedure. While a definitive cause is unknown, as in our patient, several theories exist for its cause. Risk factors include cervico-uterine instrumentation, in vitro fertilization, and history of pelvic inflammatory disease. Historically, treatment of CEP was with hysterectomy, but other approaches have been used recently in order to avoid infertility and surgical morbidity.
Conclusions: It is important to recognize the diagnosis of CEP, as it can be mistaken for other conditions, such as a missed abortion proximal to the cervix. The use of UAE is an emerging trend in the management of CEP due to its high success rate and preservation of future fertility. Literature on the subject is limited to observational studies and anecdotal evidence. Complications of UAE include permanent amenorrhea, claudication and other issues if another artery is embolized. Reporting of this and similar cases may contribute to improved methods of managing CEP.
Sponsor
IRB/IACUC# 2014-018

404 Poster **Classification:** TCOM DO Student
Presenter: Lida Shaygan, MS **Department:** Pediatrics
Authors: Lida Shaygan, MS, University of North Texas Health Science Center at Fort Worth; Paul Bowman, MD, University of North Texas Health Science Center at Fort Worth; Ching Wang, MD, Driscoll Children's Hospital

DIAGNOSING MULTIPLE SCLEROSIS IN A 9 YEAR OLD BOY – CASE STUDY

Purpose: This case study aims to highlight the clinical features and imaging results of multiple sclerosis seen in a 9 year old boy and to distinguish these from ADEM, which presents with similar clinical features and is usually first diagnosed in pediatric patients.
Methods: Information and records were obtained on a 9 year old boy diagnosed with MS who presented initially with a history of relapsing and remitting episodes of somnolence, hemiparesis, blurred vision and dizziness at Driscoll Children's Hospital in Corpus Christi.
Results: Clinical features and MRI data after 3 months confirmed diagnosis of MS, and he was placed on the long-term immuno- modulatory therapy, Copaxon.
Conclusions: Children, especially those with ADEM, should be monitored closely for other transient neurological symptoms, such as blurry vision or episodes of dizziness that resolve on their own. These symptoms commonly present in kids who may develop multiple sclerosis.
Sponsor N/A
IRB/IACUC#

405 Poster **Classification:** Resident (Not for Competition)
Presenter: Adityanant Jain, DO, MS **Department:** Internal Medicine
Authors: Adityanant Jain, DO, MS, Corpus Christi Medical Center Bay Area; Humberto Bruschetta, MD, Corpus Christi Medical Center Bay Area

GENETIC POLYMORPHISMS AFFECTING CLOPIDOGREL METABOLISM

Purpose: To demonstrate a case of severe cardiovascular complications in a young and otherwise healthy patient with no high risk behaviours likely due to a genetic polymorphism affecting his ability to activate clopidogrel.
Methods: Labs were drawn in the office and performed by Quest Lab and results were discussed with the patient who participated in decision making regarding his subsequent medication selection.
Results: HR = "High Risk" LR = "Low Risk" MR = "Medium Risk" LPA Aspirin Genotype Ile/Ile (non-carrier) KIF6 Genotype Arg/Arg (High Risk-CV disease) 9p21 rs10757278 ag 9p21 rs1333049 gc ApoE Genotype E2/E3 (Apo E2 carrier) LPA Intron 25 Genotype tt (non-carrier) CYP2C19 *2/*2 (poor metabolizer) 4q25 AF Risk Genotype rs2200733 tt (High Risk carrier - Afib & CVA) rs10033464 gg (non-carrier) HS-CRP 0.5 LP PLA2 181(LR) Fibrinogen Antigen 267 ≤ 350 (LR) Vitamin D, 25-OH, Total 18 ≥ 30 (HR) Vitamin D, 25-OH, D3 18 Vitamin D, 25-OH, D2 <4 Homocystine 16.1 Apolipoprotein A1 166 >176 (MR) Apolipoprotein B 62(MR) Apolipoprotein B/A1 0.37 Lipoprotein (a) 46(LR) Lipoprotein Subfractionation LDL Phenotype A (LR) LDL, Particle Size 225.6 (LR) >255.5 LDL Particles, Tot 1234 (LR) <1260 LDL, Very Small 304 (LR) <398 LDL, Med & Small 397 (MR) <369 HDL, Small 28160 (LR) >28133 HDL, Large 8028 (MR) >9386 IDL, Small 223 (HR) >315 IDL, Large 179 (LR) <198 VLDL, Small 72 (LR) 124 VLDL, Medium 46 (LR) <61 VLDL, Large 13 (LR) <17
Conclusions: Our patient had multiple risk factors for underlying cardiovascular disease – including his KIF6 Arg/Arg genotype and strong family history. Although his CYP2C19*2/CYP2C19*2 genotype was not responsible for his underlying disease; significant evidence exists demonstrating that loss of function mutation being associated with adverse cardiovascular outcomes while on clopidogrel. Currently gene testing is not currently standard of care. Previous studies have not categorically shown cost-effectiveness of gene testing, however genetic testing technology is becoming increasingly affordable. Cost-effective gene testing and the availability of alternatives to clopidogrel suggests that identification of patients with loss of function mutations is in the best interest of patient care. If a patient has a thrombotic event on clopidogrel, it is appropriate to either determine CYP2C19 genotype or empirically initiate alternative antiplatelet therapy.
Sponsor N/A
IRB/IACUC# N/A - Case Report

406 Poster **Classification:** TCOM DO Student
Presenter: Sara Bodenhamer **Department:** Orthopaedic Surgery
Authors: Sara Bodenhamer, University of North Texas Health Science Center at Fort Worth; James Kelley IV, University of North Texas Health Science Center at Fort Worth; Daniel Clearfield, DO, MS, University of North Texas Health Science Center at Fort Worth

NON-OPERATIVE MANAGEMENT FOR A NON-UNION CUBOID FRACTURE

Purpose: In this report, we assess electrical bone stimulation in the management of a non-union cuboid avulsion fracture in place of surgical intervention in a 30-year-old female.
Methods: We reviewed the patient's medical record and imaging to provide a summary of the case presentation and X-ray findings. Review of the literature was also conducted to research the use of electrical bone stimulation in non-union fractures.
Results: The patient was diagnosed with a closed, slightly displaced avulsion fracture of the right cuboid and was managed conservatively. Initial conservative management failed, however after two months of continued electrical bone stimulation and immobilization, bony union with osseous bridging was apparent on imaging. The patient was able to avoid surgery and began a rehabilitation program. She has since made a full recovery.
Conclusions: Electrical bone stimulators can serve to enhance healing conservatively, and in cases that are recalcitrant to other modes of conservative therapy. Bone stimulation also provides a less invasive, less costly option leading to decreased morbidity. The use of bone stimulation in non-healing fractures may enhance and expedite the healing process. Conduction of larger studies and on various bones is necessary to assess the efficacy of this treatment and to fully utilize this management option in the future.
Sponsor N/A
IRB/IACUC# 2014-013

407 Poster **Classification:** Faculty (Not for Competition)
Presenter: Mike Richardson **Department:** Physical Therapy Program
Authors: Mike Richardson, University of North Texas Health Science Center; Amy Nordon-Craft, University of Colorado at Denver and Health Sciences Center; LeeAnne Carrothers, University of Alaska, Anchorage

POSTURAL ORTHOSTATIC TACHYCARDIA SYNDROME (POTS): SYMPTOMS, SCREENING, AND USING AN EXERCISE PROGRAM TO IMPROVE ACTIVITY TOLERANCE IN A YOUNGER FEMALE

Purpose: Postural Orthostatic Tachycardia Syndrome (POTS) is most prevalent in younger females and shares common symptoms with orthostatic hypotension (OH). Whereas the screening criteria for OH are well known in the physical therapy community, the symptoms and screening for POTS are not. The purposes of this case report were to:
1. describe the symptoms and current POTS screening guidelines,
2. address the role of the physical therapist in prescribing an effective exercise program.
Methods: A 34-year-old female completed a 4-week course of physical therapy consisting of aerobic and strengthening exercise with an 8-week follow up after an exacerbation of POTS. Initial presenting symptoms included: dyspnea with mild exertion, light-headedness, fatigue, "heaviness" in her legs, and the inability to perform normal work duties.
Results: The patient's estimated VO_2 max on the 1 mile timed walk test (1 MWT) improved from the 60th percentile at baseline to the 90th percentile at 8 weeks post discharge follow-up. In addition, the patient was able to return to work full time and resume all previous fitness activities.
Conclusions: The patient demonstrated clinically meaningful improvements in estimated VO_2 after the 'reconditioning' training. Physical therapists must be able to recognize the symptoms of and screen for POTS as part of a differential diagnosing process. Further research is needed with clinical trials to investigate the efficacy of other similar treatment strategies for POTS management.
Sponsor N/A
IRB/IACUC# 2014-009

408 Poster **Classification:** TCOM DO Student
Presenter: Arash Bahrami **Department:** Texas College of Osteopathic Medicine
Authors: Arash Bahrami, University of North Texas Health Science Center at Fort Worth; Eric Ho, University of North Texas Health Science Center at Fort Worth; Ryan Cheung, University of North Texas Health Science Center at Fort Worth; Ronald Buczek, University of North Texas Health Science Center at Fort Worth; Peggy Smith-Barbaro, University of North Texas Health Science Center at Fort Worth

REMOVAL OF A MESOAPPENDIX DURING A ROUTINE APPENDECTOMY IN A CASE OF APPENDICITIS

Purpose: The purpose of this case report was to discuss the importance of pseudoduplication and duplication of the appendix while performing an appendectomy.
Methods: The patient was a 58-year-old Caucasian male, with an unremarkable past medical and surgical history, who presented to the emergency department with an abrupt onset of fever and chills in the morning and mild burning periumbilical abdominal pain, which was temporarily relieved by an antacid tablet. Physical examination was within normal limits, and the patient was admitted to the hospital and placed on Vancomycin and Zosyn. Overnight, the patient developed right lower quadrant abdominal pain. Blood work confirmed an elevated WBC count and CT scan showed findings that were consistent with acute appendicitis. After consents were signed, the patient was taken to the operating room the following morning for a laparoscopic appendectomy.
Results: The patient underwent an unsuccessful laparoscopic surgery since the base of the appendix could not be visualized. As a result, the procedure was converted to an open appendectomy; the appendix was resected and the sample was sent to pathology. Following the surgery, the patient was placed on Zosyn and Flagyl for 24 hours. The patient was progressing well until he developed a fever of 102° F, at which time the pathology report came back and revealed the removed tissue sample was an "abundant acute inflammation involving serosal surface of adipose tissue and sheet like portion of mesoappendix covered with fibromembranous tissue." The patient consented to a re-exploration of his abdomen, and the surgeons took the patient back to the operating room, where they identified the inflamed appendix and the appendiceal artery. The specimen was removed and was confirmed by pathology as the appendix. The patient had an uneventful post-operative course with a full recovery and was subsequently discharged home.
Conclusions: Surgeons need to be aware of pseudoduplication and the duplication of the appendix while performing an appendectomy. Although rare, it can become an unexpected complication and increase the morbidity and mortality in the patients. Therefore, it is recommended for physicians to perform a thorough assessment of the patient's anatomy during the surgical procedure to reduce and eliminate future complications from duplicate or even triplicate appendices.
Sponsor
IRB/IACUC# 2014-021

409 Poster **Classification:** TCOM DO Student
Presenter: Matthew Douglass **Department:** Pediatrics
Authors: Matthew Douglass, University of North Texas Health Science Center at Fort Worth; Don Wilson, MD, Cook Children's Medical Center; Casey Fiocchi, RD, Cook Children's Medical Center; John Dallas Cook Children's Medical Center, MD; Jill Radack, MD, Cook Children's Medical Center

SEVERE HYPONATREMIA IN AN INFANT WITH PSEUDOHYPOALDOSTERONISM

Purpose: The purpose of this project is to present an interesting case of severe hyponatremia in an infant with pseudohypoaldosteronism and present information about the disease Pseudohypoaldosteronism including: definition, characteristics, etiology, presentation, management, and prognosis.
Methods: Materials consist of a single patient's records and methods consist of review of those records and a thorough review of published literature on Pseudohypoaldosteronism as available on Pubmed.
Results: The patient was found to have a previously unidentified mutation in the genes known to be associated with autosomal dominant form of Pseudohypoaldosteronism and has required supplemental sodium of 11 mEq/kg/day in addition to a low potassium diet and potassium binding agents to make up for renal losses of sodium and hyperkalemia due to his disease.
Conclusions: This patient has a novel gene mutation causing his disease and has required treatment of persistent electrolyte abnormalities by sodium supplements and potassium binding agents.
Sponsor n/a
IRB/IACUC# 2014-014

410 Poster **Classification:** TCOM DO Student
Presenter: Ashley Windham **Department:** Clinical Lab/Pathology
Authors: Ashley Windham, University of North Texas Health Science Center at Fort Worth; Troy Dawley, University of North Texas Health Science Center at Fort Worth; Tom Chow, University of North Texas Health Science Center at Fort Worth

WHERE LESIONS COLLIDE: THE SELLA TURCICA

Purpose: Collision tumors are neoplasms involving two types of histology in one mass. Collision tumors of the sella turcica are a rare species of brain tumors and the information is sparse. Most commonly, the tumors are comprised of more than one type of adenoma. There has been no published case of a collision tumor involving a neuroendocrine and adenomatous histology, which we present a case here. The purpose of this case report was to review the differential diagnosis of sellar and parasellar masses. Also, we aimed to hypothesize about the etiology of collision tumors in the sella and present this unique case of a collision tumor.
Methods: A case report of one pituitary microadenoma of a 72 year old Caucasian female who presented with eye pain and headaches. The tumor was removed transsphenoidally and histopathologically categorized.
Results: The tumor was histologically diagnosed as a collision tumor involving a neuroendocrine tumor with a pituitary adenomatous component. Immunohistochemistry revealed a strongly positive synaptophysin stain with a weakly positive Ki-67 in the spindle cell regions. Adrenocorticotropic hormone, prolactin, growth hormone, luteinizing hormone, follicle-stimulating hormone, glial fibrillary acidic protein, CAM 5.2 and p53 stains were are grossly negative.
Conclusions: Collision tumors are a rare phenomenon involving the sella turcica. A review of literature reveals very few collision tumors as well as no publication with a neuroendocrine tumor colliding with a pituitary adenoma. This case adds to the already extensive differential diagnosis for sella turcica masses.
Sponsor
IRB/IACUC# 2013-134

501 Poster **Classification:** GSBS Student
Presenter: Sayantan Maji **Department:** Molecular & Medical Genetics
Authors: Sayantan Maji, University of North Texas Health Science Center at Fort Worth; Jamboor Vishwanatha, University of North Texas Health Science Center at Fort Worth; Mallika Valapala, Johns Hopkins University School of Medicine

CELL SURFACE TRANSLOCATION OF ANNEXIN A2 FACILITATES GLUTAMATE-INDUCED EXTRACELLULAR PROTEOLYSIS

Purpose: Glutamate-induced intracellular increase in Ca^{2+} levels leads to the hyper-activation of several normal Ca^{2+}-mediated physiological processes including the activation of intracellular kinases, phosphatases, phospholipases and proteases which contribute to the degeneration of the retinal neurons as seen in many diseases including age-related macular degeneration (AMD) and retinitis pigmentosa (RP). Despite intensive research, the mechanisms that contribute to glutamate-induced cellular loss are yet to be elucidated. AnxA2, a Ca^{2+}-dependent phospholipid binding protein serves as an extracellular proteolytic center by recruiting tissue plasminogen activator and plasminogen, and mediating localized generation of plasmin. We investigated whether AnxA2 plays a major role in glutamate induced neuronal excitotoxicity in a cone-photoreceptor cell line, 661W. Understanding the molecular mechanisms of glutamate-induced retinal degeneration can lead to the development of better therapeutic approaches for neurodegenerative diseases including AMD and RP. Our study provides new insights into one of the mechanisms that might contribute to glutamate-induced loss of photoreceptors in the retina.
Methods: Ratiometric Ca^{2+} imaging and time lapse confocal microscopy were used to study glutamate-induced Ca^{2+} influx. EDTA eluates of 661W cells were immunoblotted to study the membrane translocation of endogenous as well as AnxA2-GFP in the presence or absence of different treatments. To determine whether glutamate induced membrane translocation of AnxA2 is dependent on the phosphorylation of the 23rd tyrosine residue or not, phosphomimetic and non-phosphomimetic variants were studied.
Results: Glutamate translocated both endogenous and AnxA2-GFP to the cell surface in a process dependent on the activity of the NMDA receptor. Glutamate-induced translocation of AnxA2 is dependent on the phosphorylation of tyrosine 23 at the N-terminus and mutation of tyrosine 23 to a non-phosphomimetic variant inhibits the translocation process. The cell surface translocated AnxA2 forms an active plasmin-generating complex and this activity can be neutralized by a hexapeptide directed against the N-terminus.
Conclusions: These results suggest an involvement of AnxA2 in potentiating glutamate-induced cell death processes. Thereby, targeting AnxA2 can be used as an adjunctive therapy in neurodegenerative diseases like AMD and RP.
Sponsor N/A
IRB/IACUC#

502 Oral **Classification:** GSBS Student
Presenter: Irma E. Cisneros **Department:** Cell Biology and Immunology
Authors: Irma E. Cisneros, University of North Texas Health Science Center at Fort Worth; Anuja Ghorpade, PhD, University of North Texas Health Science Center at Fort Worth

METHAMPHETAMINE (METH) REGULATES ASTROCYTE EXCITATORY AMINO ACID TRANSPORTER-2 (EAAT-2) VIA ACTIVATION OF TRACE AMINE ASSOCIATED RECEPTOR (TAAR1) AND DOWNSTREAM CAMP SIGNALING

Purpose: Glutamate is an excitatory neurotransmitter that is highly regulated in the central nervous system (CNS). High concentrations of extracellular glutamate result in excitotoxicity and can exacerbate neurodegenerative disorders, including human immunodeficiency virus-1 (HIV-1)-associated neurocognitive disorders (HAND). Additionally, drugs of abuse such as methamphetamine (METH) can increase the severity of excitotoxicity and can accelerate HAND. Excitatory amino acid transporter-2 (EAAT-2) is responsible for approximately 90% of extracellular glutamate uptake from the synapse and is primarily localized in astrocytes. Dysregulation of EAAT-2 leads to astrocytes decreased ability to clear glutamate.
Methods: It is established that METH leads to excitotoxicity in neurons, however, in astrocytes the molecular mechanisms resulting in METH-mediated EAAT-2 dysregulation are unclear. Previously we showed that HIV-1_{ADA}, METH and transient hyperthermia regulates localization and expression of astrocyte trace amine associated receptor 1 (TAAR1).
Results: Our data shows METH-induced activation of astrocyte TAAR1 increases intracellular cAMP levels in astrocytes that is significantly decreased in siTAAR1-transfected astrocytes. Further, METH treatment downregulates EAAT-2 mRNA levels. We propose downstream cAMP signaling pathways of METH-induced astrocyte TAAR1 activation result in EAAT-2 dysregulation.
Conclusions: The results of this study will uncover novel molecular mechanism of METH-induced astrocyte TAAR1 activation and the downstream effects of cAMP signaling on astrocyte EAAT-2 levels in the context of HAND.
Sponsor RO1DA025566
IRB/IACUC# 2007-121

503 Poster **Classification:** Dual Degree student

Presenter: Victor Lin **Department:** Cell Biology and Immunology

Authors: Victor Lin, University of North Texas Health Science Center at Fort Worth; Dan Dimitrijevich, University of North Texas Health Science Center and UHV Technologies, Inc.; UHV Technologies, Inc.; Anthony Di Pasqua, University of North Texas Health Science Center

X-RAY FLUORESCENCE FOR TRACKING CELL DIFFERENTIATION

Purpose: To analyze using XRF several breast cancer cell lines as a model for changes in cell phenotype and function. To validate these ECSs and begin to compile a database will facilitate non-destructive tracking of stem cell differentiation in vitro and their applications to regenerative medicine.

Methods: XRF spectroscopy (Bruker, PicoFox) was used to analyze multiple breast cancer cell lines (e.g. MCF10A, T47D, and MCF7) cultured on special discs to determine their ECSs. The ECSs of cell line cells were validated using Inductively Coupled Plasma Mass Spectrometry (ICP-MS).

Results: After normalization to phosphorous (P) as a control for all 3 cell lines, MCF7 exhibited increased S, K, and Zn levels, while T47D exhibited increased Ca, Fe, Cl and Cu levels. The changes in the T47D cell line, for example, suggest appropriate correlation to the cancer cell's metabolic and functional properties: (i) higher Ca levels seen in micro-calcification, (ii) higher Fe levels likely due to elevated mitochondrial activity, (iii) higher Cl levels due to increased ion transport and (iv) higher Cu levels related to increased proliferation, possible interaction with Cu-superoxide dismutase, and involvement in growth factor signaling.

Conclusions: Thus, preliminary testing shows the power of XRF technology to distinguish different cell phenotypes. This provides support for our hypothesis that XRF measurements of ECSs can distinguish cell phenotypes and will be useful tool for future characterization of adult stem cells and their differentiation progeny.

Sponsor n/a

IRB/IACUC#

Community Medicine (Abstracts in the 600s)

600 Poster **Classification:** Staff (Not For Competition)
Presenter: Ebunoluwa Akinbola **Department:** Integrative Physiology & Anatomy
Authors: Ebunoluwa Akinbola, University of North Texas Health Science Center at Fort Worth; Ryan Allen, University of North Texas Health Science Center at Fort Worth; Xiangrong Shi, University of North Texas Health Science Center at Fort Worth

ASSOCIATION OF NEIGHBORHOOD ENVIRONMENT WITH CHILDREN'S LIFESTYLE BEHAVIORS -- THE EFFECT ON HEALTH

Purpose: The purpose of this study was to investigate neighborhood factors on children's physical activity and dietary habits and to test the hypothesis that lifestyle behaviors would be more critical than neighborhood environment in determining children's health status
Methods: We analyzed 2,930 school children whose parents participated in Community-wide Children's Health Assessment & Planning Survey in 6 north-Texas counties. Neighborhood factors focused on "are there grocery stores in your neighborhood that have fresh fruit and vegetables" and "are there safe parks/outdoor areas for the child to play in your neighborhood". Body mass index percentile (BMI-PCT) was determined to categorize normal weight (BMI-PCTthis child typically eats healthy meals". The chi-square test was applied, and the logistic regression model was used to predict children's health status and BMI-PCT.
Results: If there were no "grocery-stores" in the neighborhood, the proportions of children who took unhealthy meals increased from 19.8% to 29.3% (P =0.042) and who were overweight-obese increased from 30.4% to 44.0% (P =0.017). If there were no " safe parks/outdoor areas " in the neighborhood, physically active children decreased from 77.0% to 69.9% (Pgrocery-stores"(P =0.020) and healthy dietary choice (P =0.032). Their health status was associated with healthy dietary choices (P <0.0001), PA levels (P <0.0001), and "safe parks/outdoor areas" (P <0.0001) and negatively correlated with BMI-PCT (P =0.007).
Conclusions: Neighborhood factors significantly influence children's PA levels, dietary choices, overweight-obese rate and health status. However, healthy lifestyles are more important than environmental factors for children's health status. Physical activity is the number 1 determinant for children's weight problem.
Sponsor TCOM Summer Research Fund
IRB/IACUC#

601 Poster **Classification:** TCOM DO Student
Presenter: Julie Leber **Department:** Texas Prevention Institute
Authors: Julie Leber, University of North Texas Health Science Center at Fort Worth; Mark DeHaven, PhD, University of North Texas Health Science Center at Fort Worth

HIV AND NUTRITION IN A COMMUNITY SETTING

Purpose: A balanced diet and good nutrition help maintain a strong immune system for resisting disease and contribute to improved quality of life. Weight loss, wasting, and malnutrition are common problems which can contribute to HIV disease progression. With recent advances in effective antiretroviral medications, good nutrition can help those infected with HIV to better process their many medications. Diet (and exercise) may help control other symptoms such as diarrhea, nausea, and fatigue, and other metabolic abnormalities such as high blood sugar, cholesterol, and triglycerides. The purpose of this project was to assess the behaviors, knowledge, and attitudes related to modifiable lifestyle factors for improving health outcomes among residents of an HIV/AIDS living facility in Fort Worth (Samaritan House). This study will provide the baseline for understanding the potential value in making future nutritional interventions within the living facility.
Methods: The Samaritan House in Fort Worth is dedicated to creating a supportive community providing housing and resources for positive change in the lives of persons living with HIV/AIDS and other special needs. A conglomerate of validated questionnaires was administered to Samaritan House residents in order to assess their knowledge, attitudes, and behaviors with regards to nutrition, physical activity, depression, and smoking.
Results: Results showed that residents intake patterns did not meet the dietary recommendations with regards to fat, fruits, vegetables, and fiber, and that the majority of residents worry considerably about their health but do not change their eating habits because of it. The majority of residents answered that motivations for healthy behavior were driven by internal rather than external factors. 64% screened positive for depression. 54% were active smokers, but 41% had tried to quit in the past year. With regards to physical activity, 33% of residents had a high level, 33% had a medium level, and 33% had a low level.
Conclusions: Nutritional and lifestyle renovation are a potential source of improvement at Samaritan House. This results of this study will be used to provide a foundation by which later studies can be conducted that examine the effects of dietary interventions (through education and influence of the charitable donations providing food) on the holistic health of this population, which will serve to improve the quality of life and prevention of disease.
Sponsor CAMSTRR, TPI
IRB/IACUC# 2013-143

602 Poster **Classification:** TCOM DO Student

Presenter: Elizabeth S. Balyakina **Department:** Texas College of Osteopathic Medicine

Authors: Kimberly Fulda, University of North Texas Health Science Center at Fort Worth; Anita Kurian, Tarrant County Public Health; Elizabeth Balyakina, University of North Texas Health Science Center at Fort Worth; Micky Moerbe, Tarrant County Public Health

PATERNAL RACE/ETHNICITY AND VERY LOW BIRTH WEIGHT AMONG WOMEN IN TARRANT COUNTY, TX 2006-2010

Purpose: The purpose was to examine the association between paternal race/ethnicity and VLBW stratified by maternal race/ethnicity.
Methods: Birth data for Tarrant County, Texas 2006-2010 were analyzed. VLBW was dichotomized as yes (<1,500g) and no (≥1,500g). Paternal race/ethnicity was categorized as white, African American (AA), Hispanic, other, and missing. Missing observations (14.7%) were included and served as a proxy for fathers absent during pregnancy. Potential confounders included maternal age, education, and marital status, plurality, previous preterm birth, sexually transmitted disease during pregnancy, smoking during pregnancy, and Kotelchuck Index of prenatal care. Logistic regressions were stratified by maternal race/ethnicity. Odds ratios and 95% confidence intervals were calculated.
Results: Of 145,054 births, 60,156 (41.5%) were white, 22,306 (15.4%) AA, 54,553 (37.6%) Hispanic, and 8,039 (5.5%) other mothers. There were 2,154 (1.5%) VLBWs total, with 3.1% for AA mothers and 1.2% for all other race/ethnicities. Among white mothers, AA paternal race was associated with increased odds of VLBW (OR=1.52; 95% CI:1.08-2.14). Among Hispanic mothers, AA paternal race (OR=1.66; 95% CI:1.01-2.74) and missing paternal race/ethnicity (OR=1.65; 95% CI:1.15-2.36) were associated with increased odds of VLBW.
Conclusions: Paternal race/ethnicity is an important predictor of VLBW among white and Hispanic mothers. Future research should consider paternal race/ethnicity and further explore the association between paternal characteristics and VLBW.

Sponsor N/A
IRB/IACUC# 2012-112

603 Poster **Classification:** TCOM DO Student

Presenter: Spencer Septien **Department:** Community Medicine

Authors: Spencer Septien, University of North Texas Health Science Center at Fort Worth; Jonathan David, University of North Texas Health Science Center at Fort Worth; Lauren Kjolhede, University of North Texas Health Science Center at Fort Worth; Meagan Sims University of North Texas Health Science Center at Fort Worth

TARRANT COUNTY RESOURCES FOR PATIENTS WITH ALZHEIMER'S DISEASE

Purpose: The purpose of this investigation was to identify comprehensive community resources available in the Tarrant County area for people diagnosed with Alzheimer's disease (AD). AD is a debilitating illness that requires lifelong care and support. There is currently no cure for AD making community resources an invaluable asset to any person afflicted with the disease. Our goal was to educate the community on the basics of AD and to identify local resources which could help patients and their families cope with the effects and burdens of AD.
Methods: Our group conducted research using http://www.tarrantcounty211.org/ to locate organizations within Tarrant County that offer a variety of comprehensive resources for individuals with AD. We analyzed the services provided by the Alzheimer's Association- North Texas Chapter, Memories in the Making, James L. West Alzheimer's Center, and the Texas Alzheimer's Research and Care Consortium.
Results: The Alzheimer's Association- North Texas Chapter should be the primary resource for local residents afflicted with AD. The organization offers support, education, and programs such as TrialMatch and professional training. TrialMatch is a free program designed to locate clinical trials for people suffering from AD using one's unique diagnosis and symptoms. Professional training for medical personnel helps educate caretakers on the proper way to care for this unique subset of the population. Memories in the Making is an organization that offers a therapeutic outlet for AD patients by allowing individuals to express themselves through art and exercises that stimulate creativity. The James L. West Alzheimer's Center is a comprehensive care center offering activities, education, and specialized care for any stage of the disease. The Texas Alzheimer's Research and Care Consortium is a large statewide research project that strives to better understand the disease by examining the potential role of genetic factors and phenotypic characteristics of subjects in the epidemiology and pathology of AD.
Conclusions: Tarrant County has a variety of services available to patients and families coping with Alzheimer's disease and its effects. These services are aimed at education, support, and research with the ultimate goal of decreasing the morbidity and mortality of those individuals suffering with Alzheimer's disease.

Sponsor
IRB/IACUC#

Diabetes (Abstracts in the 700s)

700 Poster **Classification:** TCOM DO Student
Presenter: Ashley Nelson **Department:** Pediatrics
Authors: Don Wilson, MD, Cook Children's Medical Center; Ashley Nelson, University of North Texas Health Science Center at Fort Worth; W. Bowman, MD, University of North Texas Health Science Center at Fort Worth

A PROCESS IMPROVEMENT TOOL TO ENHANCE AND MONITOR THE TREATMENT OF CHILDREN AND ADOLESCENTS WITH DIABETIC KETOACIDOSIS (DKA)

Purpose: The purpose of this research is to conduct a proof of concept study to determine the ability of a novel process improvement tool to enhance the treatment of children < 18 years of age with diabetic ketoacidosis (DKA).
Methods: A process improvement tool was developed using an Excel platform. A retrospective study of fifteen patients admitted to the pediatric intensive care unit (PICU) at Cook Children's Medical Center for the treatment of DKA was used to evaluate the functionality of the process improvement tool.
Results: The process improvement tool enables visual assessment of treatment trends and outcomes along with immediate feedback on the treatment course upon discharge from the PICU.
Conclusions: A process improvement tool with visual monitoring and tracking of treatment trends is desirable in the treatment if DKA.
Sponsor N/A
IRB/IACUC#

701 Poster **Classification:** TCOM DO Student
Presenter: Sameer Prakash **Department:** Texas College of Osteopathic Medicine
Authors: Sameer Prakash, University of North Texas Health Science Center at Fort Worth; Van Leung-Pineda, PhD, Cook's Children's Medical Center; Sumihiro Suzuki, University of North Texas Health Science Center at Fort Worth; Jill Radack, Cook's Children's Medical Center, MD; John Dallas, MD, Cook's Children's Medical Center; Paul Thornton, MD, Cook's Children's Medical Center; Don Wilson, MD, Cook's Children's Medical Center

CLASSIFICATION OF CHILDREN WITH NEWLY DIAGNOSED DIABETES MELLITUS

Purpose: Historically the diagnosis of Type 2 Diabetes Mellitus (T2DM) has relied on a well described clinical phenotype. The reliability of this clinical phenotype in classifying children with diabetes is, however, not clear. The ability of experienced clinicians to correctly classify the type of diabetes based upon the clinical phenotype has recently been challenged. According to the American Diabetes Association, the diagnosis of T2DM requires a fasting plasma glucose of 126 mg/dL or higher, a 2-hour glucose level of 200 mg/dl or higher during a 75-g oral glucose tolerance test, or a random plasma glucose of 200 mg/dL or higher in a patient with classic symptoms of hyperglycemia or hyperglycemia crisis. In addition, those with T2DM should demonstrate the absence of diabetes auto-antibodies. Since the appropriate classification of a child's diabetes has important implications with regard to treatment options, expected outcomes and genetic counseling, a systematic, cost-effective algorithm to assist in the initial classification of diabetes mellitus is needed
Methods: We propose a retrospective analysis of diabetes related autoantibody tests (GAD, IA-2, Tg, Gliadin Peptide IGA, Gliadin Peptide IGG) in children (< 18 yrs of age) seen for evaluation of newly diagnosed diabetes mellitus in the Pediatric Endocrine Clinic hospitalized at Cook Children's Medical Center for Jan 2010-June 2012.Following IRB approval, children and adolescents
Results: Following IRB approval, we conducted a retrospective chart review of 348 children(178 males; 170 females) hospitalized at Cook's Children's Medical Center from Jan 2010 – Jun 2012 with new onset diabetes mellitus to determine the frequency of antibody positive vs. antibody negative diabetes mellitus. In addition the frequency and test results for other diabetes-associated conditions (i.e. thyroid and celiac disease) were summarized. As expected the majority of patients were positive for one or more diabetes related antibodies. A much smaller number of patients were also tested for diabetes-associated conditions.
Conclusions: We conclude that the majority of children < 18 years of age with new onset diabetes are positive for diabetes antibodies at the time of presentation. Those that are antibody negative need further evaluation to 1) determine whether these patients may have T2DM, a genetic form of DM (i.e. MODY) or some other form of diabetes and 2) to provide appropriate therapeutic and genetic counseling. Given the complexity of diagnosing diabetes mellitus and the rising cost of healthcare, a systematic algorithm may be useful in providing a cost-effective means of classifying children with new onset diabetes mellitus
Sponsor N/A
IRB/IACUC# N/A

702 Poster **Classification:** Faculty (Not for Competition)
Presenter: Shane I Fernando, PhD, MS **Department:** Pediatrics
Authors: Shane Fernando, PhD, MS, Department of Pediatrics; Kimberly Fulda, DrPH, University of North Texas Health Science Center at Fort Worth; Susan Franks, University of North Texas Health Science Center; W Bowman, MD University of North Texas Health Science Center; Deep Shah, MD, University of North Texas Health Science Center; Randi Proffitt-Leyva, University of North Texas Health Science Center; Binky Bawa MPH, University of North Texas Health Science Center; Nusrath Habiba MD, University of North Texas Health Science Center

COMPARISON OF BODY MASS INDEX PERCENTILE AND PERCENT BODY FAT ON RISK FACTORS FOR TYPE 2 DIABETES MELLITUS IN CHILDREN AGED 10-14

Purpose: The growing rate of type 2 diabetes mellitus (T2DM) in children presents a critical public health problem for the future. However, assessment of T2DM risk among children can be challenging. Therefore, to improve assessment of risk, we examined the association between BMIP (body mass index percentile, a traditional indicator) with risk, compared to the association of percent body fat (PBF) with risk.
Methods: Data were obtained from 290 10-14 year olds in North Central Texas participating in a study examining risk for T2DM. During study visits, subjects' BMI percentile and percent body fat were obtained using a Tanita body composition device. Associations were then assessed using logistic regression models against four of the five critical risk factors for T2DM: Average blood pressure (BP) above 95th percentile or History of high BP, family history of type 2 diabetes mellitus, positive sign of Acanthosis nigricans and a high blood sugar test.
Results: Among 290 subjects, 78.2% were of Hispanic origin, with approximately 13.4% being Black. Approximately 51% of subjects were female, while age distribution was evenly spread across 10-14. Logistic regression models found that both PBF and BMIP were significantly associated with Acanthosis nigricans (PBF: Sβ 0.584 vs. BMIP: Sβ 0.489), average systolic BP above 95th> percentile (PBF: Sβ 0.219 vs. BMIP: Sβ 0.124), family history of T2DM (PBF: Sβ 0.189 vs. BMIP: Sβ 0.172), and high blood sugar test (PBF: Sβ 0.152 vs. BMIP: Sβ 0.119).
Conclusions: The data from this study provides evidence that PBF may be a better measurement of T2DM risk among children compared to BMIP. It may be beneficial for pediatric and family physicians to measure PBF alongside BMIP to better ascertain a particular pediatric patient's risk of T2DM.

Sponsor N/A
IRB/IACUC# 2011-136

703 Poster **Classification:** TCOM DO Student
Presenter: Francis Behan **Department:** Physical Therapy
Authors: Francis Behan, University of North Texas Health Science Center at Fort Worth; Roozbeh Jafari, University of Texas at Dallas; Rita Patterson, University of North Texas Health Science Center at Fort Worth; Nicoleta Bugnariu, University of North Texas Health Science Center at Fort Worth

EFFECTIVNESS OF BALANCE TRAINING WITH VIRTUAL REALITY AND VIBROTACTILE DEVICE IN DIABETIC PATIENTS

Purpose: Patients with diabetic peripheral neuropathy experience different degrees of sensory loss in their feet and tend to rely heavily on visual inputs to maintain their balance. This is an efficient coping strategy for as long as they can attend to the placements of their feet, but becomes a high risk of falls when they have to visually attend to something else, like crossing a street or a conversation. The purpose of this research is to assess the effectiveness of a training program designed to improve balance through sensory reweighting based on the principles of stochastic resonance and using virtual reality (VR). Moreover, biomarkers for diabetic control and neuro-protection pre- and post- sensory retraining will be studied to identify possible correlations between balance control and specific lab values. In addition, membrane androgen receptor (mAR) has been linked to poor cognitive performance in animal models and this link will be examined in terms of balance control in the human subjects.
Methods: Subjects with peripheral neuropathy due to diabetes undergo 6 one hour long training sessions in which they practice increasingly more challenging task of balance and walking while their visual attention is engaged by the VR. During training subjects were fitted with vibratory devices placed above the level of sensory loss (around the ankles). The intended to enhance somatosensory perception in the feet vibration was constant and sub-threshold. At visit 1 and 8, Pre- and Post- training assessments of balance and gait function as well as blood values for mAR, follicle stimulating hormone, estradiol, estrogen, C reactive protein, glucose, and a lipid panel.
Results: To date two subjects have been enrolled in the study and one diabetic subject has completed the entire 8 weeks training protocol. Comparison of pre- and post-training revealed an improved balance function expressed by increased anterior and lateral center of pressure movement (ability to reach forward and laterally without losing balance) and increased walking speed. At the end of the training subject was able to maintain a straight walking trajectory even in the presence of visual inputs entraining lateral movements.
Conclusions: Preliminary results show that sensory retraining with VR and vibratory device is feasible in diabetic subjects and holds promise for improvement of balance due to an increased ability to integrate all sensory inputs available and a decreased reliance on visual inputs.

Sponsor
IRB/IACUC# 2012-007

704 Poster **Classification:** Faculty (Not for Competition)
Presenter: Alisa L. Rich **Department:** Environmental & Occupational Health
Authors: Jay Patel, University of North Texas Health Science Center at Fort Worth; Alisa Rich, University of North Texas Health Science Center at Fort Worth; Samiah Al-angari, University of North Texas Health Science Center at Fort Worth;

INCREASED POTENTIAL FOR GLUCOSE METABOLISM INTERFERENCE AND RETINAL ANEURYSMS FROM CARBON DISFULDIE EXPOSURE IN OIL AND NATURAL GAS WORKERS: A SYSTEMATIC REVIEW

Purpose: This study examined the relationship of glucose metabolism interference and retinal microaneurysms from exposure to carbon disulfide (CS_2) in natural gas workers. This study is the first to identify an increased potential for glucose metabolism interference, resulting in diabetogenic effect and subsequent retinal microaneurysms in natural gas occupational workers exposed to CS_2.
Methods: The review of literature was conducted as an evaluative assessment rather than an annotated bibliography and focused on the potential diabetogenic effects from CS_2 exposure. The search criteria were inclusive to all papers on occupational health effects related to CS_2 exposure. Relevant articles were identified by a systematic search of Medline, TOXLINE, Scopus, and PubMed databases. Due to the lack of current literature, all study designs were included.
Results: The literature review found a strong association in viscose rayon occupational workers exposed to CS_2 and an increased potential for alteration of normal glucose metabolism and retinal microaneurysms. CS_2 wasalso found to be present in emissions from extraction and processing of oil and natural gas. The mechanism of action of CS_2 on a biochemical level proved similar in viscose rayon and oil and natural gas workers.
Conclusions: Natural gas occupational workers exposed to CS_2 may experience an increased potential for glucose metabolism interference, which has been an indicator for diabetogenic effect and increased incidence for retinal disease. The recommendation is for regular monitoring of blood glucose levels in CS_2-exposed workers preventing diabetogenic effect and ensuing retinopathy.
Sponsor N/A
IRB/IACUC#

705 Poster **Classification:** SPH Student
Presenter: Roberto Ramirez **Department:** Texas Prevention Institute
Authors: Roberto Ramirez, University of North Texas Health Science Center at Fort Worth; Kimberly Fulda, PhD, University of North Texas Health Science Center at Fort Worth; Michelle Lee, University of North Texas Health Science Center at Fort Worth; Randi Proffitt Leyva, University of North Texas Health Science Center at Fort Worth, ; Susan Franks, PhD, University of North Texas Health Science Center at Fort Worth; Anna Espinoza, University of North Texas Health Science Center at Fort Worth

PARENT'S PERCEPTIONS OF NEIGHBORHOOD SAFETY AND RISK OF TYPE 2 DIABETES IN MEXICAN AMERICAN CHILDREN AND ADOLESCENTS

Purpose: The number of people suffering from type 2 diabetes (2 DM) has increased drastically over the last 30 years, especially in children under the age of 18. Specifically, Mexican American children have been diagnosed at alarming rates. Inactivity in children has contributed to these high rates of diabetes, but there is not sufficient information on factors that contribute to this inactivity. The purpose of this study was to explore parent's perceptions of the features in their neighborhoods and its safety as it relates to their child being at risk of developing 2 DM.
Methods: 144 Mexican American participants, ages 10-14 were enrolled in this study which included one visit that lasted approximately two hours. The primary caregiver was asked via a survey to assess the features and safety of the neighborhood in which the child participant lives. A set of measurements and family history were taken on each participant. "High-risk" status was assigned if participants had ≥3 of the following risk factors: BMI ≥95 percentile, high blood glucose, presence of Acanthosis Nigricans, family history of 2 DM in a 1st or 2nd degree relative, and history of hypertension or blood pressure ≥95th percentile.
Simple and multiple logistic regressions were performed with high risk status for 2 DM as the outcome variable and neighborhood safety, presence of sidewalks and playgrounds in neighborhoods as the primary predictors. The adjusted model controlled for child's age, gender, highest education level of household and household income.
Results: Adjusted analyses illustrate that the presence of playgrounds in the respondent's neighborhoods presented a 76% decreased odds of being at risk for 2 DM [OR: 0.24; 95% CI (0.06-0.86)]. The parent's perceptions of neighborhood safety and the presence of sidewalks were not significant findings. In secondary findings, participants who responded that Spanish was the primary language spoken in the home had 79% decreased odds of being at risk for 2 DM [OR: 0.21; 95% CI (0.11-1.35)].
Conclusions: Potential policy implications resulting from the analysis of the study point to an increase in potential support for the establishment of playgrounds in areas that are deprived of such elements.
Sponsor N/A
IRB/IACUC# 2012-151

706 Poster **Classification:** SPH Student

Presenter: José D. Retana **Department:** Epidemiology

Authors: José Retana, University of North Texas Health Science Center at Fort Worth; Randi Proffitt Leyva, University of North Texas Health Science Center at Fort Worth; Kimberly Fulda, PhD, University of North Texas Health Science Center at Fort Worth; Susan Franks University of North Texas Health Science Center at Fort Worth

THE ASSOCIATION BETWEEN ACCULTURATION AND RISK FOR TYPE 2 DIABETES IN MEXICAN-AMERICAN CHILDREN AND ADOLESCENTS

Purpose: Type 2 diabetes mellitus (DM2) is increasing in children and adolescents of all races/ethnicities in the United States, but especially in minorities such as Hispanics. In particular, Mexican-American children and adolescents are experiencing onset of DM2 at alarming rates. The purpose of this study was to examine the relationship between acculturation to a Mexican or Anglo orientation and risk for DM2.
Methods: Participants completed demographic questions and the brief Acculturation Rating Scale for Mexican Americans II (Brief ARSMA-II). A linear acculturation score was derived from the Mexican Oriented Scale (MOS) and the Anglo Oriented Scale (AOS).
Adolescents 10-14 years and a parent/legal guardian were included. At risk for DM2 was determined by having ≥3 of the following: relative with diabetes, BMI 95th percentile, blood pressure 95th percentile, elevated glucose, or positive for Acanthosis Nigricans.
Simple and multiple logistic regressions were performed with risk of DM2 (high/low) as the outcome and acculturation score as the primary predictor. The adjusted model controlled for child's age, gender, highest household education, child and maternal birth country (US/not US).
Results: Participants (N=144) were 49% female and 51% male. The mean age was 11.96 years (SD=1.45). Forty-five children/adolescents (31.3%) had 3 of 5 risk factors for DM2. Approximately half (53.3%) of high risk children/adolescents were "strongly Anglo-oriented" and "Assimilated". Higher acculturation was associated with an increased odds of being high risk for DM2 [OR=1.50; 95% CI (1.00-2.25)]
Conclusions: For each degree of increased Anglo acculturation, risk for DM2 increased by 50%. Therefore, children of Mexican descent are more at risk for DM2 as they/their families become more acculturated to the Anglo cultural orientation. The degree of acculturation of a child/family should be taken into consideration when developing diabetes preventions and interventions.

Sponsor
IRB/IACUC# 2012-151

800 Poster **Classification:** TCOM DO Student
Presenter: Ryan Joseph **Department:** Texas College of Osteopathic Medicine
Authors: Ryan Joseph, University of North Texas Health Science Center at Fort Worth; Russell Wagner, University of North Texas Health Science Center at Fort Worth; Brian Webb, University of North Texas Health Science Center at Fort Worth

EVALUATION OF INTRAOPERATIVE LIGAMENT INJURY DURING TOTAL KNEE ARTHROPLASTY INVOLVING RESIDENT TRAINING

Purpose: The focus of this study was to evaluate intraoperative errors in the performance of total knee arthroplasties (TKAs) and compare the error rate of when a junior resident versus a senior resident served as the primary surgeon.
Methods: A restrospective analysis was performed on all of the TKAs performed by either a junior or senior resident, directly supervised by Russell Wagner, MD, over a four year period of time. This study identified 346 cases, 143 of which were performed by a junior resident and 203 of which were performed by a senior resident. Incidence of injury was also evaluated to determine if intraoperative errors occur as frequently throughout a given rotation or if the occurrences decreased as the rotation progressed. In addition to this, differences between rotations taking place at the beginning of the year and rotations occuring at the end of the year was also investigated. Finally, the last factor analyzed was whether there was a correlation between a patient's BMI and a ligament injury.
Results:
Of the 346 total knee arthroplasties performed from January 1, 2008 to December 31, 2012, there was an incidence of ligament injury in 7.5% of the cases. The occurrence of injury in which junior residents performed the surgery was 6.3%, compared to 8.3% when senior residents performed the surgery. There were no significant differences between junior or senior residents performing the surgery with regards to intraoperative ligament or tendon injury (p=. 58). The most common ligament injured was the medial collateral in 11 (3%); other ligament injuries included the posterior cruciate ligament in 10 (3%), the patellar tendon in 3 (1%), the popliteus tendon in 2 (.5%), and the lateral collateral ligament and iliotibial band in 1 (.3%). There was no relationship between ligament/tendon damage and in which month of the rotation the surgery was performed. There was also no correlation between rotations during the beginning versus the end of the year. 1 ligament/tendon injury occurred in 89 patients (1%) with a BMI of 30 or less while 25 ligament/tendon injuries occurred in 257 patients (10%) with a BMI of more than 30. This difference was statistically significant (p=.034).
Conclusions: This analysis suggests that supervised junior residents may safely play a more active role when performing total knee arthroplasty since their involvement is not associated with increased intraoperative ligament or tendon injury. This information may assist attending orthopaedic surgeons and resident training programs in determining the role of junior residents during surgery.
Sponsor
IRB/IACUC# 091012.003ex

801 Poster **Classification:** Faculty (Not for Competition)
Presenter: Yolanda Pitts Lane **Department:** Internal Medicine
Authors: Yolanda Pitts Lane, University of North Texas Health Science Center at Fort Worth; Raina Smith, University of North Texas Health Science Center at Fort Worth; Janice Knebl, DO, University of North Texas Health Science Center at Fort Worth; Sandra Marquez-Hall University of North Texas Health Science Center at Fort Worth; Constance Eshon, University of North Texas Health Science Center at Fort Worth
FINDINGS FROM A THREE YEAR REVIEW OF MEDICAL STUDENT ATTITUDES TOWARD A GERIATRIC TRAINING PROGRAM AND AN EARLY PRACTICE MODEL IN THE CARE OF OLDER ADULTS

Purpose: Between 2005 and 2030, the number of adults in the US aged 65 and older will almost double from 12% to almost 20% of the population, with those who are 80 and over, "the oldest old" expected to nearly double from 11 million to 20 million. This group, along with changes in the US Health Care System, will place increased demand on the patchwork of health care services due to the epidemic of chronic disease such as dementing disorders, arthritic conditions, diabetes, hypertension, and heart disease. The Reynolds Geriatric Education & Training in Texas (GET-IT) Program sought to better address the medical needs of the growing geriatric population. The two objectives of the study were: 1) Increase the content of geriatric education in the medical education curriculum; a total of 163 hours of geriatric education were added to Y1 and Y2; and, 2) Identify and evaluate the attitudes of student perceptions related to the health care of older adults in response to the geriatric curricular content.
Methods: The study used a 52 item questionnaire Aging and Healthcare Survey Medical Students Perceptions that contains a 5-point Likert Scale for measurement. Surveys were administered twice over a three year period (2009-2011); once at orientation as a pre-test and again as a post-test at the end of Y2 after medical students were exposed to geriatric curriculum and the SAGE Program. A selected sample of surveys (n=95) were used for this review.
Results: Only responses that contained significance at $p \leq 0.005$ related to changes in student perceptions of aging and healthcare between Y1 and Y2 of medical school were included in this report. Selected Survey Items from Aging & Healthcare Study 5= Strongly Agree; 4= Agree; 3= Neutral; 2= Disagree; 1= Strongly Disagree Year 1 Mean Year 2 Mean P-value Q14 There is not enough course content on the evaluation and care of older adults. 4.44 2.70 < .001 Q21 I am comfortable talking with an older patient about their death.
4.20 3.59 < .001 Q23 Physicians need to learn special skills to care for older patients. 4.23 3.75 < .001 Q30 Learning about how to care for older patients should be a priority for people in Medicine. 2.53 3.40 < .001 Q31 I know a lot about growing older. 2.12 3.06 < .001 Q38 I would prefer not to provide medical care to older adults. 3.37 2.52 < .001 Q29 Physicians need to understand issues of quality of life for an older adult. 3.03 4.05 0.002 Q16 As people become older, most become depressed. 3.19 2.75 0.004
Conclusions: Our findings showed some mixed results. Exposure to the geriatric curriculum had a positive impact on student's awareness, understanding, and treating of older adults including psycho-social awareness. Students reported more confidence in and an appreciation of the need for communication with older adults in the areas medical history and quality of life issues but less confidence with older adults in areas of palliative care and end of life issues. The data obtained from the survey supports the integrative model of geriatrics curricula into undergraduate medical education.
Sponsor Donald W Reynolds Foundation
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802 Poster **Classification:** Faculty (Not for Competition)
Presenter: Shara Elrod **Department:** Pharmacotherapy
Authors: Shara Elrod, University of North Texas Health Science Center, College of Pharmacy; Katura Bullock, University of North Texas Health Science Center, College of Pharmacy

OBJECTIVE STRUCTURED CLINICAL EXAM (OSCE) RATER TRAINING

Purpose: Objective structured clinical examinations (OSCEs) are organized, multi-station activities designed to allow students to demonstrate their ability to perform specific clinical skills. OSCEs are increasingly being used in health professions education to objectively evaluate performance-based abilities. Observing and grading OSCEs is a key responsibility of persons who serve as raters. However, there is a surprising dearth of information on validated techniques of OSCE rater training. The objective of this project was to develop and validate a rater training process based on Kilpatrick's 4 levels of evaluation and which maximizes inter-rater reliability of performance-based OSCE assessment across the University of North Texas System College of Pharmacy (UNT SCP) curriculum.
Methods: The UNT SCP curriculum includes a four-semester sequence of Pharmacy Practice Skills Labs. Each semester contains at least one OSCE to evaluate performance-based abilities. A training process for raters of interactive OSCE stations was developed.
The OSCE rater training included both clinicians and standardized patients. The training was comprised of group discussion of the standards and their meaning, instruction on completing clinical checklists and global impression scales, common sources of systematic rater error, and practice scoring sample videos. Due to varying schedules and distance from campus, the training included both online and live segments. All raters were asked to view a sample recorded encounter of each interactive station. Standardized patients provided a global impression scale. Clinicians completed a binary checklist to provide a numerical grade and a pass/fail designation in addition to the global impression scale. Raters were asked to complete a pre- and post-training survey via Likert scale (1=strongly disagree; 4 = strongly agree; 0 = not applicable) and training outcomes were assessed using Kirkpatrick's 4 levels of evaluation.
Results: Of the 13 raters surveyed (10 clinicians; 3 standardized patients), four raters (31%) completed the pre-training survey and 6 raters (46%) completed the post-training survey. Raters were asked about their knowledge of OSCE philosophy and structure, common sources of rater error, their ability to use objective clinical skills-based checklists and global impression scales, and their confidence in developing consensus standards for grading. As expected, overall median likert-scale scores improved from the pre-training (1.0) to the post-training survey (4.0). Data detailing inter-rater reliability is forthcoming.
Conclusions: In this pilot training program, UNT SCP OSCE raters had overall increases in their knowledge and ability to objectively evaluate pharmacy students in this 1st year Pharmacy Practice Skills Lab. These results support the need for increased focus on OSCE rater training programs.
Sponsor N/A
IRB/IACUC# 2013-193

803 Poster **Classification:** Faculty (Not for Competition)
Presenter: Kathryn J. Dolan, PhD **Department:** Family Medicine

Authors: Kathryn Dolan, PhD, University of North Texas Health Science Center at Fort Worth

PREPARING MEDICAL STUDENTS FOR INTERPROFESSIONAL PRACTICE 'OUTSIDE THE FOUR WALLS'

Purpose: The Medical Home Model as implemented within the guidelines of the Affordable Care Act, requires physicians to utilize community resources provided by many diverse allied health professions and organizations, including social, vocational and rehabilitation service providers which are typically "outside of the four walls" of the medical home. This research addresses approaches to enriching the curriculum to introduce students to the competencies required for community and/or systems based practice, many addressed in the NBOME Domain 7 Competency—Systems Based Practice. In the rapidly changing practice environment, osteopathic medical students need to be prepared for interprofessional practice during their clinic training.
Methods: Educational objectives for IPE outside the four walls are identified. Varying instructional strategies to meet these objectives are identified and evaluated taking into account their costs, benefits and challenges. Many professionals from diverse allied health professions and organizations are keenly aware of the barriers their clientele face in accessing the care they need and communicating those needs to physicians. Comparison are made between two basic approaches to systematically expose medical students to other members of the extended health care team, a large classroom format where all students are exposed to the same material, and individual or small group visits to specific agencies chosen by the students.
Results: Student evaluations, performance on quizzes and focus group feedback reveal strengths and weaknesses of these approaches. Large group presentations by community professionals is by far the most efficient delivery method, however is most effective when case studies are used to illustrate the needs and barriers accessing services their clients face. Student focus group feedback led to developing a format that can be applied to diverse agencies and client populations. Individual and small group visits with community agencies are typically rated very favorably by students, however do not offer consistent experiences that meet all learning objectives.
Conclusions: Recommendations are made for best practices and further development.
Medically vulnerable and underserved individuals present with health problems that are deeply embedded in social, economic, community and psychological conditions which must be addressed for successful treatment outcomes. In Accountable Care Organizations (ACO), there will be a need for all practitioners to be able to respond appropriately to a broad array of these common situations and the challenges they pose. Medical students entering training in ACO practice environments will be well served to know how to recognize the needs of medically underserved and vulnerable patients, identify their problems, barriers they experience, and locate appropriate community services "outside of the four walls" of the medical home.
IRB/IACUC# 2014-029

900 Poster **Classification:** GSBS Student
Presenter: Avani A Mody **Department:** Cell Biology and Immunology
Authors: Avani Mody, University of North Texas Health Science Center at Fort Worth; Robert Wordinger, University of North Texas Health Science Center at Fort Worth; Abbot Clark, University of North Texas Health Science Center at Fort Worth

BMP4 INDUCED ID PROTEIN PROTECTS TM FROM GLAUCOMATOUS EFFECTS OF TGFβ-2

Purpose: Increased aqueous humor (AH) outflow resistance causes high intraocular pressure (IOP), which is a critical risk factor in primary open-angle glaucoma. Elevated transforming growth factor b2 (TGFb2) in the AH of glaucoma patients increases extracellular matrix (ECM) protein deposition in the trabecular meshwork (TM), thereby elevating IOP. Bone morphogenetic protein 4 (BMP4) inhibits the pathogenic effects of TGFb2 in the TM. However, the underlying molecular mechanism for this BMP4 inhibition remains unknown. BMP4 regulates various cellular processes by induction of inhibitors of DNA binding proteins (ID1, ID3), which are transcriptional regulators that bind specific transcription factors and suppress their functions. This study will determine whether ID1/ID3 are downstream targets of BMP4, attenuating the TGFb-2 effects on TM cells.
Methods: Cultured primary human TM cells and the GTM3 cell line were treated with BMP4 (5-10ng/ml) for 1-48 hrs. Q-PCR and western immunoblotting were performed to determine ID1 and ID3 expression. GTM3 and primary TM cells were transfected with ID1 and ID3 expression plasmids vectors or ID1 and ID3 siRNA to determine the effects of ID1 and ID3 on TGFb2 induced extracellular matrix (ECM) proteins. The expression of fibronectin and plasminogen activator inhibitor-1 (PAI-1) was studied by western immunoblotting.
Results: BMP-4(10ng/ml) significantly BMP4 (10ng/ml) significantly induced early ID1 and ID3 gene and protein expression ($p<0.05$). ID1 and ID3 suppressed the TGFβ2 induction of fibronectin and PAI-1 in TM cells.
Conclusions: BMP4 induced ID1 and ID3 expression in TM cells. ID1 and ID3 suppressed the TGFb2 induction of ECM proteins in TM cells, and therefore are key signaling molecules involved in the BMP4 suppression of TGFb2 profibrotic activity. These specific regulators controlling TGFb2 effects in the TM may lead to the development of potential new IOP lowering therapies for the treatment of glaucoma.
Sponsor NIH grant EY-017374
IRB/IACUC# NANA

901 Poster **Classification:** GSBS Student
Presenter: Sean Silverman **Department:** North Texas Eye Research Institute
Authors: Sean Silverman, University of North Texas Health Science Center at Fort Worth; Byung-Jin Kim, University of North Texas Health Science Center at Fort Worth; Robert Wordinger, University of North Texas Health Science Center at Fort Worth; Abbot Clark, University of North Texas Health Science Center at Fort Worth

C1Q EXPRESSION AND GLIAL ACTIVITY IN THE MOUSE RETINA FOLLOWING ISCHEMIA/REPERFUSION INJURY

Purpose: The complement cascade has become of increasing interest in several neurodegenerative diseases, including glaucoma, a leading cause of blindness. C1q has been observed as one of the earliest upregulated genes in the optic nerve head, the initial site of glaucoma injury preceding pathological changes. Here we use a glaucoma-like model of retinal ischemia/reperfusion (I/R) to mimic clinical changes in visual function and cellular loss.
Methods: Deeply anesthetized C57BL/6J received a cannula to the anterior chamber of their left eye, through which their intraocular pressure (IOP) was raised to 120mmHg for 60 minutes leading to complete retinal ischemia. The cannula was then removed and blood flow was naturally reperfused. The right eye was uninjured as a contralateral control. Mice were sacrificed and enucleated at 3, 7, 14, 21, and 28 days. Eyes were fixed in 4% PFA and frozen for immunofluorescence or in situ hybridization studies. Microglia and astrocytes were identified using Iba1 and GFAP, respectively. Quantifications were performed using ImageJ Analysis software(NIH).
Results: Initial changes in C1q expression were observed as early as 72 hours following injury, with a nearly two-fold increase compared to uninjured controls. Upregulated C1q was observed only in the ganglion cell (GCL) and inner plexiform (IPL) layers. Maximum intensity of C1q expression was observed 14 days post injury. Fluorescent in situ hybridization (FISH) studies reveal primarily microglia, not astrocytes, colocalized with expression of C1q in the retina.
Conclusions: Following retinal I/R injury, C1q expression is actively upregulated, which appears to spatio-temporally correlate with changes in microglial, astrocyte, and Mueller cell homeostasis. Our FISH studies identify microglial cells as the primary producers of C1q following I/R injury. This suggests the elevated levels of C1q may stimulate astrocyte activation. There appears to be an interplay between microglia and astrocytes, both of which have been directly implicated in neurodegenerative diseases, including loss of RGCs in glaucoma. We propose C1q is an integral part of this mechanism, and by removing C1q we hope to preserve visual function and prevent degeneration in the visual system following injury.
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IRB/IACUC# 2011/12-58

902 Poster **Classification:** GSBS Student

Presenter: Wanda E. Medina-Ortiz **Department:** Cell Biology and Immunology

Authors: Wanda Medina-Ortiz, University of North Texas Health Science Center at Fort Worth; Robert Wordinger, University of North Texas Health Science Center at Fort Worth; Abbot Clark, University of North Texas Health Science Center at Fort Worth

CELLULAR FIBRONECTIN SUPRESSES NORMAL HUMAN TRABECULAR MESHWORK CELL METALLOPROTEINASE EXPRESSION AND ACTIVATES TRANSFORMING GROWTH FACTOR-BETA 2 SIGNALING PATHWAY

Purpose: The expression of cellular fibronectin isoforms (cFN) are induced by transforming growth factor-beta 2 (TGF-b2) in cultured human trabecular meshwork (TM) cells, and TGF-b2 expression is elevated in glaucomatous TM tissues. Cellular interaction with cFN isoforms can affect extracellular matrix (ECM) homeostasis, as well as the cellular interaction and response to the surrounding microenvironment. Our purpose is to determine the impact of the interaction of normal HTM (NTM) cells with cFN isoforms on the metalloproteinase (MMP) expression and the TGF-b2 signaling pathway.

Methods: NTM cell strains were cultured for up to 2 days on surfaces coated with cFN, and the responses were compared to control uncoated surfaces. In addition, to show that the EDA domain of cFN was involved, NTM cells were cultured in the presence of anti-EDA antibodies. Changes on gene and protein expression and cellular distribution of MMPs and TGF-b2 signaling pathway components were analyzed using qRT-PCR, Western immunoblots and immunocytochemistry.

Results: NTM cell strains exposed to cFN isoforms significantly decreased MMP-1 and MMP-3 expression, and this effect was blocked by anti-EDA pre-incubation. cFN significantly altered the expression of TGF-b2 signaling pathway components, including regulatory and inhibitory SMADs. The phosphorylation and nuclear translocation of regulatory SMADs also was increased, indicating activation of the TGF-b signaling pathway.

Conclusions: Our results demonstrate that NTM cell interactions with cFN isoforms decreases levels of critical components involved in ECM homeostasis. Furthermore, we show that interaction with cFN affects different TGF-b2 signaling components further activating this signaling pathway. In summary, our data suggest that interaction of NTM cells with a glaucoma-like ECM (i.e. cFN) further exacerbates TGF-b2 signaling leading to decreased ECM turnover and fibrosis.

Sponsor NIH Grant RO1 EY017374

IRB/IACUC#

903 Poster **Classification:** GSBS Student

Presenter: Nolan R. McGrady **Department:** North Texas Eye Research Institute

Authors: Nolan McGrady, University of North Texas Health Science Center at Fort Worth; Alena Minton, University of North Texas Health Science Center at Fort Worth; Raghu Krishnamoorthy, University of North Texas Health Science Center at Fort Worth

CHANGES IN ENDOTHELIN RECEPTOR A EXPRESSION IN A RAT MODEL OF OCULAR HYPERTENSION

Purpose: The endothelin system of peptides and their receptors have been implicated for their neurodegenerative role in glaucoma. The purpose of this study was to determine changes in ET_A receptor expression within the retina in the Morrison's elevated IOP model of glaucoma in rats.

Methods: IOP was elevated in the left eye of adult male retired breeder Brown Norway rats using the Morrison's model of glaucoma (by injection of hypertonic saline through episcleral veins) while the contralateral eye served as the control. The rats were maintained for two to four weeks following IOP elevation and sacrificed. Retinal sections were obtained from both control and IOP-elevated eyes, and analyzed for changes in ET_A receptor expression using immunohistochemistry. ET_A receptor immunostaining was co-localized with β-III-Tubulin, which is selectively expressed in retinal ganglion cells.

Results: After two weeks, rat eyes with IOP elevation showed an increase in immunostaining for ET_A receptors in several retinal layers including the inner and outer plexiform layers with a modest increase in the retinal ganglion cell layer. Following four weeks of IOP elevation, ETA receptor expression was modestly increased in the inner and outer plexiform layers of the retina, compared to that in the corresponding contralateral eyes.

Conclusions: Elevated intraocular pressure results in a time-dependent change in ET_A receptor expression. Increased ET_A receptor expression is associated with neurodegenerative changes in glaucoma.

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904 Poster **Classification:** TCOM DO Student
Presenter: Neal Olarte **Department:** Texas College of Osteopathic Medicine
Authors: Neal Olarte, University of North Texas Health Science Center at Fort Worth; Sean Silverman, University of North Texas Health Science Center at Fort Worth; Robert Wordinger, University of North Texas Health Science Center at Fort Worth; Abbot Clark, University of North Texas Health Science Center at Fort Worth

CORRELATIVE INCREASES IN ASTROCYTE, MICROGLIA, AND C1Q IN A MURINE MODEL OF ACUTE GLAUCOMATOUS INJURY

Purpose: Glaucoma is a leading cause of blindness worldwide. Recent studies of glaucomatous retinal injury have observed a correlation of upregulated C1q and increased microglial activity. Using the optic nerve crush (ONC) model of glaucoma, we are investigating whether there is an injurious response involving C1q, microglia, and astrocytes within the superior colliculus (SC), the visual center of the mouse brain.
Methods: Glaucomatous injury was simulated in mice using ONC of the left eye, while leaving the right eye intact. Brain tissue was harvested at 0, 7, 14, and 28 days post-injury, fixed overnight in 4% paraformaldehyde, and paraffin embedded. Following paraffin removal and antigen recovery, immunohistochemistry was performed to label astrocytes (GFAP), microglia (IBA1), and C1q in the SC.
Results: Beginning 7 days post-injury, there was an increase in astrocytes, microglia, and C1q, with microglia assuming an activated morphology. Astrocytes and C1q remained elevated through 28 days post-injury, with a gradual reduction in microglial density. These results were observed only within the SC contralateral to the injured nerve, the main target of the retinal ganglion cell (RGC) axons from the ONC eye. Increased C1q and astrocyte activity was not observed in the ipsilateral hemisphere; however, there was a slight increase in microglial density.
Conclusions: Our data support a similar response in the retina and SC of upregulated C1q, resulting from glaucomatous injury. Microglia and astrocytes also appear to be involved in the acute injury phase. Previous studies of retinal glaucomatous injury have shown that early reduction of C1q is protective. Future studies using a C1q-deficient mouse model might also show protective function against SC glaucomatous injury.
Sponsor DOD W81XWH-10-2-003
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905 Poster **Classification:** TCOM DO Student
Presenter: Kyle A Kirkland **Department:** Texas College of Osteopathic Medicine
Authors: Kyle Kirkland, University of North Texas Health Science Center at Fort Worth; Jaclyn Bermudez, University of North Texas Health Science Center at Fort Worth; Weiming Mao, University of North Texas Health Science Center at Fort Worth; Abbot Clark, University of North Texas Health Science Center at Fort Worth

EFFECT OF LYSYL OXIDASE (LOX) AND TISSUE TRANSGLUTAMINASE (TGM2) GENES ON HUMAN TRABECULAR MESHWORK CELLS

Purpose: Glaucoma is a leading cause of irreversible blindness in the world. TGF-β2 is elevated in glaucoma eyes and is an important factor in the extracellular matrix (ECM) metabolism of human trabecular meshwork (HTM) cells, leading to increased intraocular pressure (IOP). Both LOX and TGM2 enzymes are important in cross-linking the ECM in HTM cells. As TGF-β2 up regulatesLOX and TGM2 expression, the aim of this experiment is to determine and quantify the amount of LOX- and TGM2-induced ECM crosslinking in glaucomatous trabecular meshwork cells (GTM).
Methods: LOX and TGM2 cDNAs were obtained and amplified by PCR with specifically designed primers and isolated by gel electrophoresis. The cDNAs were ligated into the pGEM-T plasmid vector and cloned into E. coli gold cells. After sequencing, the genes were restriction digested and ligated to a pacAd5 vector to generate adenovirus expression vectors, which have a high selectivity for TM cells. The pacAd5 vectors will be used to transduce the GTM3 cell line. The plasmid expression vectors will also be transfected into GTM3 cells. Western immunoblot analysis will be utilized to evaluate the LOX and TGM2 protein expression and ECM crosslinking in GTM cells.
Results: LOX and TGM2> plasmid vectors were successfully cloned and sequenced and are now being used to transfect GTM cells. LOX and TGM2 adenoviral vectors are being prepared. We expect that increased expression of LOX and TGM2 enzymes through both transduction and transfection will induce a greater amount of crosslinking in the GTM cells.
Conclusions: TGF-β2 raises IOP by mechanisms that are still under investigation. One potential mechanism is increased ECM cross-linking via TGF-b2 induction of LOX and TGM2 gene expression. Successful transduction and LOX and TGM2 expression in cultured GTM3 cells will allow us to directly test the roles of LOX and TGM2 on the regulation of IOP using an ex vivo bovine ocular perfusion culture model.
Sponsor N/A
IRB/IACUC#

906 Poster **Classification:** GSBS Student

Presenter: Alena Z Minton **Department:** Cell Biology and Immunology

Authors: Alena Minton, University of North Texas Health Science Center at Fort Worth; Shaoqing He, University of North Texas Health Science Center at Fort Worth; Hai-Ying Ma, University of North Texas Health Science Center at Fort Worth; Raghu Krishnamoorthy University of North Texas Health Science Center at Fort Worth

ENDOTHELIN B (ETB) RECEPTORS CONTRIBUTE TO NEURODEGENERATION IN A RODENT MODEL OF GLAUCOMA VIA UPREGULATION OF C-JUN AND BAX

Purpose: Previously, our lab has demonstrated that increased levels of ET_B receptors contribute to the death of retinal ganglion cells (RGCs) and degeneration of optic nerve axons in the Morrison's elevated intraocular pressure (IOP) model of glaucoma in rats. Moreover, these pathological changes were greatly attenuated in ET_B receptor-deficient transgenic Wistar Kyoto rats. Interestingly, an increase in ET_B receptor levels in RGCs, following 2 weeks of IOP elevation in Brown Norway rats, was shown to be associated with increased expression of c-Jun, a member of the activator protein-1 (AP-1) family. The current study was aimed at investigating whether the increased expression of c-Jun observed in wild type rats is reduced in ET_B receptor-deficient Wistar Kyoto rats subjected to the Morrison's model of glaucoma. The status of another apoptotic protein, Bax, was also assessed in these rats.

Methods: IOP was elevated in one eye of adult wild type and ET_B receptor-deficient transgenic Wistar Kyoto rats using the Morrison's method (injection of hypertonic saline through episcleral veins), while the contralateral eye served as control. After IOP was elevated, rats were maintained for 2 weeks and sacrificed. Retinal sections were obtained and stained with specific antibodies to detect the expression of c-Jun and Bax by immunohistochemistry. In addition, retinal sections were immunostained using an antibody to βIII-tubulin, which is selectively expressed by RGCs in the retina. Images were taken using Zeiss LSM-510 confocal microscope with Z-scan.

Results: Immunohistochemical analysis showed that IOP elevation for 2 weeks caused increased expression of c-Jun and Bax mainly in the ganglion cell layer (GCL) of wild type transgenic Wistar Kyoto rats as compared to ET_B receptor-deficient transgenic Wistar Kyoto rats. Interestingly, using the Promo 3 software, we found 15 binding sites for members of the AP-1 family of proteins on the rat 1.95 kb upstream promoter region of Bax. Therefore, the transcription factor c-Jun may be an upstream regulator of Bax (pro-apoptotic factor).

Conclusions: Transcription factor AP-1 could be involved in the elevation of the ET_B receptor levels in the Morrison's model of glaucoma. Conversely, deletion of the ET_B receptor results in the downregulation of c-Jun. Taken together, there may be a reciprocal feedback loop between the AP-1 and ET_B receptors.

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907 Poster **Classification:** GSBS Student

Presenter: Jaclyn Y. Bermudez **Department:** North Texas Eye Research Institute

Authors: Jaclyn Y. Bermudez, University of North Texas Health Science Center; Hannah Webber, University of North Texas Health Science Center at Fort Worth; Yi-Qiang Cheng, University of North Texas Health Science Center at Fort Worth; Abbot Clark University of North Texas Health Science Center at Fort Worth; Weiming Mao, University of North Texas Health Science Center at Fort Worth

EPIGENETIC REGULATION OF GLAUCOMA-ASSOCIATED GROWTH FACTORS IN THE TRABECULAR MESHWORK

Purpose: Glaucoma is a leading cause of blindness in the U.S. and worldwide. This disease leads to progressive, irreversible damage to the optic nerve and visual function. The primary risk factor of primary open angle glaucoma (POAG), the major type of glaucoma, is elevated intraocular pressure (IOP). IOP elevation in glaucoma patients is due to glaucomatous insults to the trabecular meshwork (TM) and compromised TM function, which increase aqueous humor outflow resistance. In the glaucomatous TM (GTM), there is excessive extracellular matrix (ECM) protein deposition. Many studies have suggested that cell signaling pathways, such as the transforming growth factor beta (TGF-β) and Wnt signaling pathways, play key roles in TM homeostasis.The growth factors that are associated with these pathways, including $TGF\beta_2$, Gremlin and sFRP1, are found to be at higher levels in the GTM cells compared to normal TM cells. Little is known about the role of epigenetics in regulating glaucoma-associated growth factors in the TM. One of the major epigenetic regulatory mechanisms is histone acetylation.We hypothesize that histone acetylation is responsible for the increased expression of glaucoma associated factors in the TM.

Methods: Primary human TM cell cultures were treated with 10nM Thailandepsin (TDP-A), a histone deacetylase inhibitor (HDACi), or 1% DMSO as vehicle control for 4 days. Cells were harvested for qPCR to compare gene expression levels or for ChIP assays to compare promoter associated histone acetylation status. We also treated paired perfusion cultured bovine anterior segments with DMSO or TDP-A for 7 to 10 days. The IOP change of the treated bovine eyes was monitored and recorded. Data were analyzed by using Student's t-test or one-way ANOVA. P values less than 0.05 were considered significant.

Results: TDP-A significantly elevated the expression of sFRP-1 and $TGF\beta_2$ (n=3, p2 as well as elevated IOP.

Conclusions: Histone acetylation may play an important role in the dysregulation of growth factors in the TM. This mechanism provides a unique opportunity to elucidate the etiology of POAG. Also, TDP-A is a potent HDACi that can be used as a powerful tool in glaucoma research.

Sponsor Thomas R. Lee award for National Glaucoma Research, a program of the American Health Assistance Foundation

IRB/IACUC#

908 Poster **Classification:** Postdoctoral Fellow
Presenter: Yang Liu **Department:** Cell Biology and Immunology
Authors: Yang Liu, University of North Texas Health Science Center at Fort Worth; Tasneem Sharma, University of North Texas Health Science Center at Fort Worth; Robert Wordinger, University of North Texas Health Science Center at Fort Worth; Marina Gorbatyuk, University of North Texas Health Science Center at Fort Worth; Abbot Clark, University of North Texas Health Science Center at Fort Worth

GENE DELIVERY OF GRP78/BIP PROMOTES RETINAL GANGLION CELL SURVIVAL FOLLOWING OPTIC NERVE CRUSH

Purpose: Optic nerve injury triggers endoplasmic reticulum (ER) stress and activates the unfolded protein response (UPR), leading to retinal ganglion cell (RGC) degeneration. Glucose-regulated protein (GRP78/BiP) is a sensor of ER homeostasis and plays a role in ER stress alleviation. In this study, we evaluated the involvement of GRP78/BiP in RGC degeneration induced by optic nerve crush (ONC) and the neuroprotective effects of gene delivery of GRP78/BiP.
Methods: ONC was performed unilaterally in adult BALB/cJ mice. The expression of GRP78/BiP was evaluated by real time PCR and fluorescent in situ hybridization (FISH). To evaluate the potential neuroprotective effect of BiP, an AAV2 vector harboring the human BiP gene (AAV2-hBiP) or green fluorescent protein (AAV2-GFP) (2×10^9 P) was intravitreally injected 4 weeks prior to the ONC. Seven and fourteen days after the ONC, RGC survival was determined by RBPMS immunofluorescence staining of retinal flat mounts. Retinal function was assessed using full field flash ERG. Expression of UPR related proteins was evaluated by western blotting.
Results: Three days after ONC, GRP78/BiP expression was significantly up-regulated in RGCs ($p<0.01$). Intravitreal administration of AAV2-hBiP significantly reduced RGC loss at 7 and 14 days post-ONC compared to AAV2-GFP injected group ($n=5$, $p<0.01$). ERG analysis showed partial protection of pSTR amplitudes in AAV2-hBiP injected eyes ($n=5$, $p<0.05$). Retina levels of cleaved ATF6 in AAV2-hBiP injected eyes were much lower than those of AAV2-GFP injected eyes.
Conclusions: Gene delivery of GRP78/BiP promotes RGC survival and preserves RGC function following optic nerve injury. This study suggests a potential therapeutic target for central nervous system neurodegenerative diseases.
Sponsor DOD-W81XWH-10-2-0003
IRB/IACUC# NA2011/12-58

909 Poster **Classification:** Postdoctoral Fellow
Presenter: Xiaobin Liu **Department:** Pharmacy
Authors: Xiaobin Liu, University of North Texas Health Science Center at Fort Worth; Jamieson Jann, University of Georgia; Hongli Wu, University of North Texas Health Science Center at Fort Worth

INCREASED EXPRESSION OF GLUTAREDOXIN 1 (Grx1) PROTECTS HUMAN RETINAL PIGMENT EPITHELIAL CELLS FROM OXIDATIVE DAMAGE

Purpose: The retina is constantly exposed to oxidative stress, which is countered by well-designed antioxidant systems present in retinal pigment epithelial (RPE) cells. Disruption of these systems may lead to the development of age-related macular degeneration (AMD). In this study, we explored the strategy of overexpressing glutaredoxin 1 (Grx1), a component of the endogenous antioxidant defense system, to combat oxidative damage in RPE cells.
Methods: Human retinal pigment epithelial (ARPE-19) cells were transfected with either a Grx1-containing plasmid or an empty vector. Normal ARPE-19 cells and transfected cells were treated with or without 200 μM H_2O_2 for 24 h. Grx1 protein expression was detected by western blots and enzyme activity was measured by spectrophotometry. Cell viability was measured by a colorimetric assay with WST8. The morphology of nuclear chromatin was assessed by staining with Hoechst 33342. Apoptosis was quantitatively analyzed by flow cytometry. The level of protein glutathionylation (PSSG) was measured by immunoblotting using anti-PSSG antibody.
Results: Grx1 protein level and enzyme activity in Grx1 transfected cells were significantly increased as compared to non-transfected and vector transfected cells. Grx1 overexpression protected ARPE-19 cells from H_2O_2-induced cell viability loss. Assessment of apoptosis indicated that cells transfected with Grx1 were relatively more resistant to H_2O_2 with fewer cells undergoing apoptosis as compared to vector control or non-transfected cells. Furthermore, PSSG accumulation was also dramatically attenuated by Grx1 overexpression.
Conclusions: Grx1 can protect human retinal pigment epithelial cells against H_2O_2-induced cell death. The mechanism of this protection is likely associated with its ability to prevent lethal accumulation of PSSG.
Sponsor N/A
IRB/IACUC#

910 Poster **Classification:** GSBS Student

Presenter: Shreyasi Choudhury **Department:** Pharmaceutical Science

Authors: Shreyasi Choudhury, University of North Texas Health Science Center at Fort Worth; Yang Liu, University of North Texas Health Science Center at Fort Worth; Abbot Clark, University of North Texas Health Science Center at Fort Worth; Iok-Hou Pang University of North Texas Health Science Center at Fort Worth

KNOCKOUT OF CASPASE-7 PROTECTS AGAINST OPTIC NERVE CRUSH-INDUCED RETINAL GANGLION CELL DEATH

Purpose: Optic nerve (ON) injury is involved in various ocular diseases, such as glaucoma, which leads to apoptotic death of retinal ganglion cells (RGC) and loss of vision. Caspases have been implicated previously in glaucoma and RGC death. However, the role of caspase-7, a functionally unique caspase, in ON injury and glaucomatous damage has not been studied. Therefore, the purpose of this study is to evaluate the role of caspase-7 in ON injury-induced RGC apoptosis.
Methods: C57BL/6 (Wt) and caspase-7knockout (casp7KO) mice were used for this study. Optic nerve crush (ONC) was performed on left eyes; right eyes served as control. Western blots of the isolated retinas of Wt mice were used to assess the activation of caspase-7 at 3h, 6h, 12h, 1d, 3d, and 7d after ONC. Immunohistochemistry was performed to detect the localization of caspase-7 in RGC. RGC survival was determined by counting the RBPMS (RGC marker) labeled cells in flat-mounted retinas of Wt and casp7KO mice at 7d, 14d and 28d post injury. Both Wt and casp7KO mice were subjected to spectral-domain optical coherence tomography (SD-OCT) and scotopic threshold response of electroretinography (STR-ERG) to evaluate the retinal structural and RGC functional changes at 7d, 14d, and 28d after ONC.
Results: Western blot data demonstrated that caspase-7 was activated in Wt retina at 12h, 1d, 3d, and 7d after ONC compared to the uninjured control retinas. The number of surviving RGCs was significantly more (3173±59 cells/mm2, mean±SEM, n=6, $p<0.001$) in casp7KO retinas compared to Wt retinas (1693±84 cells/mm2) at 28d post ONC. SD-OCT analysis revealed that the thickness of the inner retinal layer (ganglion cell layer, nerve fiber layer, and inner plexiform layer) in casp7KO mice was greater (54±1.1 μm, $p<0.05$) compared to Wt mice (42.3±1.5 μm). Most importantly, analysis of the STR-ERG response demonstrated a decline in amplitude in Wt ONC eyes (10.5±1.9 μv), whereas the response was significantly higher (20.7±2.3 μv, $p<0.05$) in casp7KO mice even at 28d post injury.
Conclusions: The current study indicates that injury to the ON activates caspase-7 and knockout of caspase-7 protects inner retinal layer morphology and RGC function after ONC. Thus, caspase-7 appears to play a critical role in ONC-induced RGC death and inhibition of caspase-7 activity may be a novel therapeutic target for glaucoma and other neurodegenerative diseases of the retina.

Sponsor N/A
IRB/IACUC# 2011/12-58-A04

911 Poster **Classification:** Dual Degree student

Presenter: Brett Mueller **Department:** Pharmacology & Neuroscience

Authors: Brett Mueller, University of North Texas Health Science Center at Fort Worth; Yong Park, University of North Texas Health Science Center at Fort Worth; Hai-Ying Ma, University of North Texas Health Science Center at Fort Worth; Thomas Yorio, PhD, University of North Texas Health Science Center at Fort Worth

PROLONGED NMDA STIMULATION INDUCES NEUROPROTECTIVE PATHWAYS AND ENHANCES SURVIVABILITY OF PRIMARY RETINAL GANGLION CELLS

Purpose: Calcium influx through postsynaptic NMDA receptors has been shown to stimulate a number of key pro-survival genes; however, prolonged stimulation has been shown to have excitotoxic effects leading to apoptosis in neurons. Previous studies have shown a rapid dephosphorylation of CREB in primary hippocampal neurons treated for 1-2 h with100μM NMDA . It is hypothesized that the activation of CREB-specific phosphatases is one of the main pathways that cause apoptosis during NMDA excitotoxicity. The current study investigated the role of NMDA stimulation on the phosphorylation of CREB in primary RGCs, and assessed if NMDA overstimulation caused excitotoxic changes similar to those seen in primary hippocampal neurons. In addition, the occurrence of NMDA excitotoxicity in bipolar and photoreceptor cells was also investigated.
Methods: Purification and culture of RGCs were performed by sequential immunopanning using Thy 1 antibody from P3-P7 Sprague-Dawley rats. Mixed retinal cultures that remained following isolation of RGCs from the retina were plated once the RGCs were separated and purified. Calcium imaging was used to measure the intracellular changes in calcium following treatment of cells with 100μM NMDA. Western blots were performed to determine signaling pathways linked to NMDA induced cell survival or excitotoxicity. Calcein AM and ethidium homodimer were used to quantify cell survival and cell death. Cells were also subjected to a trophic factor deprivation insult for 6 hours and 24 hours.
Results: Treatment of primary RGCs with NMDA (100 μM) for 6h caused a greater than 2-3 fold induction of the transcription factor pCREB. MK801 (NMDA antagonist) completely abolished endogenous levels of pCREB and blocked NMDA induction of pCREB. NMDA (100 μM) treatment for 6 and 24 hrs under trophic factor deprivation, protected RGCs from trophic factor deprivation induced cellular death. The mixed retinal cultures (retinal cells without RGCs) had an opposite effect, where the levels of pCREB were diminished and the neurons died when treated with 100 μM of NMDA.
Conclusions: The data suggests that NMDA signaling is essential for RGC survivability and blocking calcium ion influx through this receptor by the NMDA blocker, MK801 can be detrimental to RGC function and survival. These results also demonstrate that primary RGCs behave differently than other neurons in the retina, and are not susceptible to NMDA excitotoxicity.

Sponsor n/a
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912 Poster **Classification:** Postdoctoral Fellow

Presenter: Trivendra Tripathi **Department:** Cell Biology and Immunology

Authors: Trivendra Tripathi, University of North Texas Health Science Center at Fort Worth; Mahshid Abdi, University of North Texas Health Science Center at Fort Worth; Hassan Alizadeh, University of North Texas Health Science Center at Fort Worth

PROTEASE-ACTIVATED RECEPTOR 2 (PAR2) IS UPREGULATED BY ACANTHAMOEBA PLASMINOGEN ACTIVATOR (APA) AND INDUCES PROINFLAMMATORY CYTOKINE IN HUMAN CORNEAL EPITHELIAL CELLS

Purpose: Acanthamoeba plasminogen activator (aPA), is a serine protease elaborated by Acanthamoeba trophozoites, facilitates invasion of trophozoites to the host and contributes to the pathogenesis of Acanthamoeba keratitis (AK). The aim of this study was to explore if aPA induces proinflammatory cytokine in human corneal epithelial (HCE) cells via the protease-activated receptorPAR2 pathway.

Methods: A. castellanii trophozoites were grown in peptone-yeast extract glucose for 7 days and the supernatants were collected and centrifuged. The aPA was purified using the fast protein liquid chromatography system and aPA activity was determined by zymography assays. HCE cells were incubated with or without aPA (100µg/ml), PAR1-agonists (Thrombin, 10µM; TRAP-6, 10µM), and PAR2-agonists (SLIGRL-NH2, 100µM; AC55541, 10µM) for 24 hours. Inhibition of PAR1 and PAR2 involved pre-incubating the HCE cells for 1 hour with the antagonist of PAR1 (SCH79797, 60µM) and PAR2 (FSLLRY-NH2, 100µM) and then incubated with or without aPA, Thrombin, TRAP-6, SLIGRL-NH2, and AC55541 for 24 hours. Expression of PAR1 and PAR2 was examined by qRT-PCR, flow cytometry, and immunocytochemistry. IL-8 expression was quantified by qRT-PCR and by ELISA.

Results: PAR1 and PAR2 surface protein were expressed in HCE cells. aPA and PAR2-agonists significantly upregulated PAR2 expression (~1-2 times) ($P<0.05$). PAR2-antagonist significantly inhibited aPA and PAR2-agonists-induced PAR2 expression (~2-5 times) ($P<0.5$) in HCE cells. PAR1-agonists, but not aPA, significantly upregulated PAR1 expression, which was significantly inhibited by PAR1-antagonist (~30-45 times) in HCE cells. aPA and PAR2-agonists, but not PAR1-agonists, stimulated IL-8 production, which is significantly diminished by PAR2-antagonist (~2-10 times) ($P<0.5$). PAR1-antagonist did not diminish aPA-induced IL-8 production in HCE cells.

Conclusions: aPA specifically induces expression and production of IL-8 in HCE cells via PAR2 pathway and PAR2-antagonists may be a therapeutic target in AK.

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IRB/IACUC#

913 Poster **Classification:** GSBS Student

Presenter: Yong Park **Department:** North Texas Eye Research Institute

Authors: Yong Park, University of North Texas Health Science Center at Fort Worth; Brett Mueller, University of North Texas Health Science Center at Fort Worth; Nolan McGrady, University of North Texas Health Science Center at Fort Worth; Hai-Ying Ma, University of North Texas Health Science Center at Fort Worth, MS; Adnan Dibas, PhD, University of North Texas Health Science Center at Fort Worth; Thomas Yorio, PhD, University of North Texas Health Science Center at Fort Worth

RETINAL GANGLION CELLS ARE RESISTANT TO AMPA RECEPTOR MEDIATED EXCITOTOXICITY

Purpose: The ionotropic glutamate receptors (iGluR) have been hypothesized to play a role in glaucoma pathogenesis by mediating excitotoxic death of retinal ganglion cells (RGC). Previous studies on iGluR in the retina have been focused on two broad classes of receptors: NMDA and non-NMDA receptors including the α-amino-3-hydroxy-5-methyl-4-isoxazolepropionic receptor (AMPAR) and Kainate receptor. In this study, we examined the specific excitotoxic effects of activation of the AMPAR in RGCs in-vitro.

Methods: Purified rat RGCs were isolated from P3-P5 Sprague-Dawley rats by a double immunopanning technique using an antibody to Thy 1.1. RGCs were cultured for 7 days before s-AMPA (100µM) treatments. s-AMPA excitotoxicity was determined by Caspase3/7 luciferase activity assay, immunoblot analysis for α-fodrin and Live (calcein AM)/Dead (ethidium homodimer-1) assay. Gap-43 expression was assessed by immunocytochemistry.

Results: Treatment of cultured RGCs with s-AMPA (100µM) for 24, 48 and 72h, both in the presence and absence of trophic factors (BDNF and CNTF), did not alter caspase 3/7 activity and cleavage of α-fodrin (neuronal apoptosis marker), compared to untreated controls. A significantly higher ($p<0.05$) cell survival of RGCs (85.3±1.5% alive cells) was observed after a 72h treatment with 100µM s-AMPA compared to control untreated RGCs (74.8±3.1% alive cells). Quantification of s-AMPA (100µM) – mediated excitotoxicity in purified RGCs incubated for 24h in an oxygen/glucose deprived (0.5% oxygen) medium demonstrated no statistically significant differences in cell survival compared to control RGCs maintained under either normoxia or hypoxia. Additionally, immunocytochemical analysis showed increased GAP-43 staining in RGCs after 24h of treatment with s-AMPA (100µM).

Conclusions: These results indicate that purified RGCs in-vitro are not susceptible to AMPA excitotoxicity as previously hypothesized. Activation of AMPAR increased GAP-43 expression, suggesting AMPAR could possibly increase neurite outgrowth. The ability of AMPA receptors to promote neuroprotection of RGCs remains to be confirmed.

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IRB/IACUC# 2012/13-17-A05

914 Poster **Classification:** GSBS Student

Presenter: Sonali Nashine **Department:** North Texas Eye Research Institute

Authors: Sonali Nashine, University of North Texas Health Science Center at Fort Worth; Byung-Jin Kim, University of North Texas Health Science Center at Fort Worth; Abbot Clark, University of North Texas Health Science Center at Fort Worth; Iok-Hou Pang, University of North Texas Health Science Center at Fort Worth

ROLE OF C/EBP HOMOLOGOUS PROTEIN (CHOP) IN THE SURVIVAL OF RETINAL GANGLION CELLS AFTER RETINAL ISCHEMIA/REPERFUSION INJURY

Purpose: Retinal ischemia/reperfusion (I/R) causes apoptotic death of retinal ganglion cells (RGC). CHOP is a pro-apoptotic protein and a unfolded protein response (UPR) marker that plays a role in ER-stress mediated apoptotic cell death. The purpose of this study was to investigate the role of CHOP in mouse RGC survival following retinal I/R injury.

Methods: Retinal I/R was induced in adult C57BL/6J (WT) and CHOP-/- mice by cannulation of the anterior chamber of the left eye with a needle connected to a reservoir of saline. Intraocular pressure was increased to 120 mmHg for 60 min, after which the needle was withdrawn to restore retinal circulation. Uninjured right eyes served as controls. Expression of CHOP protein and other UPR markers (p-eIF2α and BiP) in WT mice post-I/R was studied using Western blot and immunohistochemistry. To compare RGC survival between WT and CHOP-/- mice, retinal flat mount staining with RGC marker, Brn3a was performed. Scotopic threshold response electroretinography (STR-ERG) was performed at 0.03 mcd.s/m^2 light intensity to evaluate retinal function.

Results: CHOP protein was up-regulated by 30 % in I/R injured eyes (1.30 ± 0.11 arbitrary units (a.u.)) compared to control eyes (1 ± 0.07 a.u.) in WT mice three days after I/R injury ($p < 0.05$). Protein levels of p-eIF2α and BiP also increased by 19% (I/R: 1.19 ± 0.15 a.u., Control: 1 ± 0.06 a.u.) and 11% (I/R: 1.11 ± 0.02 a.u., Control: 1 ± 0.03 a.u.) respectively (both $p < 0.05$). Co-localization of CHOP and Brn3a confirmed the up-regulation of CHOP specifically in the RGCs. In the uninjured control eyes, CHOP knockout did not affect baseline RGC density or STR-ERG amplitude. I/R injury decreased RGC densities and STR-ERG amplitudes in both WT and CHOP-/- mice. However, survival of RGCs in I/R-injured CHOP-/- mouse eyes (3337.1 ± 316.4 RGC/mm^2) was 48% higher ($p < 0.05$) than that of I/R-injured WT mouse eyes (2248.7 ± 225.9 RGC/mm^2) three days after I/R injury. STR-ERG amplitudes were 83 % higher in CHOP-/- I/R eyes (18.6 ± 1.1 μV) compared to WT I/R eyes (10.1 ± 0.9 μV) ($p < 0.05$).

Conclusions: Absence of CHOP partially protects against the loss of RGCs and reduction in retinal function (STR-ERG) after I/R injury. These results indicate that CHOP and thus ER-stress play an important role in RGC apoptosis in retinal I/R injury.

Sponsor U.S. Department of defense grant W81XWH-10-20-0003

IRB/IACUC# Approval# 2011/12-58

915 Oral **Classification:** Dual Degree student

Presenter: Yong Park **Department:** Pharmacology & Neuroscience

Authors: Brett Mueller, University of North Texas Health Science Center at Fort Worth; Yong Park, University of North Texas Health Science Center at Fort Worth; Hai-Ying Ma, University of North Texas Health Science Center at Fort Worth; Thomas Yorio, PhD, University of North Texas Health Science Center at Fort Worth

SIGMA-1 RECEPTOR STIMULATION PROTECTS PURIFIED RETINAL GANGLION CELLS FROM ISCHEMIC INSULT THROUGH THE PHOSPHORYLATION OF EXTRACELLULAR SIGNAL REGULATED KINASE 1/2

Purpose: Sigma-1 receptor activation and mitogen-activated protein kinases (MAPKs) have been shown to have neuroprotective roles in protecting retinal ganglion cells (RGCs) from cell death. The purpose of this study was to determine if sigma-1 receptor stimulation with pentazocine could promote neuroprotection under conditions of ischemia through the phosphorylation of extracellular signal regulated kinase (pERK)1/2.

Methods: Primary RGCs were isolated from P3-P7 Sprague-Dawley rats and purified by sequential immunopanning using a Thy 1.1 antibody. RGCs were cultured for 7 days before subjecting the cells to an ischemic insult (0.5% oxygen in glucose-free medium) for 6 hours. During the ischemic insult, RGCs were treated with pentazocine (sigma-1 receptor agonist) with or without BD1047 (sigma-1 receptor antagonist). In other experiments primary RGCs were treated with pentazocine, in the presence or absence of PD98059 (ERK1/2 inhibitor). Cell survival/death was assessed by staining with the calcein-AM/ethidium homodimer reagent. Levels of pERK1/2, total ERK1/2, and beta tubulin expression were determined with immunoblotting and immunofluorescence.

Results: RGCs subjected to an ischemic insult demonstrated more than a 40% increase in cell death, compared to untreated controls. RGCs maintained under ischemia also showed a 50% decrease in expression of pERK1/2 ($p<0.05$). Cell death was attenuated when RGCs were treated with pentazocine under ischemic conditions and levels of pERK1/2 were increased more than 60% ($p<0.05$), compared to untreated RGCs subjected to ischemia. Treatment with BD1047 abrogated the pentazocine neuroprotection effects, and also attenuated the increase in levels of pERK1/2 ($p<0.05$). Finally, treatment with PD98059 also reversed the pentazocine mediated neuroprotective effects on RGCs, and abolished the expression of pERK1/2 ($p<0.05$).

Conclusions: These results establish a direct relationship between sigma-1 receptor stimulation and neuroprotective effects under ischemia through the involvement of the MAPK/ERK1/2 pathway in purified RGCs. These findings support a role for sigma receptor agonists as potential neuroprotective agents.

Sponsor n/a

IRB/IACUC# 2012/13-17-A05

916 Poster **Classification:** Staff (Not For Competition)

Presenter: Tara Tovar **Department:** Cell Biology and Immunology

Authors: Tara Tovar, University of North Texas Health Science Center at Fort Worth; Monal Naik, University of North Texas Health Science Center at Fort Worth; Abbot Clark, University of North Texas Health Science Center at Fort Worth; Robert Wordinger University of North Texas Health Science Center at Fort Worth, PhD

TRANSFORMING GROWTH FACTOR-β2 EFFECTS EXPRESSION OF PERIOSTIN AND PROCOLLAGEN C-ENDOPEPTIDASE ENHANCER 1 IN HUMAN TRABECULAR MESHWORK CELLS

Purpose: Transforming growth beta-2 (TGF-β2) has been associated with increased extracellular matrix (ECM) deposition, which is attributed to increased aqueous humor outflow resistance through the trabecular meshwork (TM). We have previously demonstrated that bone morphogenetic protein 1 (BMP1) (an enzyme responsible for the cleavage and maturation of ECM proteins) is expressed and regulated by TGF-β2 in the human TM and that BMP1 regulates lysyl oxidase activity. Also, other factors associated with the ECM remodeling include periostin (POSTN) and procollagen c-endopeptidase enhancer 1 (PCOLCE1). The purpose of this study was to determine whether human TM cells (a) express POSTN and PCOLCE1 (b) whether expression of POSTN and PCOLCE1 are regulated by TGF-β2.

Methods: Primary human normal (NTM) and glaucomatous (GTM) cells were isolated and subjected to qPCR and Western immunoblotting (WB) for POSTN and PCOLCE1 expression. qPCR was used to determine POSTN and PCOLCE1 expression between control and TGF-β2 treated (5ng/ml for 24 hours) TM cells. WBs of cell lysates and conditioned medium were used to compare POSTN and PCOLCE1 protein expression between control and TGF-β2 treated NTM and GTM cells.

Results: Human TM cells expressed POSTN and PCOLCE1 mRNA and protein. Exogenous TGF-□2 increased POSTN mRNA expression ($p<0.05$) and decreased PCOLCE1 expression ($p<0.0005$) compared to control cells. WB analysis showed increased POSTN secretion in NTM compared to GTM cells ($p<0.05$). TGF-□2 induced POSTN in NTM cells ($p<0.05$). However, no POSTN was detected in cell lysates of TM cells. WB analysis showed decreased PCOLCE1 secretion in NTM cells compared to GTM cells ($p<0.05$).

Conclusions: POSTN and PCOLCE1 are expressed in the human TM. These molecules may be involved in the normal function of the TM as well as TM pathogenesis. Altered expression of POSTN and PCOLCE1 may lead to structural and functional changes in the ECM within the TM.

Sponsor NIH: EY017374

IRB/IACUC#

General Medicine (Abstracts in the 1000s)

1000 Poster **Classification:** TCOM DO Student
Presenter: Dan Sumko **Department:** Family Medicine
Authors: Dan Sumko, University of North Texas Health Science Center at Fort Worth; William Soutt, University of North Texas Health Science Center at Fort Worth; Long Wong, MD, PhD, University of North Texas Health Science Center at Fort Worth; Stephen Weis, DO, University of North Texas Health Science Center at Fort Worth

CONGENITAL IDIOPATHIC HYPOGONADOTROPIC HYPOGONADISM: A CASE REPORT

Purpose: Congenital idiopathic hypogonadotropic hypogonadism (IHH) is caused by the lack of production or physiological response to gonadotropin releasing hormone (GnRH). A wide variety of genetic mutations have been implicated in the disorder demonstrating autosomal dominant, recessive, and X-linked inheritance patterns. Diagnosis of IHH is complicated by its similarity in presentation to a constitutional delay of puberty and often goes undiagnosed in patients under the age of 18. Once IHH is identified, the effects of the disturbed HPA axis must be addressed. In this report, we offer a brief overview of the diagnosis and management of IHH and present the case of a 27-year old male with undiagnosed IHH.
Methods: A 27-year old male presented to a family medicine clinic with complaint of a changing skin lesion that was a melanoma in situ. As a result the patient had a full-skin exam and was found to have a microphallus, undescended testes, and minimal pubic hair distribution. He had a normal sense of smell. Laboratory evaluation showed total testosterone to be 26 ng/dL (250-1100 normal), LH 0.4 mIU/mL (1.5-9.3 normal), and FSH 1.6 mIU/mL (1.6-8.0 normal). Prolactin, PTH, and calcium were within normal limits, as well as his CBC and BMP. MRI of the brain showed no lesions of the hypothalamus or pituitary gland. An abdominal CT confirmed undescended testes. DEXA scan revealed osteopenia.
Results: The patients was diagnosed as IHH. The patient was provided with supplementary vitamin D, calcium, and referrals to endocrinology and urology for orchiopexy.
Conclusions: The diagnosis of IHH in this patient was critical for his future health. Osteoporosis, increased risk of testicular cancer secondary to cryptorchidism, and infertility are just a few of the more serious sequelae associated with IHH. When diagnosed early, these comorbidities can be reduced or even eliminated. This case highlights the value of obtaining a detailed history and performing a thorough physical examination as this patient's risk of cancer, fractures, and infertility could have been dramatically reduced with an earlier diagnosis .
Sponsor N/A
IRB/IACUC# 2014-007

1001 Poster **Classification:** Resident
Presenter: Andrew Lovell, DO **Department:** UNT Health Family Medicine
Authors: Andrew Lovell, DO, University of North Texas Health Science Center at Fort Worth; Vicki Nejtek, University of North Texas Health Science Center at Fort Worth; Deepika Talari, University of North Texas Health Science Center at Fort Worth; Steven Ake, University of North Texas Health Science Center at Fort Worth; Frank Filipetto, DO, University of North Texas Health Science Center at Fort Worth

MEDICAL SCHOOL EMPLOYEE HEALTH COMPARED TO STATE AND NATIONAL AVERAGES

Purpose: The 2012 Center for Disease Control (CDC) survey found 65.1% of Texans and 63.9% of U.S. citizens' body mass index (BMI) is >25 indicating that most Americans are overweight or obese. Health data for medical school employees in comparison to state and national averages is scarce. Here, we examined the health status and behaviors of medical school employees to determine the influence of the health promotion environment. We hypothesized that medical school employees are healthier than the state and national averages.
Methods: A prospective study was conducted to examine medical school employee health status and behaviors. Vital signs, weight, fat percentage, random serum glucose, exercise, and sleep were primary outcomes measured. Subjects completing the study received $1 compensation. Frequencies and chi-square analyses were performed using SPSS (version 19). A 95% confidence interval and an alpha of 0.05 were used to determine significance.
Results: Sixty-nine employees volunteered to participate. We found that BMI (25.8 + 5.5) was slightly higher than the recommended range (18.5-24.9). Almost 45% of participants were slightly overweight edging towards obesity (BMI >25). Mean systolic/diastolic blood pressure was 125/79 mmHg (normal=120/80). Mean body fat % for men (17.2) was within the recommended range (15-20%), but was slightly higher for women (31.8 vs. 24-30%). However, these values are substantially lower than the national average (28.1 = men, 39.8 = women). Significant race/ethnicity differences in BMI were evident.
Conclusions: Based on the recommended values and the state and national averages, these data suggest that medical school employees seem to have healthier physiology than the general population. Although prevalence of overweight and obesity in our sample is better than the state and national averages, these values are still higher than the recommended range. Working in a medical school environment may offer some protective factors, but more work is needed to reduce body weight. These preliminary data interpretations are limited due to a small sample size.
Sponsor n/a
IRB/IACUC# 2013-226

1002 Poster **Classification:** SPH Student
Presenter: Samiah Sultan Al-Angari **Department:** Environmental & Occupational Health
Authors: Samiah Al-Angari, University of North Texas Health Science Center at Fort Worth; Alisa Rich, University of North Texas Health Science Center at Fort Worth; Jay Patel, University of North Texas Health Science Center at Fort Worth

META-ANALYSIS OF THE HEALTH EFFECTS FROM CARBON DISULFIDE EXPOSURE TO NATURAL GAS INDUSTRIAL WORKERS

Purpose: Health effects from occupational exposure to Carbon disulfide (CS_2) have been primarily associated with viscose rayon plant workers. The objective of this study was to examine the potential for health impairment from CS_2 exposure in natural gas workers. This study is unique in associating exposure to CS_2 to natural gas workers and unrecognized adverse health impairments.
Methods: A meta-analysis study was conducted and published literature on the health effects of CS_2 were reviewed. Databases searched included MEDLINE, TOXLINE, and PubMed. Studies related to exposure to CS_2 were limited and historically associated with the viscose rayon industry. Analysis of the published literature of CS_2 exposure to workers in petrochemical refineries were identified but limited. Selection criteria were inclusive to all studies available despite study design. The inclusivity of all study designs was influenced by the lack of current literature of CS_2 exposure to occupational workers in the U.S.
Results: Results revealed exposure to CS_2 was associated with multiple health effects in various body systems. The potential for significant health effects both on a short-term and long-term basis were identified in natural gas extraction and processing workers exposed to CS_2.
Conclusions: Natural gas occupational workers may be exposed to CS_2 from extraction and processing leading to adverse health effects comparable to viscose rayon workers. This study is the first to associate CS_2 to occupational workers involved in natural gas extraction or processing operations. This study illuminates the need for application of regular medical diagnostic tools to recognize CS_2 levels in workers.
Sponsor N/A
IRB/IACUC#

1003 Poster **Classification:** Resident
Presenter: Stephen D. Ake **Department:** Family Medicine
Authors: Stephen Ake, University of North Texas Health Science Center at Fort Worth; Susan Franks, University of North Texas Health Science Center at Fort Worth; Adam Smith, Fort Worth Lap Band

SUSTAINED CHANGES IN GLP-1 AND INSULIN 12 MONTHS AFTER LAPAROSCOPIC GASTRIC BANDING SURGERY

Purpose: The following hypotheses were examined: (1) Fasting and post-prandial (pp) GLP-1 will be increased 12 months after LGBS, and (2) Fasting and pp-insulin will be decreased after LGBS. Relationships between GLP-1 and weight loss were explored.
Methods: Thirteen LGBS patients (9 women and 4 men) who underwent pre-surgical and 6-month post-surgical testing were retested at 12-months post-surgically. Average baseline BMI was 40.5 (32.4-48.4). Average age was 47.5 (24-66). Fasting and pp-blood samples were taken to evaluate GLP-1 and insulin. Data were analyzed using repeated measures ANOVA.
Results: In comparison to baseline, fasting GLP-1 increased ($F=6.46$, $p=0.006$), fasting insulin decreased ($F=6.11$, $p=0.022$) and pp-insulin decreased ($F=9.46$, $p=0.008$). The ppGLP-1 increase approached significance ($F=3.70$, $p=0.065$), with a significant post-hoc pairwise finding at 12-months in comparison to baseline ($p=0.004$).
Conclusions: Results suggest that LGBS improves GLP-1 and insulin as early as 6 months and that these improvements persist up to 1 year. Overall, these improvements appear independent of weight loss, although exploration of data suggests a possible connection with post-prandial GLP-1 at 12-months. These results provide further evidence of the efficacy of LGBS for the treatment of diabetes.
Sponsor
IRB/IACUC# 2007-053

General Public Health (Abstracts in the 1100s)

1100 Poster **Classification:** SPH Student
Presenter: Jennifer Cole **Department:** Texas Prevention Institute
Authors: Jennifer Cole, University of North Texas Health Science Center at Fort Worth; Leilani Dodgen MPH, CHES, University of North Texas Health Science Center at Fort Worth; Heather Kitzman-Ulrich, PhD, University of North Texas Health Science Center at Fort Worth; Jenny Lee University of North Texas Health Science Center at Fort Worth, PhD,MPH; Mark DeHaven, PhD, University of North Carolina at Charlotte

"IS SKINNY HEALTHY"? : FOCUS GROUP FINDINGS AMONG AFRICAN AMERICAN WOMEN REGARDING BARRIERS TO WEIGHT LOSS

Purpose: To examine how motivation and appearance is related to weight loss among African American (AA) women. Studies indicate AA women are more satisfied with their body and accept a larger body size. Yet, obesity rates leading to chronic disease are highest among AA women with nearly 60% considered overweight/obese.
Methods: Focus groups were conducted with 51 AA women (mean age=45.6 years; 21% high school; 38% college; 62% full time employed). Social Cognitive Theory and Social Ecological Framework informed questions evaluating barriers and facilitators to weight loss. Classic content analysis identified themes related to motivation for weight loss and body appearance. Inter-rater reliability was adequate (K=0.65).
Results: Motivation was mentioned 73 times and appearance 28 times. Prominent subthemes of motivation were lack of discipline, needing accountability, and excuses. Prominent subthemes for appearance were disconnection of obesity to health, acceptance of current size, and concern of losing desired shape. Concerns related to appearance may be related to motivation for weight loss in AA women such that preferences for appearance may interfere with motivation to adhere to weight loss behaviors.
Conclusions: Research is needed to determine how to improve motivation for weight loss while considering AA women's preferences for appearance.
Sponsor N/A
IRB/IACUC# 2011-164

1101 Poster **Classification:** SPH Student
Presenter: Dawn Nguyen **Department:** Texas Prevention Institute
Authors: Dawn Nguyen, University of North Texas Health Science Center at Fort Worth; Rachael Waverka, University of North Texas Health Science Center at Fort Worth; Heather Kitzman-Ulrich, PhD, University of North Texas Health Science Center at Fort Worth; Don Wilson, MD

AN ACADEMIC-COMMUNITY-CLINIC PARTNERSHIP TO REDUCE WEIGHT IN HISPANIC YOUTH: FIT FOR HEALTH

Purpose: To develop an academic-community partnership, FIT for Health, to deliver a weight management program to low-income underserved communities who experience obesity related health disparities.
Methods: Families with an overweight child (N=12; mean age = 11.8 (SD=2.1) years, 83% female, 100% Hispanic, mean BMI% = 96.3) were recruited by medical staff in a neighborhood clinic.
Results: Youth maintained their weight over the 9-week program and demonstrated a small decrease in BMI percentile (96.3 to 96.0). The program demonstrated high satisfaction with an 84% attendance rate and 100% of families reporting enjoyment of the program, 89% were happy with their progress, and 100% felt they did a good job getting healthier. In addition, 78% of volunteer students reported an increase in knowledge about delivering community-based health promotion programs.
Conclusions: The FIT academic-community-clinic model is a novel, cost-effective, and promising health promotion program that can provide resources to underserved low-income, ethnic minority families along with opportunities for students to participate in community-based health promotion.
Sponsor
IRB/IACUC# 2013-110

1102 Poster **Classification:** TCOM DO Student
Presenter: Ariel Riezenman **Department:** Rural Medicine
Authors: Ariel Riezenman, University of North Texas Health Science Center at Fort Worth; Irwin Mendoza, University of North Texas Health Science Center at Fort Worth; Ana Chiapa-Scifres, MS, MPH, University of North Texas Health Science Center at Fort Worth; John Bowling, DO University of North Texas Health Science Center at Fort Worth

AN EVALUATION OF DIABETES KNOWLEDGE AMONGST TYPE 2 DIABETICS, HIGH RISK, AND LOW RISK DIABETIC POPULATIONS IN A RURAL COMMUNITY

Purpose: It has been predicted that 1 of 3 adults in the US will have diabetes by 2050. Most Texas rural communities lack adequate healthcare professionals and resources to serve their residents. The assessment of diabetes knowledge in a rural community identifies groups that may benefit from diabetes education in efforts to prevent diabetes and its associated medical complications.
Methods: A cross-sectional study was performed within Guadalupe County at hospital and clinical settings. A consent and 24-item survey was provided to each participant. Data abstracted from 122 individual surveys were analyzed on SAS. Participants were classified as either having type 2 diabetes or being of high/low risk for type 2 diabetes. Risk status was based on the number of diabetes risk factors outlined by the National Diabetes Informational Clearinghouse. Diabetes exposure was determined by either having diabetes or knowing someone with diabetes, such as a family member or friend. Diabetes knowledge was categorized based on number of correct questions: poor (<8), average (9-16), good (17-24).
Results: Participants had an average age of 43 years, were predominantly white (63.87%), and female (61.34%). The average number of correct responses from the diabetes knowledge questionnaire was 12.38 (±3.43), with majority of participants having average diabetes knowledge, 78.15%. Independent sample t-tests were conducted to compare the average number of correct responses from the diabetes knowledge questionnaire and both diabetes exposure and age. Specifically, those with diabetes exposure had a significantly higher average number of correct responses ($M = 12.69$, $SD = 3.23$) when compared to participants not exposed to diabetes ($M = 9.27$, $SD = 3.88$), $t(117) = -3.28$, $p = 0.001$. Similarly, the average number of correct responses was significantly different between participants aged 18 to 25 ($M = 10.87$, $SD = 3.13$) and those aged 26 and older ($M = 13$, $SD = 3.28$), $t(113) = -3.10$, $p = 0.003$. A one-way ANOVA noted a significant effect for risk status on average number of correct responses, $F(2, 118) = 5.14$, $p=0.007$. Post hoc analysis using the Tukey HSD test indicated that the average number of correct response for those with diabetes ($M = 13.7$, $SD = 2.69$) was significantly different from those at low risk ($M = 11.29$, $SD = 3.85$). However, those at high risk ($M = 12.68$, $SD = 3.02$) did not differ significantly from either those at low risk or those with type 2 diabetes. A one-way ANOVA showed no significant effect for gender on average number of correct responses, $F(2, 118) = 1.78$, $p=0.173$.
Conclusions: Overall, this study supports targeted diabetes education for persons aged 18-25 years, regardless of gender, in rural communities due to their lower levels of diabetes knowledge compared to persons aged 26 and older. Through diabetes awareness programs and health education classes, diabetes prevention and future medical complications may be reduced in rural settings.
Sponsor N/A
IRB/IACUC# 2013-123

1103 Poster **Classification:** SPH Student
Presenter: Lauren R. Hall **Department:** Epidemiology
Authors: Lauren Hall, University of North Texas Health Science Center at Fort Worth; Brad Cannell, PhD, University of North Texas Health Science Center at Fort Worth; Martha Felini, PhD, University of North Texas Health Science Center at Fort Worth

ASSOCIATION BETWEEN PERFLUORONONANOIC ACID (PFNA) AND THYROID HORMONE LEVELS IN THE U.S. POPULATION: A CROSS-SECTIONAL STUDY OF NHANES DATA, 2007-2008

Purpose: Perfluorinated chemicals (PFCs) are widely used in many consumer products and have been linked with thyroid hormone disruption. Most studies have focused on perfluorooctonoic acid (PFOA) and perfluorooctane sulfonate (PFOS) exposures and thyroid hormone levels, but perfluorononananoic acid (PFNA) has shown to be associated with thyroid hormone levels in animal studies. More human studies are needed to assess PFNA in relation to thyroid hormone levels. We assessed the association between serum PFNA levels and serum thyroid hormone levels (T_3, T_4, and TSH) in the adult U.S general population.
Methods: We analyzed data from the 2007-2008 National Health and Nutrition Examination Survey (NHANES) for participants 20 years of age and older. Sex-specific multivariable linear regression models were used to assess the association between perfluorononanoic acid (PFNA) and thyroid hormone measures of triiodothyronine (T3), thyroxine (T4), and thyroid stimulating hormone (TSH), separately, while adjusting for age, race, and BMI.
Results: Higher concentrations of PFNA were found in males (males = 1.95 ng/mL and females = 1.60 ng/mL). There were statistically significant negative relationships with PFNA and T_3 ($p = 0.0013$) and T_4 ($p = 0.0381$) among males, after adjustment for age, race, and BMI, indicating that gender may be an effect modifier.
Conclusions: PFNA is associated with decreasing $T_3$and T_4 levels in males. However, there have been no consistent findings of an association between PFNA levels and thyroid hormone levels in previous studies. More evidence and research is needed to determine specific implications of PFNA exposure and thyroid function.
Sponsor N/A
IRB/IACUC# 2013-002

1104 Poster **Classification:** Faculty (Not for Competition)
Presenter: Alisa Larraine Rich **Department:** Environmental & Occupational Health
Authors: Alisa Rich, University of North Texas Health Science Center at Fort Worth; Jay Patel, University of North Texas Health Science Center at Fort Worth

CARBON DISULFIDE AS A CONTRIBUTOR TO FORMATION OF CARBON DIOXIDE IN THE ATMOSPHERE FROM NATURAL GAS EXTRACTION AND PROCESSING OPERATIONS

Purpose: This study is one of the first to identify the presence of CS2 and other sulfide compounds in emissions from unconventional shale gas extraction and processing, and the mechanisms by which it contributes CO2 to the atmosphere. This study also identifies COS, CO and SO2 as additional greenhouse gas (GHG) contributors from CS2 breakdown. The purpose of this study is to examine the different mechanisms by which CS2 and associated sulfide compounds can form CO2 and their ability to contribute to GHG atmospheric levels.
Methods: A literature review was performed correlating CS2 emissions and production of CO2 in natural gas emissions. Databases searched included MEDLINE, TOXLINE, and PubMed. Current research has not identified CS2 as a contributor to CO2 levels in the atmosphere from natural gas extraction and processing operations. No paper was found that recognized all four potential mechanisms of CO2 formation or identified the potential for COS and SO2 to be contributors to CO2 formation.
Results: Atmospheric conversion of CS2 was shown to result in the formation of CO2, COS, CO and SO2. Emissions from unconventional shale gas extraction and processing were shown to be a source for CS2 in the atmosphere. The mechanisms for GHG formation was found to occur through combustion, photolysis and hydrolysis of CS2.
Conclusions: The contribution of CO2, COS, CO, and SO2 in the atmosphere from natural gas emission of CS2 may be underestimated. Future calculations of atmospheric GHGs levels may consider what contribution CS2 from natural gas emissions is making to GHG levels in the atmosphere.
Sponsor N/A
IRB/IACUC#

1105 Poster **Classification:** TCOM DO Student
Presenter: Carol Kim Le **Department:** Rural Medicine
Authors: Krupa Desai, University of North Texas Health Science Center at Fort Worth; Carol Kim Le, University of North Texas Health Science Center at Fort Worth; Matt Negem, University of North Texas Health Science Center at Fort Worth; Ana Chiapa-Scifres University of North Texas Health Science Center at Fort Worth; John Bowling, DO, University of North Texas Health Science Center at Fort Worth

COLORECTAL CANCER SCREENING KNOWLEDGE AND BEHAVIOR IN RURAL TEXAS

Purpose: Colorectal Cancer (CRC) is the third most prevalent form of cancer. Colonoscopies/Sigmoidoscopies (C/S) can be an effective screening tool for CRC. The study investigated the relationship between knowledge and awareness of CRC, and the prevalence of C/S in a rural community.
Methods: A survey was implemented and 360 individuals aged 18 to 93 years were recruited from Clifton and Cuero, Texas. Basic knowledge and awareness of CRC was divided into 3 categories: low, medium, and high. History of C/S was measured dichotomously as yes or no. Logistic regression was used to estimate the adjusted odd ratio (OR) and 95 % confidence interval (CI) between knowledge and awareness of CRC, and the prevalence of C/S after controlling for potential covariates (age, gender, race, education, insurance status, and income).
Results: Results showed that those who had high and moderate level of knowledge and awareness of CRC were 6.38 (OR = 6.83, p = 0.004, 95% CI = 1.83-25.50) and 3.62 (OR = 3.62, p = 0.038, 95% CI = 1.073-12.209) times more likely to undergo C/S than those with low level of knowledge and awareness. As the age increased by one year, participants were 1.09 times (9 %) more likely to undergo C/S. Result were not significant for any other potential covariates.
Conclusions: Our findings suggest that knowledge and awareness of CRC influence the prevalence of C/S. Health education programs should continue to promote C/S in rural communities to reach Healthy People 2020 goals.
Sponsor N/A
IRB/IACUC# 2012-147

1106 Poster **Classification:** TCOM DO Student
Presenter: Shamyal H. Khan **Department:** Rural Medicine
Authors: Shamyal Khan, University of North Texas Health Science Center at Fort Worth; Ana Luz Chiapa-Scifres, University of North Texas Health Science Center at Fort Worth

COMPARING ATTITUDES AND OUTCOMES OF THE AFFORDABLE CARE ACT'S READMISSION REDUCTION PROGRAM IN TEXAS RURAL AND URBAN HOSPITALS

Purpose: Section 3025 of the Affordable Care Act, The Readmission Reduction Program, which outlines penalties to participating hospitals with high readmission rates in certain diagnoses, began the Federal fiscal year (FY) of 2012 and has been met with mixed criticism as to its fairness as well as its results. Penalties asserted to participating hospitals under this policy will rise from 1% of Medicare reimbursement dollars (FY 2012) to eventually 3% (FY 2015) with limited data suggesting improved quality of care as a result of implementation. Prior data is conflicting if readmission rates are a positive, negative, or even contributory to outcomes on the national scale. This project sought to determine if readmission rates had gone down in participating Texas hospitals and what the attitudes are at hospitals concerning the readmission rate as a measure of quality of care. Furthermore, we sought to review possible discrepancies between rural and urban facilities.
Methods: Hospitals were approached among a qualifying list with the intent of gathering a sample size of 25. A cross-sectional survey was provided to participating hospitals inquiring about the following: readmission rates as a factor for quality of care, protocol for discharge instructions, average length of stay increases, penalties assessed by Medicare, and Medicare reimbursements as significant income (25%) to the hospital.
Results: Preliminary data is being gathered and indicates that while attitudes remain ambiguous an increased focused on readmission rates have driven readmission down.
Conclusions: Readmission rate as a factor of quality of care remains undetermined.
Sponsor
IRB/IACUC# 2013-133

1107 Poster **Classification:** SPH Student
Presenter: Shivani Arora **Department:** Biostatistics
Authors: Shivani Arora, University of North Texas Health Science Center at Fort Worth; Subhash Aryal, University of North Texas Health Science Center at Fort Worth

COMPARISON OF FREQUENTIST AND BAYESIAN TOLERANCE INTERVALS VIA SIMULATION

Purpose: To compare via simulations frequentist and Bayesian methods for estimating the shape parameter of a gamma distribution and apply the estimates to construct gamma tolerance interval.
Methods: We generated data for various sample sizes (10, 20, 50 and 100) from gamma distribution with shape parameter = 0.25 to 7 (with an increment of 0.25). The scale parameter was held constant at 1. We obtained parameter estimate for the shape parameter via maximum likelihood method, method of moments and Bayesian approach. Next, we constructed 95% tolerance interval separately using each of the parameter estimates and evaluated the coverage probability.
Results: All three methods failed to consistently provide 95% coverage. The coverage probability for the Bayesian approach was closer to 95% compared to the other two methods. For sample size less than 20, the coverage was close to 95% for the Bayesian approach and the method becomes progressively conservative when sample size becomes larger. This was observed consistently for all values of the shape parameter.
Conclusions: Tolerance intervals are frequently used in environmental monitoring programs. Most monitoring programs for groundwater use samples of size 8 or 20 and our study shows that the Bayesian approach performs adequately for sample sizes less than 20.
Sponsor
IRB/IACUC#

1108 Poster **Classification:** Resident
Presenter: Stephen D. Ake **Department:** Family Medicine
Authors: Stephen Ake, University of North Texas Health Science Center at Fort Worth; Vicki Nejtek, University of North Texas Health Science Center at Fort Worth; Deepika Talari, University of North Texas Health Science Center at Fort Worth; Andrew Lovell, DO, University of North Texas Health Science Center at Fort Worth; Frank Filipetto, DO, University of North Texas Health Science Center at Fort Worth

DIFFERENCES IN HEALTH BEHAVIORS BETWEEN MEDICAL SCHOOL FACULTY AND STAFF

Purpose: The 2012 National Gallup-Healthways survey using self-report phone interviews found that physicians and nurses are healthier than other workers. However, objective data to adequately describe the health status in clinicians versus non-clinicians is lacking. Here, we objectively measured and compared physiological health indices and behaviors between medical school faculty and staff.
Methods: A prospective, cross-sectional pilot study was conducted to compare routine health and well-being between faculty and non-faculty medical school employees (n=69). Information about routine preventative health behaviors, inoculations, exercise, daily stress levels, and general life enjoyment were obtained. Subjects received $1 for completing all assessments. Data were analyzed using SPSS (version 19) and included analysis of variance to compare quantifiable variables and chi-square for categorical variables. All analyses were conducted using a 95% confidence level and an alpha level of 0.05 was used to determine statistical significance.
Results: There were no statistically significant group differences between faculty and non-faculty staff in weekly exercise, daily stress levels, and general life enjoyment. 53% of staff exercised > 3 times/week than 25% of the faculty ($p = 0.009$). Based on the total population, 24% of combined faculty and staff did not receive a flu shot during the past 12-months ($p = 0.026$). More concerning was 25% of faculty and 78.6% of staff had not been TB tested in the past year. Significant differences emerged in faculty reporting higher levels of daily stress ($p = 0.048$), and lower overall levels of general life enjoyment than in non-faculty staff ($p = 0.023$).
Conclusions: These data suggest that medical school faculty do not have better health outcomes or behaviors than non-faculty staff. Conversely, staff are significantly happier in life, exercise more often, and report less daily stress than faculty members. The data suggest that while faculty may take good care of others, they seem to put themselves at a higher risk for poor health outcomes. Further investigation is warranted.
Sponsor N/A
IRB/IACUC# 2013-226

1109 Poster **Classification:** SPH Student
Presenter: Michael Tran **Department:** Behavioral & Community Health
Authors: Michael Tran, University of North Texas Health Science Center at Fort Worth; Joe Simon, University of North Texas Health Science Center at Fort Worth; Susie Ramisetty-Mikler, University of North Texas Health Science Center at Fort Worth

DRINKING HABITS IN HIGH SCHOOL ADOLESCENTS IN TEXAS

Purpose: A major public health concern facing high schools in the United States is binge drinking among 9th-12th grade students and its consequences towards adolescent health and well-being, especially physical violence. The short and long term consequences of binge drinking include blackouts, memory loss, suicides, academic failures, violence, and automobile accidents. This study examines the association between binge drinking and other risk behaviors with physical violence among high school students in Texas.
Methods: Data was analyzed from the 2011 Youth Risk Behavior Survey (YRBS) to examine the prevalence of binge drinking among high school students in Texas and its relationship to other categories of risk behavior like smoking, marijuana use, and drugs without prescription. Binge drinking is defined as consuming ≥5 drinks in about 2 hours. Prevalence estimates, odds ratios, p-values, and 95% confidence intervals were calculated by using Statistical Package for the Social Sciences (SPSS) software. Logistic regression analysis was used to examine the associations between the different patterns of alcohol consumption and physical violence.
Results: 53.4% of the participants are associated with both physical fights in schools and an episode of > 1 binge drinking in the last one year. Males have higher odds (OR=2.511) with increased violence compared to females. Among different ethnicities, African Americans have higher odds (OR=1.566) of violence compared to any other ethnic groups. Students who binge drank were more likely than both nondrinkers and current drinkers who did not binge, to report being in a physical fight at least once in twelve months. Other covariates such as male gender (OR=2.51), smoking marijuana (OR=1.52), smoking tobacco (OR=1.84) and using drugs without prescription (OR=1.64) have an association with increased physical fights.
Conclusions: The alcohol consumption, especially binge drinking, and other risk factors (smoking, marijuana use, and drug use without prescription) among high school adolescents is significantly associated with increased violence. Study limitations include generalizability of the results and over/under reporting of the responses. Effective intervention strategies will require further attention to other positive and negative covariates, enforcement of the legal drinking age, looking at those who engage in violence sober, and interventions programs for students at-risk.
Sponsor N/A
IRB/IACUC#

1110 Poster **Classification:** SPH Student

Presenter: Mayra Rodriguez **Department:** Behavioral & Community Health

Authors: Mayra Rodriguez, University of North Texas Health Science Center at Fort Worth; Jennifer Lerch, George Mason University; Scott Walters, University of North Texas Health Science Center at Fort Worth; Faye Taxman, George Mason University

FACTORS ASSOCIATED WITH INCREASED MOTIVATION FOR SUBSTANCE ABUSE TREATMENT AMONG PROBATIONERS

Purpose: Study examines the individual factors associated with motivation for substance abuse treatment among probationers.
Methods: Preliminary data (N=103) was collected from MAPIT, a multi-site, randomized controlled trial to increase substance abuse treatment (SAT) compliance. Criminal history, HIV testing, and social support were assessed as potential predictors of motivation. The CJ CEST-Intake was used to measure motivation, desire for help (alpha=.73) and problem recognition (.88).
Results: Nearly 40% had a court condition to attend substance abuse treatment, with 41% having attended SAT sometime prior in their lifetime. 24.3% tested positive for any illicit drug. 87% had ever been tested for HIV in their lifetime, 69% were tested in the past 12 months. 32% had ever tested positive for any STD. Desire for help was marginally associated with at least one night of homelessness in the last 90 days ($F(1, 101)=3.3$, $p=.07$), lifetime prior SAT ($F(1, 101) = 43.43$, $p=.00$), having ever tested positive for an STD ($F(1, 100) = 5.30$, $p=.02$), and testing positive for amphetamines at baseline ($F(1, 91)= 4.39$, $p=.04$). Increased problem recognition was associated with lifetime prior SAT ($F(1, 100)=7.70$, $p=.01$) and testing positive for opiates $F(1, 89)= 5.28$, $p=.02$). Having ever had a prior SAT improved both desire for help ($B= .50$) and problem recognition ($B= .52$).
Conclusions: Information may be helpful in increasing treatment initiation and engagement. Prior SAT, positive for STDs, and drug use were associated with increased motivation. Prior treatment may be considered to assess treatment readiness.

Sponsor
IRB/IACUC# 2011-125

1111 Poster **Classification:** SPH Student

Presenter: Richa Bashyal **Department:** Biostatistics

Authors: Sharon Homan, University of North Texas Health Science Center at Fort Worth; Richa Bashyal, University of North Texas Health Science Center at Fort Worth; Oyinade Akinyede, University of North Texas Health Science Center at Fort Worth; Anindita Roy, University of North Texas Health Science Center at Fort Worth

HEALTHCARE ACCESS AND SATISFACTION WITH CARE BY INSURANCE TYPE AMONG CHILDREN WITH SPECIAL HEALTH CARE NEEDS: A SUMMARY REPORT AND KEY FINDINGS FROM NEW MEXICO

Purpose: This article reports new findings from the 2009-2010 National Survey of Children with Special Health Care Needs (NS-CSHCN) regarding parental opinion on access to health care and satisfaction with care according to insurance type. The report highlights descriptive summary comparing findings from the state of New Mexico, one of the eight states of the Mountain States Genetics Regional Collaborative (MSGRC), to the entire mountain state region and to the nation. The focus is on New Mexico because demographically the state of New Mexico is found to be the underprivileged state in terms of its socioeconomic status.
Methods: Data on 40,242 children included in the NS-CSHCN were used to create the baseline descriptive for the entire nation. A sub group for the MSGRC"REGION" was created with 6,334 observations, which included data from 8 states. Finally, the analysis was narrowed down to only New Mexico to study the association between health care access and satisfaction with care by insurance type and impact of language barrier.
Results: According to this national survey, 13.8% of children under age 17 in New Mexico have special healthcare needs compared to 15.1% nationwide. The respondents are 50% more likely to be Hispanics and approximately 30% are living below the 100% Federal Poverty Level compared to the region and the nation. Families covered by public insurance expressed lower level of satisfaction with care thereby utilizing low quality of care as compared to those who are privately insured. Additionally, parents of Hispanic children whose household language is not English were almost 5 times more likely than their counterparts to go without a usual source of care.
Conclusions: The findings indicate that those who are publicly insured expressed lower level of satisfaction with care compared to those who are privately insured. In addition, language barrier is another leading cause of diminished access to usual source of care. These conclusions suggest that the coverage of public insurance certainly needs to be revised in order to deliver high quality care for CSHCN targeting non-English speaking Hispanic households with low socio-economic status.

Sponsor N/A
IRB/IACUC# 2013-137

1112 Poster **Classification:** Faculty (Not for Competition)

Presenter: Youcheng Liu, ScD, MD **Department:** Environmental & Occupational Health

Authors: Youcheng Liu, ScD, MD, University of North Texas Health Science Center at Fort Worth; Jie Li, Shandong University; Kiyoung Lee, Seoul National University; David Sterling, PhD, University of North Texas Health Science Center at Fort Worth

INDOOR SURFACE CONTAMINATION BY ISOCYANATES FROM CONSUMER PRODUCTS AS A POTENTIAL SOURCE OF SKIN EXPOSURE IN CHILDREN: A PILOT STUDY

Purpose: Environmental exposure to isocyanate-containing products may cause asthma in children. The objective of this pilot study was to identify the sources of isocyanates in homes at Jinan City, Shandong province, China.

Methods: 5 homes recently painted and 5 homes painted for 1 - 4 years were selected in 3 of the 6 districts in Jinan City, China. A variety of environmental surfaces in the bedroom or living room were selected such as wall, wall paper, plywood floor, mattress surface, sofa, desk and chair. Each surface area was tested with both aliphatic and aromatic surface SWYPE^{TM} pads following a standard protocol. To identify the aliphatic isocyanates, mineral oil was lightly sprayed on a surface area of 5 x 5 cm which was then wiped with the SWYPE^{TM} pad 3 times using the thumb, index and middle fingers holding the pad and pressing down firmly starting from the outside and moving toward the inside concentrically. The investigator waited for 5 min for color development. Surfaces tested for aromatic isocyanates were applied with 5 drops of acetone. The surface SWYPE ^{TM} pad was then placed on the surface for 10 – 60 min for close contact before the result was read. If the pad color changed to deep orange or red color, an indication of isocyanate presence was recorded.

Results: All surfaces painted recently were identified with aliphatic isocyanates, whereas wall surfaces painted in the past 1- 4 years showed no presence of aliphatic isocyanates. No aromatic isocyanates on the wall surfaces were identified. However, aromatic isocyanates were identified from surfaces of sofas, chairs and mattresses. Aromatic isocyanates were also detected on some wall papers, plywood floors and furniture (desks). No aliphatic isocyanates were detected on foam and furniture surfaces.

Conclusions: Isocyanate presence on indoor interior surfaces, furniture and furnishing materials is common in homes in Jinan, China. Different types of isocyanates are present on different surfaces. Isocyanates on home surfaces present an exposure risk to infants and young children, which may lead to the sensitization and asthma later in life. Quantitative assessments of isocyanate content on the surfaces and the evaluation on skin exposure through surface and skin wipe sampling, biological monitoring and immunologic testing are needed. The relationship between potential air and skin exposure in children and the risk of asthma in the area should be also investigated.

Sponsor N/A

IRB/IACUC#

1113 Poster **Classification:** Select your classification
Presenter: John Allen **Department:** Non UNTHSC
Authors: John Allen, University of North Texas Health Science Center at Fort Worth; Leigh Johnson, University of North Texas Health Science Center at Fort Worth; Ashlee Loewen, University of North Texas Health Science Center at Fort Worth; Ashley Martin University of North Texas Health Science Center at Fort Worth; Valerie Johnson, University of North Texas Health Science Center at Fort Worth; Kathlene Camp, University of North Texas Health Science Center at Fort Worth; Ashley Toale, University of North Texas Health Science Center at Fort Worth; Margarita Rice, University of North Texas Health Science Center at Fort Worth

LIFE GUARD RESCUES AT SEATTLE PARKS' LAKE BEACHES

Purpose: This purpose of this project is to conduct an exploratory statistical analysis of Water Rescue/Assist Reports for nine fresh water beaches in King County, Washington, for the period 2008 to 2012. The nine beaches covered by the Water Rescue/Assist Report are East Greenlake Beach, Madison Beach, Madrona Beach, Magnuson Beach, Matthews Beach, Mount Baker Beach, Pritchard Beach, Seward Beach, and West Greenlake Beach. The project alternate hypothesis is: By describing and comparing data compiled from the Water Rescue/Assist Reports, public health leaders can make better decisions regarding water safety and can use the information for additional study.
Methods: A total of 508 Water Rescue/Assist Reports reviewed for this analysis. The data from the reports were entered into and analyzed in Microsoft Excel. We reviewed lifeguard rescue records that collected data on: incident date and time of day; victim gender and age; parent availability during rescues for victims under age 18; victim symptoms after rescue; possible neck/back injuries; disposition to hospital; cause of incident; water depth; water temperature; park rules disobeyed; number of active and passive patrons present at time of rescue. The analysis included: age and gender based descriptive statistics; the ratio of lifeguards to patrons; water temperature correlated with rescue frequency; odds ratios and relative risks based on gender and age and the presence of a parent at the time of rescue. We searched records of the King County Medical Examiners deaths to identify drowning deaths occurring in Seattle Parks. The analysis uses coded data to make data inferences using primarily descriptive statistics. Evaluations of non-coded or non-standardized report entries (such as water depth and number of guards on duty) was limited the "Other" category under "Accidents possible causes" in order to determine any possible trends based on information rescuers entered into the form.
Results: Results: 508 rescues were completely recorded; an average of 11/park/year. Rescues steadily increased from beach opening at 11 AM and peaked at 5-7 PM when beaches closed. Most (65%) involved males; males outnumbered females between the ages of 7-50 years (RR=3.1, p5-10 feet deep; (29%) occurred in waters >10-15 feet deep.
Conclusions: This exploratory analysis provides a snapshot of the data from the Water Rescue / Assist Reports filed from 2008-12. The data underscores some key points to be considered, including: most rescued victims were male; rescue frequency positively correlated with increasing levels of parental absence; swimmer overconfidence in their swimming abilities was the most common cause for rescues; more than 70% of rescues occurred in water depth exceeding 5 feet; the relative risk of rescues was twice what is was when there were fewer swimmers in the water as compared to more swimmers in the water. Public health leaders and others can use the information from these reports to better understand the factors involved with rescues and to conduct further study and develop effective policy.
Sponsor N/A
IRB/IACUC# to be determined

1114 Poster **Classification:** SPH Student
Presenter: Saehwan Park **Department:** Health Management and Policy
Authors: Saehwan Park, University of North Texas Health Science Center at Fort Worth; Thaddeus Miller, MPH, University of North Texas Health Science Center at Fort Worth

MAXIMUM COST OF EFFICIENT WEIGHT-LOSS PROGRAMS FOR OVERWEIGHT AND OBESE POPULATIONS

Purpose: 1) To estimate economic and health benefit of different body-mass index (BMI) reduction targets for overall overweight and obese populations as well as each age subgroup 2) To define a Program-cost target (PCT) measure to facilitate cost-effectiveness considerations in planning weight-loss programs
Methods: Person-specific data from a representative sample of the US population (National Health and Nutrition Education Survey IV) was used to determine current population and characteristics of adults aged 30-84 years in the U.S. with BMI exceeding 25, and are candidates for different weight-reduction programs. We used the Archimedes modeling tool to create a simulated population matched to the current US population and simulate the 10-year aggregate effects of achieving three different weight-reduction targets among that population. We then compared economic and health benefits among different subgroups and reduction targets and to estimate the maximum intervention cost for which the program would remain cost effective.
Results: Simulations predict that achieving weight loss targets would result in decreased cumulative for five obesity-related disorders, but that these benefits vary widely by subgroups and target effect. Predicted health benefits range from a net present value of 0.01 to 0.17 QALYs. Optimal relative results are predicted for programs that produce a sustained reduction of BMI level down to 25 kg/m^2. Older subgroups showed higher health benefit for the same BMI reduction target. Estimated PCT ranged from $18,119 to $99,893, with the highest PCT predicted for the subgroups (age 65-84) achieving sustained BMI reductions to 30 kg/m^2, which implies the highest health value for the same cost.
Conclusions: We found substantial variation in program cost targets/value thresholds for weight loss/control interventions by population and effect; such investments will require careful targeting of interventions to appropriate populations. Our analysis predicts weight loss interventions targeted to high BMI elderly as the best relative value among the alternatives we considered. PCT is comprehensive enough for even academically untrained business/policy professionals to use, and may facilitate more CE evaluations and early stage program planning without the help of experts. Average costs of weight-loss interventions are much higher than PCTs estimated in this study, suggesting emerging smartphone/GPS-based exercise monitoring applications such as Nike+ Move® may be potentially efficient alternatives.
CE of weight-loss interventions largely depend on population age and target BMI, which an optimal target should consider. Our PCT estimation showed that concentrating older subpopulations could maximize CE. Further studies should validate the statistical robustness of this approach and the practical bounds of its utility.
IRB/IACUC# 2014-034

1115 Poster **Classification:** SPH Student
Presenter: Abhilash Vemulapalli, Sruthi Anne **Department:** Biostatistics
Authors: Subhash Aryal, University of North Texas Health Science Center at Fort Worth; Sruthi Anne, University of North Texas Health Science Center at Fort Worth; Abhilash Vemulapalli, University of North Texas Health Science Center at Fort Worth

SAMPLE SIZE DETERMINATION IN MIXED-EFFECTS ZERO INFLATED POISSON LONGITUDINAL DATA

Purpose: To determine sample size for a mixed-effects zero-inflated Poisson regression model via simulation.
Methods: Zero inflated Poisson(ZIP) data was simulated first and then a mixed-effects ZIP regression model was fitted to evaluate the significance of the time trend parameter using SAS software. Sample size was estimated to test the time trend parameter.
Results: Using simulation approach we determined sample size for testing both the Binomial and Poisson component separately as well as simultaneous testing of both the parameters. The results from Likelihood-Ratio-Test (LRT) indicate that different sample size estimates are required for the Binomial and Poisson components of model.
Conclusions: We suggest zero inflated data can be best explained using ZIP model. It is recommended to use the larger of the two estimates from Binomial or Poisson model while designing any clinical study.

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IRB/IACUC#

1116 Poster **Classification:** SPH Student
Presenter: Ann Davis **Department:** Epidemiology
Authors: Ann Davis, University of North Texas Health Science Center at Fort Worth; Lindsey Brown, University of North Texas Health Science Center at Fort Worth; Sumihiro Suzuki, University of North Texas Health Science Center at Fort Worth

THE FAMILY-CENTERED MEDICAL HOME AND PARENTAL REPORT OF ACCESS TO SUPPORTIVE HEALTHCARE SERVICES AMONG CHILDREN WITH AUTISM SPECTRUM DISORDER, NATIONAL SURVEY OF CHILDREN WITH SPECIAL HEALTHCARE NEEDS

Purpose: Autism Spectrum Disorder (ASD) is diagnosed among 1 in 88 children in the United States. These children have complex healthcare needs that may be well served in a family-centered medical home (FCMH) model. FCMHs provide comprehensive medical care that encourages partnerships between patients, families, and healthcare providers in effort to facilitate care that is accessible, compassionate, and family-centered. The primary purpose of this research was to examine the associations between having a FCMH and impact on access to supportive healthcare care for families with a child with ASD. Although multiple studies have examined effects of FCMH on children with special healthcare needs, few have specifically examined the relationship for ASD children.
Methods: Data was obtained from the 2009-2010 National Survey of Children with Special Healthcare Needs (CSHN), a national telephone survey of households with children identified as special needs. Unadjusted and adjusted multivariate logistic regression was performed to determine the association between report of having a FCMH and report of unmet needs for healthcare or health services, respite care, communication equipment when needed, family support services, respite care, mental healthcare, and report of frustration with access to health-related services.
Results: The study population consisted of 3,055 children (age 0-17) with parent reported ASD. The majority of the study population was between the ages of 6-11 (46.4%), male (80.6%), non-Hispanic white (72.1%), and had mild ASD (49.1%). About one quarter (23.1%) have care that is considered part of a FCMH. Those with a FCMH were less likely to report having an unmet healthcare or health service need (OR=0.170, 95%CI 0.117-0.245), having an unmet therapy need (OR=0.115,95%CI 0.068-0.194) and parent-reported frustration with coordination of care (OR=0.147,95% CI 0.089-0.240). Having a FCMH was not significantly associated with receipt of communication equipment when needed (OR=0.526, 95% CI 0.210-1.315) or receipt of respite care when needed (OR=1.281,95% CI 0.771-2.128) when adjusting for age, gender, race, ethnicity, type of insurance, having a usual source of care, primary spoken language, poverty level and state of residence.
Conclusions: The FCMH was positively associated with improved access to supportive healthcare for families with a child with ASD. Future studies should examine this population to determine reasons behind the lack of usage.

Sponsor N/A
IRB/IACUC# 2014027

1117 Poster **Classification:** SPH Student
Presenter: Leslie Allsopp **Department:** Environmental & Occupational Health
Authors: Leslie Allsopp, University of North Texas Health Science Center at Fort Worth; David Sterling, PhD, University of North Texas Health Science Center at Fort Worth; Gillian Franklin, University of North Texas Health Science Center at Fort Worth; Denise Adamie, University of North Texas Health Science Center at Fort Worth

THE USE OF FOCUS GROUP RESEARCH TO EXPLORE COMMUNITY ATTITUDES TOWARD AIR QUALITY

Purpose: The purpose of this study is to explore community perspectives on air quality, through focus group research.
Methods: North Central Texas is in nonattainment with National Ambient Air Quality Ozone Standards. One health impact of this is seen in Tarrant County's asthma prevalence which is twice the national average. Community involvement is needed to address air pollution, but there is limited information about residents' perspectives on these issues.
The UNTHSC School of Public Health collaborated with the Fort Worth League of Neighborhood Associations to hold air quality focus groups. Three geographic clusters of neighborhood associations were identified which included a range of emission sources and diverse population demographics. One focus group was formed within each area. Questions were asked regarding air quality concerns, preferred methods for receiving and responding to information, and potential uses of information to improve air quality.
Transcripts of the focus groups were reviewed by an advisory group from the Fort Worth League of Neighborhood Associations. Themes and keywords were identified and structured according to a social-environmental model. Mixed method content analysis is being conducted through NVivo.
Results: The initial analysis of the transcripts reveal a high concern regarding air pollution and toxic emissions, and an unmet need for air quality information from trusted sources. However, participants were uncertain of how they might use this information to improve air quality and reduce their exposure to pollutants.
Conclusions: Focused information from trusted sources is needed by communities to support neighborhood level approaches to air pollution, and reduce exposure to airborne pollutants.
Sponsor N/A
IRB/IACUC# 2013-147

1118 Poster **Classification:** SPH Student
Presenter: Stephanie A. Spohr **Department:** Behavioral & Community Health
Authors: Stephanie Spohr, University of North Texas Health Science Center at Fort Worth; Scott Walters, University of North Texas Health Science Center at Fort Worth; Mayra Rodriguez, University of North Texas Health Science Center at Fort Worth; Jennifer Lerch, George Mason University; Faye Taxman, George Mason University

WHAT REMINDERS DO PROBATIONERS WANT TO ASSIST WITH PROBATION AND TREATMENT GOALS?

Purpose: The development of new web-based interventions provide increased opportunities for delivering text or email reminders around health behavior goals. The purpose of this study was to examine the role of text messaging and email reminders to assist probationers in reaching probation and substance abuse treatment goals.
Methods: Sample consists of probationers (n=49) in Dallas and Baltimore participating in a randomized controlled trial of in person vs. computer interventions to increase probation compliance. Data from the computer arm were analyzed to determine probationer preference on goal content, timing and reminder method (text, email, or none). Reminder preferences were analyzed according to gender, risk level, age and ethnicity.
Results: Overall, probationers set an average of 3.80 goals between probation-related (M=1.94, SD=1.03) and treatment-related (M=1.86, SD=1.21) goals. When given the option for electronic reminders, 47% (n=23) opted for no reminder, 24% (n=12) selected email reminder and 29% (n=14) selected text message reminder. Sixty percent of participants over age 35 selected electronic reminders compared to only 46% of those 35 and under. Low-moderate risk offenders (65%) were more willing to select electronic reminders than high risk offenders (35%) but there was no difference in the number of goals selected, (M=3.78, SD=2.06) and (M=3.81, SD=1.91) respectively.
Conclusions: Persuasive technologies have not been utilized within a criminal justice sample. The use of electronic messaging provides a promising avenue for future behavioral change interventions. Information about probationer preferences for goal reminders, the method of delivery, and timing may help to increase the effectiveness of these interventions.
Sponsor N/A
IRB/IACUC# 2011-125

1119 Poster **Classification:** Alumni (Not for Competition)
Presenter: Jared Komatz **Department:** Alumni
Authors: Jared Komatz, University of North Texas Health Science Center at Fort Worth; Susie Ramisetty-Mikler, University of North Texas Health Science Center at Fort Worth

PARENTAL INTENT TO VACCINATE YOUNG CHILDREN AGAINST THE FLU

Purpose: Influenza is a preventable respiratory condition that affects over 3 million people every year. Young children are especially susceptible to complications from influenza. Daycare settings are highly vulnerable for infectious disease transmission. The objective of the study is to examine parental, child, and demographic factors that are associated with intent to vaccinate and whether intention determines parental vaccinating behavior.
Methods: Parents of children 6 years and younger from 23 daycare centers in Tarrant County participated in a survey. Data on parental intent to vaccinate, education on flu vaccination, access to and utilization of health care, and health status of the child were collected. Analyses included bivariate and multivariate techniques to assess associations between predictors and outcomes.
Results: Predictive factors associated with parental intent to vaccinate include physician discussion of benefits of flu vaccines (OR = 2.91, 95% CI (1.75, 4.83), p< 0.001), pediatric routine check-ups (OR = 10.01, 95% CI (2.50, 40.06) p< 0.001), medical insurance coverage, (OR = 9.41, 95% CI (2.87. 30.83) p< 0.001), health status of the child; "Excellent" (OR = 3.07, 95% CI (1.16, 8.11), p<0.05) and "Good"(OR 5.50, 95% CI (1.92, 15.76), p< 0.01). Parental intention to vaccinate was predictive of positive vaccinating behavior (OR = 48.74, 95% CI (23.54, 100.88) p< 0.001).
Conclusions: The study indicates that physician discussion of benefits of the flu vaccine, access to and utilization of health care, the child's health status are important factors that may help in increasing parental intention to vaccinate their child against the flu. These factors can be utilized to improve the efficacy of outreach programs and vaccination success rates.
Sponsor N/A
IRB/IACUC# 2013-130

1120 Poster **Classification:** SPH Student
Presenter: Brittany Marshall **Department:** Behavioral & Community Health
Authors: Brittany Marshall, University of North Texas Health Science Center at Fort Worth; Scott Walters, University of North Texas Health Science Center at Fort Worth; Emily Spence-Almaguer, University of North Texas Health Science Center at Fort Worth; Stacy Abraham, University of North Texas Health Science Center at Fort Worth

WHAT ARE THE NEEDS OF PERMANENT SUPPORTIVE HOUSING RESIDENTS? A SURVEY OF CASE MANAGERS IN TARRANT COUNTY

Purpose: Permanent Supportive Housing (PSH) is used as a method of reducing homelessness and its associated costs. The insight of case managers is integral to determine factors that may facilitate or inhibit the health and quality of life of PSH residents in Tarrant County.
Methods: An online survey was conducted with PSH case managers (n=24) to assess the percentage of PSH residents affected by various health and wellness domains, barriers to improving health, and potential motivational levers. Data was analyzed using SPSS.
Results: Case Managers reported that clients were most affected by poor mental health (74%), poor social support (69%) physical health (64%) and substance abuse (46%). Case managers identified furniture, transportation, and food as their clients' top needs. Case managers believed clients were somewhat motivated to work on improving social support, physical and mental health, and poor nutrition. Approximately 60% of case managers believed their clients were not at all or a little motivated to work on improving medication adherence and substance abuse issues.
Conclusions: Findings will guide the development of the Interactive Community Health Assistance for Tenants (iCHAT), which aims to reduce alcohol and drug use, reduce symptoms of depression, and improve quality of life amongst PSH residents.
Sponsor
IRB/IACUC# 2013-170

1121 Poster **Classification:** SPH Student

Presenter: Andidta Roy **Department:** Biostatistics

Authors: Sharon Homan PhD, University of North Texas Health Science Center at Fort Worth and Anindita Roy, University of North Texas Health Science Center at Fort Wort

UNMET PREVENTIVE DENTAL CARE NEEDS AMONG CHILDREN WITH SPECIAL HEALTHCARE NEEDS RESIDING IN THE MOUNTAIN STATES REGION

Purpose: To report the magnitude of unmet preventive dental care needs and factors associated among Children with Special Health Care Needs residing in the mountain states. The Mountain States region includes Arizona, Colorado, Montana, New Mexico, Nevada, Texas, Utah and Wyoming

Methods: We used the National Survey of Children with Special Health Care Needs (NS-CSHCN) 2009-2010.As a part of telephone survey, 40242 families were interviewed and 372,698 children between 0 and 17 years were screened. In this study, the primary outcome of interest was unmet preventive dental care needs, defined as whether CSHCN were said to have needed preventive dental care but were unable to obtain it. We analyzed the association between predictors and unmet preventive dental care needs using chi-square test and multiple logistic regression.

Results: Overall, 89.6 % of CSHCN residing in Mountain States region were reported as having a need for preventive dental care in the past 12 months. Of those CSHCN who needed preventive dental care, 9.8 % did not receive all of the care they needed in the region as compared to 8.9% in the nation. After adjusting for gender, non-English language interview and, mother's education level, the results suggested that uninsured CSHCN had 6 times greater odds of having unmet preventive dental care needs as compared to CSHCN with both insurance (public and private); 26.4% of the parents reported that the cost was unaffordable; 18% reported "no insurance" and 7.6% answered lack transport facilities as causes of unmet preventive dental care needs.

Conclusions: Uninsured children, poorer children, children from Hispanic families and children with greater limitations attributable to disability residing in Mountain States region had significantly greater odds of unmet preventive dental care needs. Children with a personal doctor or nurse were significantly less likely to have unmet dental care needs.

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Immunology (Abstracts in the 1200s)

1200 Poster **Classification:** GSBS Student
Presenter: Preston Burnley **Department:** Cell Biology and Immunology
Authors: Preston Burnley, University of North Texas Health Science Center at Fort Worth; Dong Ming Su PhD, University of North Texas Health Science Center at Fort Worth

AGING OF THYMIC EPITHELIAL PROGENITOR POOL IS DETERMINED BY THE P63-FOXN1 REGULATORY AXI

Purpose: The postnatal thymic epithelial progenitor (TEP) pool is proposed to be regulated by the p63 and FoxN1 genes through proliferation and differentiation, respectively. However, the combined role of these two genes in the aging TEP is still a mystery. Evidence from murine models has elucidated contrasting roles of the p63 isoforms during the aging process.
Methods: Wild type and FoxN1 cKO mice were used throughout the experiment to evaluate the amount of p21, p63, and FoxN1 present. Immunofluorescence and senescence staining was performed on frozen sections harvested from euthanized mice. PEI intrathymic injections were performed with either TAp63 or FoxN1 cDNA.
Results: We found that $TAp63^{>+}$, but not $\Delta Np63^{+}$, thymic epithelial cells (TECs) were increased with age, accompanied with increased senescence associated β-gal clusters and $p21^{+}$ TECs. Senescent clusters also developed after intrathymic infusion of exogenous TAp63 cDNA into young wild-type mice. Using our conditional FoxN1 gene knockout mouse model to disrupt TEP differentiation accelerated this senescent phenotype to early middle age. However, upon infusion of exogenous FoxN1 cDNA into aged wild-type mice resulted in only an increase in $\Delta Np63^{+}$ TECs, but no change in $TAp63^{+}$ TECs in the partially rejuvenated aged thymus. Interestingly, using a novel FoxN1 transgenic mouse model to enhance TEP differentiation, $\Delta Np63^{+}$ TECs were decreased in young thymus. Additionally, the $TAp63^{+}$ population contained a high percentage of phosphorylated-p53 and apoptotic TECs, but showed no changes in BrdU-labeled proliferation.
Conclusions: FoxN1 controlled TEC differentiation as a bottleneck to determine TEP pool via affecting TAp63 and DNp63 levels. Thus, TEC homeostasis during aging has been determined through the p63-FoxN1regulatory axis.
Sponsor NIH
IRB/IACUC# 2013/14-04-A04

1201 Poster **Classification:** GSBS Student
Presenter: KiahRae Carter **Department:** Cell Biology and Immunology
Authors: KiahRae Carter, University of North Texas Health Science Center at Fort Worth; Ashley Orlowski; Lisa Hodge, University of North Texas Health Science Center at Fort Worth

ANTI-TUMOR IMMUNE RESPONSES AGAINST MTLn3 MAMMARY ADENOCARCINOMA

Purpose: Breast cancer is the leading cause of cancer-related morbidity and mortality. New research suggests the lymphatic vessels play a key role during the metastasis of breast cancer and therapies directed at the lymph system may aid in the treatment of breast cancer. MTLn3 is a mammary adenocarcinoma that is commonly used to study the effects of tumor metastasis in Fischer 344 rats. MTLn3 closely mimics human breast cancer pathogenesis, making it ideal for the study of breast cancer disease; however, little is known about the role of the lymphatic and immune systems in this disease model. The purpose of this study was to identify the type of immune response generated during MTLn3 disease. Specifically, we proposed that natural killer cells (NK), T cells, B cells and macrophages (MO) would increase in response to disease.
Methods: To test our hypothesis, rats were randomized into control group or were sub-cutaneously injected in the right mammary fat pad with $1x10^{6}$ MTLn3 tumor cells/mL on day 0. At days 0, 7, 14, 21 and 25 post-injection, lungs, tumor-adjacent lymph nodes (ALN), tumor–opposite lymph nodes (OLN) and spleens were removed and the concentration of leukocytes was determined. Primary tumors were excised and measured to calculate tumor volume. Blood was analyzed for the complete blood count and serum was measured for cancer-specific biomarkers.
Results: All animals gained weight until day 14 post-injection. However, rats injected with MTLn3 suffered weight loss between days 14-25 post-injection. Furthermore, primary tumor size significantly ($p < 0.05$) increased during this time, suggesting weight loss may be related to disease. CD4+ T cells, B cells and MO in the spleen at day 21 decreased by day 25. Tumor adjacent lymph nodes experienced an increase in all cell populations, T cells, B Cells, MO, dendritic cells and NK. There were no differences in cell populations between ALN and OLN, except MO were significantly ($p < 0.05$) increased in ALN at Day 25. There was no change in pulmonary leukocytes by day 25. Neutrophils, monocytes and lymphocytes in the blood were significantly ($p < 0.05$) increased between control and 25 days post-injection rats, suggesting there is an immune response against MTLn3 tumor cells.
Conclusions: Collectively, our results suggest MTLn3 initiates an immune response mediated by T cells, B cells, macrophages and NK cells between days 14-25 of disease. Of interest, these cells increase in the ALN at day 25 post-injection, suggesting they migrate into the lymph nodes in response to disease. In future studies, we will determine if MTLn3 metastasizes to the sentinel lymph nodes and the lung and determine if therapies targeting the lymphatic system inhibit this process.
Sponsor N/A
IRB/IACUC# 2010/11-45-AO5

1202 Poster **Classification:** GSBS Student
Presenter: Ronny R. Racine **Department:** Cell Biology and Immunology
Authors: Ronny Racine, University of North Texas Health Science Center at Fort Worth; Mark Mummert, University of North Texas Health Science Center at Fort Worth

CD44 EXPRESSION INDUCES CALCIUM INFLUX DECREASING EGR-1 EXPRESSION AND PROLIFERATION IN ACUTE LYMPHOCYTIC LEUKEMIA CELLS

Purpose: CD44 is a cell surface glycoprotein that serves as the major receptor for hyaluronan, aiding in trafficking and adhesion of immune cells. CD44 also serves as a recruitment platform for signaling molecules and has been shown to regulate proliferation. We have shown that CD44 expression in Jurkat T cells causes a decrease in proliferation.
Methods: In our current study, we have observed that CD44 expression greatly increases the influx of calcium from extracellular sources. Calcium influx is necessary for the proliferation of T cells, but CD44 expressing Jurkat cells show a disrupted calcium homeostasis. Through use of calcium channel inhibitors we have shown that Jurkat T cells rely on calcium release activated calcium channels for influx.
Results: We have observed that CD44 induced excess calcium influx negatively regulates early growth response protein 1 expression, which is responsible for the decrease in proliferation.
Conclusions: Our findings show for the first time that CD44 can influence the calcium signaling of leukemic T cells, impacting their proliferation and potentially making a less aggressive cancer cell.
Sponsor N/A
IRB/IACUC#

1203 Poster **Classification:** GSBS Student
Presenter: Alexandra R. Witter **Department:** Infectious Diseases
Authors: Alexandra Witter, University of North Texas Health Science Center at Fort Worth; Timothy Break, National Institute of Allergy and Infectious Disease; Mohanalaxmi Indramohan, University of North Texas Health Science Center at Fort Worth; Rance Berg, University of North Texas Health Science Center at Fort Worth

EXTRACELLULAR SUPEROXIDE DISMUTASE ENHANCES NEUTROPHIL RECRUITMENT TO THE LIVER BY MODULATING THE EXTRACELLULAR ENVIRONMENT

Purpose: Listeria monocytogenes (LM) is an intracellular foodborne pathogen that causes severe disease in immunocompromised individuals, spontaneous abortion in pregnant women, and results in ~25% mortality rate in infected individuals. Extracellular superoxide dismutase (ecSOD) converts superoxide into hydrogen peroxide in the extracellular milieu and protects against oxidative stress. We have previously shown that ecSOD activity inhibits innate immune responses during LM infection leading to increased bacterial burden; however, it is unclear whether ecSOD activity affects neutrophil recruitment and function in a cell-intrinsic manner or by modulating the extracellular environment.
Methods: Congenic mice with high ecSOD activity (ecSOD HI), wild type ecSOD activity (ecSOD WT), or lacking ecSOD (ecSOD KO), on the C57Bl/6 background were used to perform adoptive transfer experiments after intravenous infection with ~10,000 wild-type LM (WTLM). Either isolated neutrophils or labeled whole bone marrow cells were transferred from ecSOD HI or ecSOD KO mice into ecSOD WT mice and then flow cytometry analysis was performed and colony forming units (CFUs) were calculated. Concentrations of hyaluronan and lymphotoxin alpha were determined by ELISA.
Results: Whole bone marrow cell transfers indicated that there was no difference in recruitment of neutrophils transferred from ecSOD HI or ecSOD KO mice to the liver when the neutrophils were all in the same environment (ecSOD WT mice). In addition, neutrophils isolated from ecSOD HI or ecSOD KO mice showed no difference in their ability to protect against LM infection, as shown by equivalent CFUs, when in comparable environments (ecSOD WT mice). Analysis of hyaluronan concentrations – a component of the extracellular matrix (ECM) – indicated that ecSOD activity protects the ECM from degradation.
Conclusions: We observed from adoptive transfer experiments that ecSOD activity does not affect neutrophil recruitment or function in a cell-intrinsic manner. Additionally, we determined that ecSOD activity protects the ECM, which is important for neutrophil trafficking. Overall, we concluded that ecSOD activity enhances neutrophil recruitment yet decreases their function by modulating the extracellular environment.
Sponsor NIH
IRB/IACUC# 2010/11-31

1204 Oral **Classification:** GSBS Student

Presenter: Mohanalaxmi Indramohan **Department:** Cell Biology and Immunology

Authors: Mohanalaxmi Indramohan, University of North Texas Health Science Center at Fort Worth; Timothy Break, National Institute of Allergy and Infectious Disease; Alexandra Witter, University of North Texas Health Science Center at Fort Worth; Rance Berg, University of North Texas Health Science Center at Fort Worth

FUNCTIONAL REGULATION OF PHAGOCYTIC CELLS BY IL-23 DURING LISTERIA MONOCYTOGENES INFECTION

Purpose: Listeria monocytogenes (LM) is a Gram-positive intracellular foodborne pathogen that causes meningitis and septicemia in immunocompromised individuals, and spontaneous abortion in pregnant women. LM is widely used as a model pathogen to study host pathogen immune interactions. Cell recruitment mediated by the IL-23/IL-17 axis is necessary for protection against multiple infectious diseases, but can be detrimental during autoimmune disorders. We have previously shown utilizing mice lacking IL-23 (IL-23p19 KO) that IL-23 provides protection against LM infection by promoting the optimal recruitment of neutrophils to the liver, and monocytes to the spleen. The receptors for IL-23 and IL-17A are present on phagocytic cells including monocytes, neutrophils, and macrophages. However, it is not known whether IL-23 or IL-17A can impact the function of phagocytic cells during LM infection.
Methods: Splenocytes and liver leukocytes were harvested from mice infected intravenously with ~10, 000 LM. Peritoneal wash was performed to isolate resident peritoneal macrophages. Flow cytometry was utilized to determine phagocytosis, production of reactive oxygen species (ROS), and myeloperoxidase (MPO). The concentrations of TNF-α, IL-1, IL-6, and nitric oxide ($NO^{\cdot}$) were measured by ELISAs/Griess assay.
Results: Phagocytic cells isolated from control C57Bl/6 (B6) and IL-23p19 KO mice displayed equivalent phagocytic potential. There were no differences in the production of ROS or MPO from splenocytes isolated from both groups of mice. Furthermore, exogenous stimulation with rIL-23 or rIL-17A did not induce or enhance production of ROS or proinflammatory mediators from B6 splenocytes.
Conclusions: IL-23 does not impact the function of phagocytic cells either by a direct or indirect mechanism during LM infection. Collectively, our data suggest that the lack of efficient recruitment of neutrophils to the liver, and monocytes to the spleen, results in a reduction in the overall levels of TNF-α and $NO^{\cdot}$ and therefore, increases the susceptibility of IL-23p19 KO to LM infection.

Sponsor NIH AI099518

IRB/IACUC# 2007/08-312007/08-31

1205 Poster **Classification:** GSBS Student

Presenter: Chaitanya R. Joshi **Department:** Cell Biology and Immunology

Authors: Chaitanya Joshi, University of North Texas Health Science Center at Fort Worth; Anuja Ghorpade, University of North Texas Health Science Center at Fort Worth

HIV-1 TAT EXPRESSION ALTERS HUMAN ASTROCYTE INFLAMMATORY BIOMARKER PROFILES AND GLUTAMATE METABOLISM

Purpose: More than 50% of the human immunodeficiency virus type 1 (HIV-1) infected individuals exhibit some form of HIV-associated neurocognitive disorders (HAND). Several studies reported that HIV-1 transactivator of transcription (Tat) protein was associated with HAND pathophysiology. HIV-1 Tat induces apoptosis and dysregulates cytokine/chemokine profiles leading to neurotoxicity. Previous studies have studied the in viv HIV-1 Tat regulation using transgenic animal models. Although animal models have helped determine the in vivo disease pathology, application of in vitro neural cell models will be critical to decipher cellular and molecular mechanisms associated with HAND. Here, we report an in vitro model system developed by transfecting human astrocytes with a full-length (101 AA) HIV-1 Tat protein expressing plasmid (pTat). HIV-1 Tat expressing in vitro system was used to evaluate HIV-1 Tat regulation of astrocyte inflammatory responses and altered neuroprotective function i.e. glutamate uptake from synapse
Methods: Primary human astrocytes were transfected with pTat by nucleofection and HIV-1 Tat expression was evaluated by immunocytochemistry. Effects of HIV-1 Tat on cell viability and replication were determined with metabolic activity and cell proliferation assays. Proinflammatory cytokines and chemokines were assayed using ELISAs. HIV-1 Tat regulation of glutamate clearing ability of astrocytes was determined using a modified amplex red glutamic acid/glutamate oxidase assay. Additionally, mRNA and protein expression of excitatory amino acid transporter-2 (EAAT-2), the major glutamate transporter in astrocytes, was measured by RT-PCR and western blot analysis respectively.
Results: The immunostaining confirmed HIV-1 Tat expression in transfected astrocytes, while glial fibrillary acidic protein (GFAP) staining indicated morphological alterations. The pTat transfection did not significantly change cell metabolism as compared to controls. However, HIV-1 Tat expression altered chemokine and cytokine levels; specifically HIV-1 Tat increased CCL2 levels significantly (P
Conclusions: HIV-1 Tat expression upregulated inflammatory biomarkers and altered glutamate clearing ability of astrocytes, implicating a direct role for astrocyte-expressed HIV-1 Tat in HAND neuropathogenesis.

Sponsor

IRB/IACUC#

1206 Poster **Classification:** GSBS Student
Presenter: Kelly Bowen **Department:** Graduate School of Biomedical Sciences
Authors: Kelly Bowen, University of North Texas Health Science Center at Fort Worth; Porunelloor Mathew, University of North Texas Health Science Center at Fort Worth

IDENTIFICATION & CHARACTERIZATION OF A MELANOMA SPECIFIC LIGAND FOR NK CELL RECEPTOR 2B4

Purpose: Natural Killer (NK) cells are lymphocytes that play a vital role in defense against cancer and infections. NK cell function is regulated by a balance between activating & inhibitory signals transmitted through NK cell surface receptors upon interaction with their ligands. Identification of NK cell receptors and their ligands on tumor cells allow targeted therapy for the specific tumor. CD48 is the only known natural ligand for NK receptor 2B4. Previous studies indicate an in vivo role of 2B4 in B16 melanoma tumor rejection. B16 melanoma cells do not express CD48. We hypothesize that 2B4 interacts with a melanoma specific ligand and that this interaction regulates NK cell function.
Methods: We generated m2B4-Fc fusion protein, consisting of the extracellular domain of mouse 2B4 and human IgG1 Fc portion. To produce the soluble m2B4-Fc, the p2B4-Fc plasmid was transiently transfected into HEK cells. The purified protein was tested for binding by flow cytometry to mouse CD48 of P815 cells, which express CD48, and for binding to mouse 2B4 melanoma cells, which do not express CD48. The melanoma specific ligand was isolated by immunoprecipitation.
Results: We show that NK cell receptor 2B4 binds to a melanoma specific ligand on B16 melanoma cells.
Conclusions: Identification and molecular characterization of the melanoma specific ligand for 2B4 will help in developing new strategies to target melanoma with NK cells.
Sponsor
IRB/IACUC#

1207 Poster **Classification:** GSBS Student
Presenter: Maximillion Mize **Department:** Cell Biology and Immunology
Authors: Maximillion Mize, University of North Texas Health Science Center; Jerry Simecka, PhD, University of North Texas Health Science Center

IL-17A ENHANCES DISEASE PATHOLOGY IN BALB/C MICE WHILE CONTRIBUTING TO HOST PROTECTION IN THE C57BL/6 STRAIN DURING INFECTION WITH MYCOPLASMA PULMONIS
Purpose: Mycoplasma cause 30% of all cases of pneumonia worldwide. Infections induce chronic airway inflammation and has also been associated with the exacerbation of other respiratory diseases, like asthma. Due to a prevalence tied to close-quarter communities (dorms, military barracks, etc.), and the possession of a reservoir in livestock, it has infiltrated human society. Furthermore, the lack of a cell wall prevents this organism from being treated with beta-lactam antibiotics forcing research to focus on alternative treatment methods. While Interleukin-17A (IL-17A) has been linked to the induction of chronic inflammatory diseases, its role in mycoplasmosis is currently unknown. Here, we hypothesize that IL-17A leads to chronic inflammation, exacerbating disease pathogenesis.
Methods: Female BALB/c and C57BL/6 mice, aged 6-12 weeks, were obtained from HARLAN Laboratory, Inc. Mice were housed in sterile microisolator cages supplied with sterile bedding, food, and water all given ad libitum. The UAB CT strain of M. pulmonis was administered intra-nasally to induce infection. Murine anti-IL-17A (αIL-17A) neutralizing antibody was administered intraperitoneal at a concentration 0.150 mg/mL daily. Results were analyzed via one-way and two-way ANOVA.
Results: After administration of αIL-17A, BALB/c mice infected with M. pulmonis lost less weight when compared to identical mice given Phosphate Buffered Saline (PBS). In addition, infected mice given antibody displayed a reduction in gross lung lesions, however, bacterial burden was not affected. In contrast, infected C57BL/6 mice given αIL-17A antibodies demonstrated increased disease susceptibility associated with an increase in bacterial burden and gross lung lesions when compared to controls given PBS.
Conclusions: While the presence of αIL-17A in infected BALB/c mice appears to exacerbate disease, this cytokine may play a protective role in C57BL/6 mice infected with the same pathogen. Lung damage decreased, independent of bacterial burden, in infected BALB/c mice administered antibody. This demonstrates that IL-17A does not play a role in pathogen clearance, but does potentiate chronic inflammation. In contrast, infected C57BL/6 mice given antibody had a slight increase in both lung damage and bacterial numbers indicating that IL-17A is needed to decrease disease pathogenesis. Thus, genotypic differences may play a role in how IL-17A influences an immune response through favoring the development of chronic diseases during bacterial infection.
Sponsor N/A
IRB/IACUC# 2013/14-01

1208 Poster **Classification:** GSBS Student
Presenter: Calvin Ike Chikelue **Department:** Graduate School of Biomedical Sciences
Authors: Calvin Chikelue, University of North Texas Health Science Center at Fort Worth; Maximillion Mize, University of North Texas Health Science Center at Fort Worth; Jerry Simecka, PhD, University of North Texas Health Science Center at Fort Worth

PRELIMINARY EXPERIMENTS IN THE DEVELOPMENT OF A HUMANIZED MOUSE MODEL OF MYCOPLASMA PNEUMONIAE

Purpose: Community-acquired pneumonia (CAP) is a lung disease caused by infection with a respiratory bacterium. M. pneumoniae, a major contributor to CAP infections, is a bacterium that invades and attaches to the airway epithelium causing damage to the host through the production toxic substances or Community Acquired Respiratory Distress Syndrome (CARDS) toxin. No commercial vaccine currently exists for the bacterium and tested vaccines have shown to be more immunopathologic rather than protective. To develop a protective vaccine, the immune response againstM. pneumoniae must be better understood. Our research is focused on the development of a humanized mouse model for the study of the immune mechanisms that occur during and infection with M. pneumonia.
Methods: Three strains are used in these preliminary experiments: S1, M129, and UABPO1. Whichever strain causes severe disease within mice will be used in the future experiments with the model. Groups of Balb/c mice were inoculated intranasally with 20 to 40 uL of bacteria from cultured stocks. A fourth control group was included. Infected animals were observed for 14 days and clinical signs were documented. At the end of period, the mice were sacrificed and lungs harvested and scored for lung lesions. Harvested lungs were either homogenized for dilution plating on agar or stored in fixation solution for histological staining.
Results: Studies were done using older mice, different dosages of mycoplasmas, and incubating thawed bacterial stocks to allow the organism to recover from their frozen state prior to inoculation. Each of these changes appeared to increase disease severity. In particular, mice infected with UABPO1 strain of mycoplasma developed more severe disease compared with the other tested strains of mycoplasma.
Conclusions: At this point in our studies, we have seen that UABPO1, in comparison with the strains of mycoplasma, may be the most promising for use in further experiments developing the humanized mouse model. Future experiments will observe bacterial load within infected animals at several different time points since it is possible that bacterial clearance is occurring during by the end of the 14 day time course. As well as repeat studies in immunodeficient and humanized mice.
Sponsor N/A
IRB/IACUC# 2013/14-01

1209 Poster **Classification:** GSBS Student
Presenter: Brandon Coder **Department:** Cell Biology and Immunology
Authors: Brandon Coder, University of North Texas Health Science Center at Fort Worth; Hongjun Wang, University of North Texas Health Science Center at Fort Worth; Dong-Ming Su, PhD, University of North Texas Health Science Center at Fort Worth

THE AGE-RELATED LOSS OF FOXN1 AND SUBSEQUENT THYMIC INVOLUTION CONTRIBUTES TO AGE-RELATED AUTOIMMUNITY BY ALTERING IMMUNOTOLERANCE

Purpose: The thymus protects against autoimmune disease by generating immunotolernace to self-tissues. This is accomplished through the process of negative selection where self-reactive T cell clones are deleted and also by the generation of natural regulatory T cells (nTregs), which help suppress autoimmunity in the periphery. However, natural aging is associated with thymic atrophy driven by the progressive loss of the gene FoxN1. We wanted to determine if thymic aging impairs immunotolerance, either by disrupting negative selection or altering the generation of suppressive nTreg cells.
Methods: We answered this question by utilizing a FoxN1 conditional knockout (FoxN1 cKO) mouse model that mimics natural thymic aging through the progressive loss of FoxN1.
Results: We found that the loss of FoxN1 is associated with the impairment of negative selection characterized by increased single positive T cells and a decrease in Aire+ medullary thymic epithelial cells. Recent thymic emigrants from the FoxN1 cKO thymus have increased proliferation and are more often CD44+, indicating that they are antigen experienced and may be self-reactive T cells. Furthermore, we found that the frequency of nTregs was increased in the FoxN1 cKO thymus, but was normal in the spleen. Additionally, nTregs from the FoxN1 cKO thymus retained normal suppressive function. We adoptively transferred aged wild-type splenocytes, in which there are a higher proportion of Treg cells, into young Rag2-/- mice. We found that the young periphery was able to reverse the accumulation of Tregs. Additionally, the adoptive transfer led to an increase in infiltrating lymphocytes to the salivary gland, which was independent of peripheral age.
Conclusions: We conclude that the loss of FoxN1 impairs negative selection, which may lead to an escape of self-reactive T cells. However, rather than being cell-intrinsic, the age-related accumulation of Tregs depends on the age of the peripheral microenvironment. These results indicate that the increased susceptibility to autoimmune disease observed with aging is likely due to defects in negative selection rather than changes in nTregs.
Sponsor Tis work was supported in part by NIH Grant: R01 AI081995/AI/NIAID NIH HHS/United States
IRB/IACUC# 2013/14-04-A04

1210 Poster **Classification:** GSBS Student

Presenter: Brittney Burnley **Department:** Cell Biology and Immunology

Authors: Brittney Burnley, University of North Texas Health Science Center at Fort Worth; Preston Burnley, University of North Texas Health Science Center at Fort Worth; Dong Ming Su, PhD, University of North Texas Health Science Center at Fort Worth; Harlan Jones, PhD, University of North Texas Health Science Center at Fort Worth

THE ROLE OF CRH IN THE LUNG DURING PNEUMOCOCCAL INFECTION

Purpose: Complications from respiratory pneumonia, mainly caused by Streptococcus pneumoniae (S. pneumoniae), account for the majority of deaths due to respiratory disease worldwide. Treatment with antibiotics is the standard protocol in eliminating S. pneumoniae during infection. However, suppression of inflammatory responses, through glucocorticoids, is also used as an adjunctive therapy during severe infection. Glucocorticoids (GCs) are central mediators of immune suppression and are the primary pharmacologic treatment used to reduce inflammatory responses (IR) in patients with severe bacterial pneumonia. GC treatment however, remains controversial due to inconclusive evidence in reducing mortality amongst at risk populations. Cortisol is an important human GC, whose release is regulated by Corticotropin Releasing Hormone (CRH), a neuropeptide produced primarily by the hypothalamus that mediates adaptive physiological responses. Regulation by CRH is typically involved in controlling immune and IR through cortisol, but has been found to have direct impact within inflamed tissues through ligation with two cellular receptors, CRH-R1 and CRH-R2.Though they provide total immune suppression preventing extensive tissue damage, a problem arises with treatment because they leave the host prone to secondary infections which they are unable to combat due to the actions of the GCs. Therefore, a gap remains in the ability to maintain host immune defenses to facilitate clearance of the pathogen, particularly in instances of ineffective antibiotic treatment caused by bacterial resistance. Therefore, the development of approaches that dampen excessive inflammatory responses without jeopardizing the host may hold promise for reducing risk of mortality due to sepsis.

Methods: The current study tested the effects of CRH and CRH-R1 antagonist, Antalarmin (ANT) administration, in ICR (CD1) mice subjected to 1 $x10^5$ colonies forming units (CFUs) of S. pneumoniae. All experimental groups were compared to the experimental group receiving Dexamethasone (DEX), which is the pharmacological glucocorticoid analogue currently used in clinical settings. Survival studies were conducted to determine the effect that treatment has on overall survival, after treatment at 18 hours. Lung tissue and total blood was analyzed by CFUs to determine bacterial load 24 hours after infection and treatment (18 hours). Additionally lung tissue was analyzed via H&E to determine changes in lung pathology.

Results: Results of survival indicated that when mice were administered CRH, they had a significant increase in survival when compared to the infection only, ANT, and DEX groups.

Conclusions: These findings suggest that CRHR1 plays a role in host defenses against pulmonary S. pneumoniae infection and may hold promise as a target to control disease mortality as an alternative approach to glucocorticoids.

Sponsor n/a

IRB/IACUC# 2012

Investigative Genetics (Abstracts in the 1300s)

1300 Poster **Classification:** GSBS Student
Presenter: Taylor E. Howard **Department:** Molecular & Medical Genetics
Authors: Taylor Howard, University of North Texas Health Science Center at Fort Worth; McKensie Kreutzer, University of North Texas Health Science Center at Fort Worth; Mary Curtis, US Fish and Wildlife Service, National Fish and Wildlife Forensic Laboratory; Michael Allen, PhD, University of North Texas Health Science Center at Fort Worth; John Planz, PhD, University of North Texas Health Science Center at Fort Worth
ALLELE CHARACTERIZATION OF FIFTEEN SHORT TANDEM REPEAT LOCI OF NORTH AMERICAN GOLDEN (AQUILA CHYSAETOS) AND BALD (HALIAEETUS LEUCOCEPHALUS) EAGLES USING NEXT-GENERATION SEQUENCING
Purpose: The purpose of this study was to characterize by deep sequencing fifteen short tandem repeat (STR) loci in North American bald and golden eagles currently utilized by the US Fish and Wildlife Service. These STR loci are used for eagle identification in North America, however they were all developed from related species of European eagles. We hypothesized that using next-generation sequencing techniques we would be able to not only show concordance between allele calls using capillary electrophoresis (CE) methods and our new sequencing method, but also have an increased discrimination power of individuals by using this technique.
Methods: Five samples of both bald and golden eagles were provided by the US Fish and Wildlife Service and deoxyribonucleic acid (DNA) was extracted from each using organic extraction. The current method of analysis through polymerase chain reaction (PCR) using fluorescent CE size based detection was adapted to create a protocol with increased specificity for the 15 sets of primers. Once the amplicon pool was developed, the amplicons were combined into a library using Library Prep Set for Ion Torrent™ kit for sequencing on the Ion Torrent™ Personal Genome Machine (PGM™) Sequencer® (Life Technologies™, Carlsbad, CA) with individual samples identified through barcodes embedded in the sequencing adaptors of the kit. After sequencing, the alleles were analyzed to identify the allele classification and determine the repeat structure of the STR motifs. The sequence data was used to determine if the sequences of North American population differed from existing reference sequences in GenBank®. Data was evaluated with the NextGENe® software using a virtual allelic ladder developed for each locus and contigs were assembled by anchoring the reads with the primer sequence.
Results: Variants of alleles and allele distributions were recorded. The data revealed that the presence of sequence motif variation can increase the power of discrimination when using sequence analysis as compared to CE. Concordance was observed between the allele calls made using CE and with the sequence determined alleles.
Conclusions: The method developed can be used to identify individual eagles with a higher discrimination power, which will be helpful in determining identity of individuals when needed for law enforcement investigations of harmed protected species such as bald and golden eagles.
Sponsor N/A
IRB/IACUC#

1301 Poster **Classification:** GSBS Student
Presenter: McKensie Kreutzer **Department:** Molecular & Medical Genetics
Authors: McKensie Kreutzer, University of North Texas Health Science Center at Fort Worth; Taylor Howard, University of North Texas Health Science Center at Fort Worth; Mary Curtis, United States Fish and Wildlife Service National Fish and Wildlife Forensics Laboratory; Michael Allen, PhD, University of North Texas Health Science Center at Fort Worth; John Planz, PhD, University of North Texas Health Science Center at Fort Worth
ALLELE CHARACTERIZATION OF TEN SHORT TANDEM REPEAT LOCI OF NORTH AMERICAN BEARS (URSIDS) USING NEXT-GENERATION SEQUENCING
Purpose: In the areas of conservation genetics and wildlife forensics, it is important to be able to accurately identify an individual and relate that individual back to the population from whence it came. With the low levels of genetic diversity possessed by some isolated North American bear populations, an identification method is needed that can provide higher resolution in short tandem repeat (STR) regions than current capillary electrophoresis assays. High resolution sequencing methods, such as those provided by next-generation sequencing (NGS) technologies, allow sequence motif changes within STR regions to be detected, whereas capillary electrophoresis only detects STR size. In this study, I hypothesized that when compared to capillary electrophoresis, NGS of STR loci would attain better genetic resolution among bear populations and thereby improve the accuracy of assigning an individual to its true population.
Methods: Polymerase chain reaction (PCR) conditions were optimized for ten Ursid STR loci. An amplicon pool was generated and used to develop a library for NGS on the Ion Torrent™ Personal Genome Machine™ (PGM™) Sequencer (Life Technologies™, Carlsbad, CA). Deoxyribonucleic acid (DNA) barcode adaptors were ligated to the amplicons, thus allowing multiple samples to be sequenced in one run. Sequencing reads were aligned to a virtual ladder, first by sample via barcode, then by locus via primer. Sequence analysis was then performed using NextGENe® (SoftGenetics®, State College, PA) software.
Results: Successful sequencing of ten loci for seven black bear (Ursus americanu) samples was carried out in one run. Allele call concordance was shown between capillary electrophoresis and NGS technologies. Variants within alleles (base changes) were evaluated and showed that NGS provided higher genetic resolution.
Conclusions: In conclusion, NGS provided better genetic resolution than current capillary electrophoresis assays. Higher resolution has implications for increasing the accuracy of assigning an individual to its true population. Better assignment could improve genetic monitoring for conservation officers, as well as help wildlife forensic analysts improve evidentiary weight in wildlife crime cases that go to court.
Sponsor
IRB/IACUC#

1302 Poster **Classification:** Staff (Not For Competition)
Presenter: Nikhil Bhat **Department:** Cell Biology and Immunology
Authors: Nikhil Bhat, MBBS, University of North Texas Health Science Center at Fort Worth, VA Department of Veterans Affairs; Padmashri Rastogi, MBBS, VA Department of Veterans Affairs; Rustin Reeves, PhD University of North Texas Health Science Center at Fort Worth

MILLION VETERAN PROGRAM

Purpose: The Million Veteran Program (MVP) is a national, voluntary research study conducted by the Department of Veterans Affairs Office of Research & Development. It is collaboration between the VA and veterans, whose goal it is to illuminate potential links between genetic heterogeneity and disease. This is an important step in our scientific understanding about how genetic, as well as epigenetic makeup impinges upon disease characteristics and drug efficacy.
Methods: A database is developed by safely collecting blood samples and health information from one million veteran volunteers who use the VA healthcare system. To maintain confidentiality, blood samples are stored in a central, secure biorepository. Each sample is coded, as to not retain personal identifiers. The database includes information about each veteran's DNA and tissue specimens as well as military exposure, pattern of living, and other health information.
Results: Strong links that will very likely be found in this study, due to the large number of participating veterans (1 million), will be used to generate testable hypotheses for future study, such as if a particular gene polymorphism or epigenetic mark leads to a particular disease trait. This will enhance our understanding about how to better prevent and treat various diseases such as heart disease, diabetes, cancer, and post-traumatic stress disorder.
Conclusions: Currently at the Dallas VA we have enrolled 2600 patients and we have all the required tools and infrastructure to significantly contribute to the goal of enrolling 1 Million veterans in the next five years. MVP aims to establish the largest of its kind database in the United States.

Sponsor
IRB/IACUC# CSPG002

1400 Poster **Classification:** Faculty (Not for Competition)
Presenter: Patrick Clay, PharmD **Department:** Pharmacotherapy
Authors: Patrick Clay, PharmD, University of North Texas Health Science Center at Fort Worth

CROFELEMER FOR HIV-ASSOCIATED DIARRHEA: SUSTAINED EFFICACY, SAFETY, AND ADHERENCE DURING A 6-MONTH RANDOMIZED, PLACEBO-CONTROLLED TRIAL

Purpose: To assess patient adherence to and efficacy and safety of crofelemer 125 mg twice daily for up to 6 months.
Methods: Randomized, phase 3, double-blind, placebo-controlled, 2-stage trial (Figure 1). The optimal crofelemer (Fulyzaq™, Salix Pharmaceuticals, Inc., Raleigh, NC, USA) dose (125, 250, or 500 mg twice daily) was determined in stage 1. Based on the stage 1 interim efficacy and safety analysis, crofelemer 125 mg twice daily was selected as the optimal dose and was evaluated in additional patients in stage 2; data for crofelemer 125 mg twice daily were combined (stage 1 and 2). Primary efficacy measure: percentage of patients achieving clinical response, defined as ≤2 watery stools per week for ≥2 of 4 weeks during the placebo-controlled phase (1-sided analysis).
Results: Demographic and baseline characteristics were similar between crofelemer 125 mg twice daily (n = 136) and placebo (n = 138) groups (Table 1); patients had a mean of 2.7 to 3.0 watery stools per day (ie, >18 watery stools per week). Primary measure: A significantly larger percentage of patients treated with crofelemer achieved clinical response compared with placebo (17.6% vs 8.0%; P < 0.01). Continued and sustained improvement in weekly clinical response and a mean improvement from baseline in diarrhea symptoms was observed in patients who continued to receive crofelemer 125 mg twice daily during the placebo-free phase.
Conclusions: Crofelemer 125 mg twice daily was efficacious and well tolerated, and improvements in noninfectious diarrhea symptoms appeared to be durable for at least 6 months in an HIV+ population receiving stable cART. Treatment of diarrhea in HIV+ individuals may provide several important benefits, such as improvement in cART adherence
Sponsor Salix Pharmaceuticals, Inc.
IRB/IACUC#

1401 Poster **Classification:** Faculty (Not for Competition)
Presenter: Patrick Clay, PharmD **Department:** Pharmacotherapy
Authors: Patrick Clay, PharmD, University of North Texas Health Science Center at Fort Worth

IDENTIFYING HIGH RESPONDER POPULATIONS TO CROFELEMER FOR TREATMENT OF NONINFECTIOUS DIARRHEA IN HIV+ INDIVIDUALS

Purpose: To determine which patients with HIV/AIDS are most likely to respond to treatment with crofelemer 125 mg twice daily
Methods: Patients and Study Design: HIV+ adults taking a stable ART regimen for ≥4 weeks, with a history of diarrhea (persistently loose stools despite regular antidiarrheal medication use or ≥1 watery bowel movement per day without regular antidiarrheal medication use for ≥1 month). Exclusion criteria included CD4+ cell count/μL and positive gastrointestinal biopsy, culture, or stool test for infectious agents in the previous 4 months. Randomized, double-blind, phase 3 trial of crofelemer 125 mg or placebo administered twice daily for 4 weeks. Assessments: Primary efficacy measure: percentage of patients achieving clinical response, defined as ≤2 watery stools per week for ≥2 of 4 weeks of treatment. Assessment of efficacy was based on patient diaries, which recorded symptoms of diarrhea (eg, stool consistency, stool frequency), adherence to study drug and ART, and use of antidiarrheal and prohibited medications; results were entered daily using an interactive voice response system. Stool consistency score was computed using the mean of all reported stool scores for 1 day; stools were scored using a scale ranging from 1 to 5 (1 = very hard; 5 = watery). Statistical Analyses: Efficacy was assessed in the intention-to-treat population composed of all randomized patients receiving ≥1 dose of study drug (1-sided for primary efficacy analysis, based on technique described by Posch et al13; 2-sided for subgroup analyses). Fisher's exact test was used for comparisons between crofelemer and placebo for subgroup analyzed. Subgroup analyses were not corrected for multiple comparisons.
Results: Patient Population: Demographic and baseline characteristics were similar between the 2 groups. Patients in the crofelemer and placebo treatment arms were of similar age (mean, 45 vs 44.8 y), sex (male, 84.6% vs 84.1%), and race/ethnicity (white, 39.0% vs 42.0%; black, 37.5% vs 38.4%; Hispanic, 22.8% vs 18.1%; American Indian/Alaskan Native, 0.7% vs 0%; other, 0% vs 1.5%). Patients in both groups averaged >18.9 watery bowel movements per week. Historical use of antidiarrheal medication was common, reported by 79 patients (58%) receiving crofelemer 125 mg and 83 patients (60%) receiving placebo. Loperamide-containing agents were historically used by 53 (39%) and 60 (43%) patients treated with crofelemer and placebo, respectively. Although not permitted during the 4 weeks of treatment, concomitant use of antidiarrheal medications (eg, loperamide, diphenoxylate /atropine, bismuth subsalicylate) were reported by 1.1% and 4.0% of patients receiving crofelemer or placebo, respectively. Efficacy: A significantly greater percentage of patients achieved clinical response during treatment with crofelemer 125 mg twice daily versus placebo (P = 0.0096; Figure 2).
Conclusions: Subgroup analyses confirm crofelemer 125 mg twice daily provides robust clinical response across multiple patient subpopulations. Crofelemer was particularly effective in patients with factors associated with severe diarrhea, consistent with its antisecretory effects on intestinal chloride channels.
Sponsor Salix Pharmaceuticals, Inc.
IRB/IACUC#

1402 Poster **Classification:** Faculty (Not for Competition)
Presenter: Patrick Clay, PharmD **Department:** Pharmacotherapy
Authors: Patrick Clay, PharmD, University of North Texas Health Science Center at Fort Worth

POPULATION PHARMACOKINETIC ANALYSIS DEMONSTRATES NO DRUG-DRUG INTERACTIONS BETWEEN CROFELEMER, A NOVEL TREATMENT FOR NONINFECTIOUS DIARRHEA IN HIV+ INDIVIDUALS, AND ANTIRETROVIRAL THERAPY

Purpose: To determine the potential for crofelemer to alter the pharmacokinetics (PK) of concomitantly administered ART agents in HIV+ patients in the ADVENT trial

Methods: HIV+ adults taking a stable ART regimen for ≥4 weeks, with a history of diarrhea (ie, persistently loose stools despite regular antidiarrheal medication use or ≥1 watery bowel movement per day without regular antidiarrheal use for ≥1 month) and CD4+ count ≥100 cells/μL. ADVENT is a randomized, double-blind, two-stage phase 3 trial (Figure 1) conducted from October 2007 to January 2011 Pharmacokinetic Assessments. A multiple-trough sampling design14 was used to assess population PK. Sample collection for PK assessments occurred at baseline, prior to dosing at randomization, at the end of the placebo-controlled phase (ie, week 4), and at the end of the study (ie, week 24). Immune status was evaluated by analysis of CD4+ cell count and HIV viral load. Crofelemer concentrations were assayed by validated high-performance liquid chromatography with fluorescence detection (Celerion, Lincoln, NE, USA); ART concentrations were assayed by Tandem Labs (Salt Lake City, UT, USA) and the University of North Carolina Clinical Pharmacology and Analytical Chemistry Core Facility (Chapel Hill, NC, USA).

Results: More than 97.5% of patients in the PK population (n = 353) had received ≥ 3 combination ART regimens before the study. Patients received 126 different combinations of ART; the most frequently used combination ART was EFV, FTC, and TNF (n = 60). All 6 of the most common ARTs demonstrated marked exposure variability during the study (Figure 2). Week 4 and 24 ART steady-state trough drug concentrations in patients receiving crofelemer, regardless of crofelemer dose, were comparable with concentrations obtained during the crofelemer-free period (for example, TNF in Figure 3). Comparable results were demonstrated with RTV, FTC, 3TC, LPV, and EFV (Table 2). Crofelemer had no statistically significant effect on the PK of the 6 most commonly used ARTs in ADVENT, as assessed by the Bonferroni correction approach (Table 2). Administration of crofelemer had no negative impact on clinical immune parameters (HIV viral load and CD4+ cell counts) • In >96% of patients, crofelemer concentrations were below the limit of quantitation (50 ng/mL).

Conclusions: Crofelemer had no significant effect on the PK of the most frequently-used ART evaluated in this study. Consistent with the absence of effects on ART PK, crofelemer did not adversely affect ART efficacy, based on HIV viral load or CD4+ cell counts. Crofelemer was not systemically absorbed to a significant extent

Sponsor Salix Pharmaceuticals, Inc.
IRB/IACUC#

1403 Poster **Classification:** GSBS Student
Presenter: John C. Vitucci **Department:** Infectious Diseases
Authors: John Vitucci, University of North Texas Health Science Center at Fort Worth; Mark Pulse, University of North Texas Health Science Center at Fort Worth; Jerry Simecka, University of North Texas Health Science Center at Fort Worth

C. DIFFICILE: A CHARACTERIZATION OF VIRULENCE FACTORS AND GROWTH BETWEEN EPIDEMIC VERSUS NON-EPIDEMIC STRAINS

Purpose: Clostridium difficile (C. difficile) is a spore-forming, gram positive bacterium found naturally within a human's intestinal flora capable of causing severe disease. Other research has focused on in vitro studies of epidemic and non-epidemic C. difficile strains, and these studies concluded no conclusive patterns between the difference in virulence factors between the individual strains. Therefore, an important question to ask is: for C. difficile, is there a difference with the growth characteristics and virulence factors contributing to the severity of infection between epidemic and non-epidemic C. difficile strains both in vitro and in vivo?

Methods: For the in vitro studies, there are multiple protocols used including, viable cell counts, spore isolation and germinated cell counts, Toxin A or B ELISA assays, growth and inhibition curves, as well as minimum inhibitory concentration (MIC) determination. In vivo UNTHSC Pre-Clinical Services 21-day Recurrence Hamster Model and Next-Gen Sequencing for microbiome research will be utilized.

Results: When non-epidemic and epidemic C. difficile strains were characterized for major virulence factors, statistically significant differences for both intrastrain and interstrain comparisons were observed. Growth curve data showed consistent growth patterns between the strains. MIC results were consistent between strains, with no more than a 100-fold difference between the MIC of any one drug for all the strains tested. Inhibition curve results also showed minimal variation between the different non-epidemic and epidemic strain behavior when growth was tested against metronidazole, moxifloxacin, and vancomycin.

Conclusions: During characterization in vitro, between five non-epidemic and five epidemic strain's virulence factors, the differences in results are small, yet statistically significant. Though statistically different, observed differences are minimal and not believed to affect the individual strain's overall virulence. Therefore, it is concluded, in vitro, different strains of C. difficile have similar growth patterns and have similar virulence characteristics as a group. When further study was conducted to compare growth patterns over 24-hours, MIC's concentrations, and Inhibition Curves, interstrain comparisons once again showed small observed differences. The overall trends in antibiotic susceptibility and growth patterns when the media was without, and supplemented with, antibiotics were seen to be similar. This continues to support that C. difficile can be treated, in vitro, as a group, independent of the labels non-epidemic and epidemic.

Sponsor UNTHSC Pre-Clinical Services
IRB/IACUC# 2012/13-21-A06

1404 Poster **Classification:** GSBS Student

Presenter: Ashley Smith **Department:** Cell Biology and Immunology

Authors: Ashley Smith, University of North Texas Health Science Center at Fort Worth; Yan Zhang, University of North Texas Health Science Center at Fort Worth; Kevin DeSpain, UT Southwestern Medical Center; Ryan Huebinger, UT Southwestern Medical Center; Michael Allen, University of North Texas Health Science Center at Fort Worth

DEEP SEQUENCING OF CULTIVATION-NEGATIVE BRONCHOAVEOLAR LAVAGE SAMPLES FROM MECHANICALLY VENTILATED TRAUMA PATIENTS REVEALS DEFICITS IN TRADITIONAL CLINICAL PROTOCOLS

Purpose: Bronchoaveolar lavage (BAL) is a method of screening mechanically ventilated patients for potentially pathogenic microogranisms. Traditional culture-based techniques used in clinical laboratories detect a limited number of known bacteria; consequently, some samples may be falsely reported as "cultivation-negative" or possessing only "normal respiratory tract flora." To ascertain the potential for false negative results, we performed next generation DNA sequencing on BAL samples previously determined to be "cultivation negative" or "respiratory tract flora" by standard plate methods.

Methods: Nine samples were taken from mechanically ventilated trauma patients in the Surgical Intensive Care Unit (SICU) subjected to BAL as part of the standard of care. DNA was extracted from the samples and the 16S rRNA subunit was amplified and sequenced using the Ion Torrent Personal Genome Machine. Sequences were analyzed using Mothur data-analysis pipeline to identify the appropriate taxonomic designation.

Results: Results indicated that the majority (>77%) were dominated by a single organism. One third (3/9) of the samples analyzed were dominated by Neisseria spp. Other potential pathogens found to be dominant within the BAL samples included Streptococcus, Haemophilus, Aeromonas, and Rothia spp. Contamination from the oral cavity were also likely in two samples as evidenced by the identification of Porphyromonas and Prevotella spp.

Conclusions: Our study demonstrates potential benefits of using next-generation sequencing to supplement the current culture-dependent clinical diagnostic methods. The knowledge gained from analyzing the lung microbiome of "culture-negative" and "respiratory tract flora" may be an important tool for identifying difficult to cultivate species associated with lung infections in mechanically ventilated patients.

Sponsor

IRB/IACUC# #2013-105

1405 Oral **Classification:** GSBS Student

Presenter: David Visi **Department:** Molecular & Medical Genetics

Authors: David Visi, University of North Texas Health Science Center at Fort Worth; Michael Allen, PhD, University of North Texas Health Science Center at Fort Worth

ELUCIDATING THE DIVERSITY OF MICROBIAL RETTING COMMUNITIES ON HIBISCUS CANNABINUS USING NEXT-GENERATION SEQUENCING

Purpose: Global environmental concerns have led to a growing interest in renewable resources such as plant-based fibers. Beyond textiles and cordage, plant fibers have the potential for incorporation into renewable, bio-based composite materials for the building and manufacturing sectors. Successful commercialization of fiber production requires optimization of fiber extraction. Retting is the traditional method of fiber extraction, whereby endogenous microorganisms break down heteropolysaccharides to release fiber bundles. Previous studies have analyzed the retting solution for its bacterial constituents, but none have followed changes in the microbial community through the retting process. This research aims to track the bacterial components of the retting community through time, and determine the effects of bacterial augmentation with isolated pectinolytic bacteria using next generation sequencing of 16S rRNA gene amplicons.

Methods: Batch C1 included plant material and an inoculum of pond water represented a "traditional" retting environment, while C2 contained autoclaved pond water to represent the endogenous microorganisms associated with the plant material. Experimental batch E1 included the addition of three pectinolytic bacterial isolates: Bacillus DP1, Paenibacillus DP2, and Bacillus K1. Total DNA was extracted from the surface-adhering biofilm bacteria and used for PCR with full-length 16S primers 27F and 1492R. Amplification products were used as templates for a nested PCR with primers 786F and 939R targeting variable region 5 of the 16S molecule. The nested 16S rRNA amplicons were then sequenced on the next-generation Ion Torrent PGM platform.

Results: The E1 environment showed a marked increase in phylum Firmicutes (55 to 94%), while phylum Proteobacteria showed a progressive decrease from Day 1 to 4 (36% to 5%). This was correlated with easy separation of fibers by mechanical movement. At a finer taxonomic level, E1 showed a rapid loss of inoculated Bacillus species DP1 and K1, and a more gradual loss of the family Paenibacillaceae 1 (P. DP2) as the time course progressed. In contrast, C1 was co-dominated by phyla Firmicutes and Proteobacteria, while C2 was composed in large part by the phylum Bacteroidetes. Additionally, comparison of the microbial communities under the different conditions revealed differences in diversity and composition at day 4 time points between the three conditions.

Conclusions: Introduction of pectinolytic bacteria into the batch reactions increased production rate and increased fiber quality. Introduction of Paenibacillus DP2 is likely the driving force behind the community shifts detected in E1, which warrants further study to determine the mechanism of action. The findings confirmed previous studies that suggest a gradual replacement of aerobic organisms to an environment that is dominated by strict anaerobes. Moreover, the efforts shed light on conditions and mechanisms for the manipulation of microbiomes. These approaches may have relevance to the treatment of dysbiosis in the gut flora in humans and the treatment of related diseases.

Sponsor

IRB/IACUC#

1406 Poster **Classification:** SPH Student
Presenter: Julie Tsecouras **Department:** Environmental & Occupational Health
Authors: Julie Tsecouras, University of North Texas Health Science Center at Fort Worth; Dr. Joon Lee, University of North Texas Health Science Center at Fort Worth; Brandon Bennett, City of Fort Worth- Director of Public Health and Codes Department;

ENVIRONMENTAL EXPOSURE RISK ASSESSMENT OF WEST NILE VIRUS IN CITY PARKS IN FORT WORTH, TEXAS

Purpose: In 2012, Dallas-Fort Worth experienced the largest epidemic of West Nile Virus (WNV) yet, little is known about risk of WNV exposure in park users, despite conceivably high degree of interaction between WNV reservoir avian hosts and vector mosquitoes. The purpose of this study was to assess environmental risk exposures of WNV in city parks and identify species composition of mosquitoes in Fort Worth.
Methods: Three city parks with high public activities and/or vegetation were selected to assess environmental risk of exposure to WNV. The CDC light trap with CO_2 > was employed to collect mosquitoes, and proven or potential vector mosquitoes were tested for WNV infection by Reverse-Transcriptase Polymerase Chain Reaction.
Results: A total of 502 mosquitoes of 4 proven or potential WNV vector species were tested. No mosquitoes had WNV infection. 18 mosquito species were collected. The average number of mosquitoes collected per trap night was 24.4.
Conclusions: The low number of proven and potential WNV vectors and no evidence of WNV activities in the vector population indicate negligible risk of environmental exposure to WNV in the 2013 season. However, high variation of exposure risk to WNV warrants continuing effort to assess the exposure risk to WNV in environmental settings with high public activities like city parks.
Sponsor City of Fort Worth
IRB/IACUC#

1407 Poster **Classification:** GSBS Student
Presenter: Yan Fan **Department:** Cell Biology and Immunology
Authors: Yan Fan, University of North Texas Health Science Center at Fort Worth; Johnny He, PhD, University of North Texas Health Science Center at Fort Worth

HIV-1 TAT INDUCED LYSOSOMAL EXOCYTOSIS IN ASTROCYTES AND ITS CONTRIBUTIONS TO TAT NEUROTOXICITY

Purpose: HIV-1 Tat protein is considered to be the critical reason in the processing of HIV-associated neuropathogenesis. Our previous studies demonstrates that HIV-1 Tat expression leads to ER stress in astrocytes through GFAP aggregation and suggest that disruption of ER homeostasis, i.e., ER stress may be involved in HIV-associated neuropathogenesis. But what the neurotoxic factor is in this indirect astrocyte-mediated Tat neurotoxicity system is still unknown. In this study, we take advantage of our Tat-inducible transgenic mice, and proteomic analysis was performed to explore the neurotoxic factor in the astrocyte-mediated Tat neurotoxicity system.
Methods: Brain-targeted inducible Tat transgenic and GFAP knockout mice were used in the study. Primary astrocytes and neurons cultures were prepared from mouse embryos. U373 cells and primary astrocytes and were either transfected with pTat.Myc or treated with doxycycline to induce Tat expression. Cells were prepared and analyzed for β–hexosaminidase activity by NAG assay after ionomycin mediated Ca^{2+}influx. Culture supernatants were collected for immunodepletion and analyzed for their neurotoxicity toward primary mouse or human neurons using MTT assay. TIRF microscopy is utilized to visualize lysosome exocytosis events.
Results: Base on the protein sequencing and pathway analysis, we proposed that HIV-1 Tat induces lysosomal exocytosis in astrocytes. Then, NAG assay and TIRF microscopy provide consistent evidences that verified our hypothesis. Moreover, we attested that inhibition of Tat induced lysosomal exocytosis in astrocytes by vaculin-1 can abolish Tat induced neuron death. More interestingly, we observed that Tat induced lysosomal exocytosis and neuron death only appears in astrocytes but not in other cell types, such as 293T and Huh 7.5.1 cells. Further more, we proved that GFAP plays a critical role in Tat induced lysosomal exocytosis and neuron death.
Conclusions: Taken together, these results demonstrate that HIV-1 Tat induces lysosomal exocytosis and hydrolytic enzymes contained within lysosome are suggested to contribute to neuronal death, which is a novel insight into astrocytes-mediated Tat neurotoxicity.
Sponsor
IRB/IACUC# 2010/11-43

1408 Poster **Classification:** GSBS Student
Presenter: Sagar Shelake **Department:** Cell Biology and Immunology
Authors: Sagar Shelake, University of North Texas Health Science Center at Fort Worth; Anuja Ghorpade, PhD, University of North Texas Health Science Center at Fort Worth

IMPLICATIONS OF ASTROCYTIC NRF2-ARE SIGNALING PATHWAY IN METHAMPHETAMINE AND HIV-1gp120 INDUCED OXIDATIVE STRESS
Purpose: Despite the advent of the antiretroviral therapy, HIV-1 associated neurocognitive disorders (HAND) continue to be a significant issue for HIV-1 infected patients. HIV-1 infection of CNS combined with Methamphetamine (METH) abuse causes overall increase in oxidative stress in astrocyte. In HAND patients, oxidative stress induced apoptosis in astrocyte compromises the normal physiology and function of CNS. NF-E2–related factor 2 (Nrf2) transcription factor plays vital role in cellular protective response against oxidative stress due to environmental agents such as electrophiles, drug abuse, smoking, radiation. Although HIV-1 gp120and METH have been implicated in the pathogenesis of HAND, little is known about their combined effect on the regulation of Nrf2 in human astrocytes. In this study, we investigated the combinatorial effect of gp120 and METH on Nrf2-ARE signaling pathway in primary human fetal astrocytes.
Methods: Astrocytes were treated with METH and gp120 followed by immunocytochemistry analysis. The oxidative stress and apoptosis was detected by protein carbonylation and DNA fragmentation, respectively. The levels of phospho-Nrf2 and Nrf2 were analyzed by western blot.
Results: Repeated treatment of METH and gp120 induced the reactive astrocyte phenotype as observed by GFAP immunostaining. METH and gp120 significantly increased oxidative stress and apoptosis. Further investigation revealed that METH and gp120 significantly increased Nrf2 phosphorylation and nuclear translocation in a time-dependent manner.
Conclusions: Taken together, these results suggest the involvement of Nrf2-ARE signaling pathway as a protective response to METH- and gp120- induced oxidative stress in human astrocytes.
Sponsor
IRB/IACUC# 2007-121

1409 Poster **Classification:** Faculty (Not for Competition)
Presenter: Patrick Clay, PharmD **Department:** Pharmacotherapy
Authors: Patrick Clay, PharmD, University of North Texas Health Science Center at Fort Worth

SAFETY AND TOLERABILITY OF CROFELEMER 125 MG TWICE DAILY IN THE TREATMENT OF NONINFECTIOUS DIARRHEA IN HIV-SEROPOSITIVE PATIENTS ON ANTIRETROVIRAL THERAPY: RESULTS FROM A PHASE 3, 48-WEEK OPEN-LABEL STUDY
Purpose: To evaluate the long-term (up to 48 weeks) safety and tolerability of crofelemer 125 mg twice daily for the treatment of noninfectious diarrhea in patients with HIV
Methods: Phase 3, multicenter, open-label study of crofelemer 125 mg twice daily for up to 48 weeks
Results: Overall, 189 patients (75.6%) experienced ≥1 AE during this open-label study; the majority of AEs (90.5% of patients) were mild or moderate in intensity. The most commonly reported AEs were infection-related (eg, upper respiratory tract [16.8%], intestinal parasitic [12.4%], Giardia [8.0%]; none drug-related) or gastrointestinal-related (eg, nausea [5.6%], constipation [5.6%]) –Most patients (10 of 14 [71.4%]) reporting a constipation AE also used ADMs during the study. Only 9 (3.6%) patients reported diarrhea as an AE •AEs considered at least possibly related to study drug occurred in 9.2% of patients; the most commonly reported were constipation (3.6%), abdominal distension (2.0%), abdominal pain (1.2%), and flatulence (1.2%). No deaths occurred during the study; serious AEs occurred in 20 patients (8.0%), including infection in 10 patients; none were considered drug-related.
Conclusions: Crofelemer 125 mg twice daily was well tolerated with a low incidence of AEs in HIV-seropositive patients with noninfectious diarrhea receiving ART, which is consistent with the minimal absorption of crofelemer. In this study, minimal clinical deterioration of immune status was observed for up to 48 weeks, suggestive of adherence to ART regimens and continued ART efficacy.
Sponsor Salix Pharmaceuticals, Inc.
IRB/IACUC#

1500 Poster **Classification:** GSBS Student
Presenter: Blayne Knapp **Department:** Integrative Physiology & Anatomy
Authors: Blayne Knapp, University of North Texas Health Science Center at Fort Worth; Joel Little, University of North Texas Health Science Center at Fort Worth; Tom Cunningham, PhD, University of North Texas Health Science Center at Fort Worth

ADENO-ASSOCIATED VIRUS CONSTRUCT ENABLES DIFFERENTIATION OF VASOPRESSIN AND OXYTOCIN NEUROPEPTIDE-EXPRESSING MAGNOCELLULAR NEURONS IN THE HYPOTHALAMIC SUPRAOPTIC NUCLEUS IN RAT

Purpose: The goal of this study was to validate this approach and determine whether it can cause the selective transfection of AVP versus OXT MNCs in the supraoptic nucleus of the hypothalamus (SON).
Methods: In these studies, an AAV2 vector with an AVP promoter and GFP (p2.OVPI.EGFP) was stereotaxically injected into the SON of adult male Sprague-Dawley rats (226-250g bw) during isoflurane anesthesia. After 14 days, the rats were each anesthetized with inactin (100 mg/kg ip) and their brains where prepared for immunofluorescence. Two separate sections of coronal sections containing the SON were processed for either AVP or OXT immunohistochemistry using a Cy3 conjugated secondary antibody. Colocalization of GFP with either AVP or OXT immunofluorescence was determined by light microscopy.
Results: Our results indicate the colocalization of GFP and AVP in MNCs of the SON (89% GFP-AVP double labeling, n=3), and not GFP and OXT (0.08% GFP-OXT double labeling, n=3).
Conclusions: Given this demonstration of successful vector transduction, we can conclude that the AAV2 vector is selective to AVP expressing MNCs, enabling us to distinguish AVP versus OXT MNCs in the SON. This capability will permit differentiation of neuronal types and their respective properties during later electrophysiological studies.
Sponsor R56 HL62569
IRB/IACUC# 2011-12-37-A05

1501 Oral **Classification:** GSBS Student
Presenter: Jacques D Nguyen **Department:** Pharmacology & Neuroscience
Authors: Jacques Nguyen, University of North Texas Health Science Center at Fort Worth; Michael Forster, PhD, University of North Texas Health Science Center at Fort Worth

CHARACTERIZATION OF COCAINE-CONDITIONED LOCOMOTOR RESPONSES BY MODULATION OF ENVIRONMENTAL CONTEXT AND NEURAL PLASTICITY-SIGNALING PATHWAYS

Purpose: In rodents, increase in locomotion is a hallmark effect of psychostimulant exposure and conditioning that is associated with activation of mesocorticolimbic dopamine signals mediating reinforcing/rewarding actions. The objective of this study was to characterize the cocaine-conditioned locomotor response following an acute injection of cocaine, specifically the modulating roles of environmental context and plasticity-associated signals.
Methods: Cocaine (40mg/kg) was administered to different groups of Swiss-Webster, C57Bl/6, or DBA2 mice via intraperitoneal injection (i.p.), in either a locomotor activity testing apparatus or the home cage, 2 hours following an activity test under saline. Mice placed in the testing chambers were given 30 minutes to explore freely and locomotion was monitored using a Digiscan photocell apparatus. A conditioned effect of cocaine was inferred by an increase in horizontal activity counts relative to home cage cocaine controls during a test in the same apparatus on the following day. Compounds known to modulate neural plasticity-associated signaling cascades were evaluated for their ability to affect the acquisition and expression of cocaine-conditioned locomotor response, using a two-day protocol. Mice were administered haloperidol (0.05-1 mg/kg), dizocilpine (0.01-0.25mg/kg), nifedipine (0.1-10 mg/kg), cycloheximide (2.5-10mg/kg), or vehicle, prior to placement into the activity chambers on the test day for expression or prior to acquisition day.
Results: Haloperidol (0.25-1 mg/kg) inhibited expression of the cocaine-conditioned locomotion, though failed to alter acquisition of the behavioral response. Dizocilpine (0.05-0.25 mg/kg) attenuated acquisition and exacerbated expression. Nifedipine had no effect on the conditioned locomotor response. Cycloheximide (2.5-10 mg/kg) attenuated acquisition of the conditioned response.
Conclusions: These findings suggest that plasticity-dependent signaling pathways mediate associations of context following acute cocaine exposure and are necessary for the acquisition and expression of the cocaine-conditioned locomotor response.
Sponsor N/A
IRB/IACUC# 2012/13-52

1502 Poster **Classification:** TCOM DO Student
Presenter: Olivia Simmons **Department:** Pharmacology & Neuroscience
Authors: Olivia Simmons, University of North Texas Health Science Center at Fort Worth; Shaletha Holmes, University of North Texas Health Science Center at Fort Worth; Rebecca Cunningham, PhD, University of North Texas Health Science Center at Fort Worth

INDUCTION OF APOPTOSIS VIA TESTOSTERONE IN OXIDATIVELY DAMAGED DOPAMINERGIC CELLS

Purpose: Following ischemic stroke, reduction of blood supply to brain cells can lead to conditions of oxidative stress (OS) in neurons, specifically in the dopaminergic neurons of the substantia nigra (SN). The loss of dopaminergic neurons manifests itself as Parkinson's disease (PD). Classically, men have a higher incidence of developing PD post-stroke than females. This suggests a role of testosterone (T) in the development of PD after induction of OS in neurons. We postulate that T in OS-induced states will activate the caspase pathway of apoptosis to induce dopaminergic cell death, and thus symptoms of PD.
Methods: To test our hypothesis, we first pre-treated N27 dopaminergic cell lines with hydrogen peroxide (H_2O_2) to simulate stroke-induced OS. The cells were then treated with differing concentrations of T (0, 1, 10, 100 nM), representing the physiologic ranges of T in humans. Expressions of pro-caspase-3 and pro-caspase-9, the uncleaved precursors to caspase-3 & caspase-9, respectively, in the cells were quantified using Western Blot analysis. Statistical significance of our findings was reported using ANOVA and Fisher's post hoc analysis with SAS software and $p < 0.05$ as significant.
Results: Our experiments showed a trend of decreased expression of pro-caspase-9, and a significant decrease in pro-caspase-3 expression in the H+T treatment conditions as compared to the control conditions.
Conclusions: These results point to the apoptotic pathway via caspase-3 and caspase-9 as the mechanism by which increased T levels lead to PD in stroke patients.
Sponsor Texas Garvey Foundation, UNTHSC Seed Grant
IRB/IACUC#

1503 Poster **Classification:** GSBS Student
Presenter: Kathleen Borgmann **Department:** Cell Biology and Immunology
Authors: Kathleen Borgmann, University of North Texas Health Science Center at Fort Worth; Lin Tang, University of North Texas Health Science Center at Fort Worth; Anuja Ghorpade, PhD, University of North Texas Health Science Center at Fort Worth

ISOLATION OF PRIMARY ASTROCYTES FROM HUMAN BRAIN TISSUE AND ASSESSMENT OF PROTOTYPICAL INFLAMMATORY RESPONSES FOR NEURODEGENERATIVE RESEARCH

Purpose: A common link in CNS disease is inflammation and the contribution of astrocyte inflammatory responses to neurodegeneration remains a focus of investigation. Non-human glial models may be limited in providing data that extrapolate directly to human neurodegenerative diseases, thus much remains to be learned in the genetically relevant context of primary human astroglial cultures.
Methods: Here we describe the isolation and purification of primary human astrocytes from fetal brain in detail. We expand this protocol to include the assessment of astrocyte responses to inflammation through changes in cell morphology and expression of astrocyte specific markers, mitochondrial pore opening and activity, proinflammatory chemokine secretion and glutamate uptake.
Results: Pure cultures were uniform in size and shape, and at least 95% positive for astrocyte markers. Mitochondrial pore staining revealed punctate calcein staining, which was decreased during inflammation. Upon treatment with a prototypical mediator of astrocyte inflammatory responses, interleukin (IL)-1beta, astrocyte processes became constricted; indicating a reactive astrocytic state, chemokine secretion increased significantly and the ability of astrocytes to clear glutamate was significantly impaired. Untreated cultures that demonstrated reactive phenotypes or those that failed to attain reactive states upon IL-1beta-treatment were excluded.
Conclusions: These parameters established a framework to assess the overall purity, health, responsiveness to inflammation and thus the suitability of the culture for experimental use of primary human astrocyte cultures for neurodegenerative research.
Sponsor 1R01To AG DA025566 (NIDA); 5R01MH087345 (NIMH); 2R01NS048837 (NINDS)
IRB/IACUC# 2007-121N/A

1504 Poster **Classification:** Postdoctoral Fellow

Presenter: Luokun Xie **Department:** Pharmacology & Neuroscience

Authors: Luokun Xie, University of North Texas Health Science Center at Fort Worth; Gourav Roy Choudhury, University of North Texas Health Science Center at Fort Worth; Yong Park, University of North Texas Health Science Center at Fort Worth; Ran Liu, University of North Texas Health Science Center at Fort Worth; Chun-Li Zhang, University of Texas Southwestern Medical Center; Thomas Yorio, PhD, University of North Texas Health Science Center at Fort Worth; Kunlin Jin, University of North Texas Health Science Center at Fort Worth; Shaohua Yang, University of North Texas Health Science Center at Fort Worth

METHYLENE BLUE INHIBITS PROLIFERATION AND MAINTAINS SELF-RENEWAL OF RAT NEURAL STEM/PROGENITOR CELLS

Purpose: Neural stem cell-based treatment holds a new therapeutic opportunity for treating neurodegenerative disorders. While methylene blue has been shown to be neuroprotective in multiple experimental neurodegenerative disease models, its potential effects on neural stem/progenitor cells (NSPCs) has not been addressed. Methylene blue can easily penetrate the blood brain barrier to access the brain parenchyma. Thus, its effects on NSPCs, whether positive or negative, need to be elucidated.

Methods: We used in both in vitro culture model and in vivo study to test the effects of methylene blue on the proliferation, self-renewal and differentiation of NSPCs. Neurospheres were generated in vitro and were treated with methylene blue. NSPC proliferation was evaluated by Ki67 staining and propidium iodide staining. NSPC self-renewal was determined by serial passage assay. Real-time PCR was applied to test the expression of neural differentiation markers in NSPCs. To address the signal pathway responsible for the methylene blue-induced changes on NSPCs, expression of cyclins and mTORC1 activation were determined by real-time PCR and Western blot, respectively. The effects of methylene blue on NSPC proliferation was also confirmed by intracerebroventricular infusion of methylene blue in rats followed by BrdU and Nestin staining.

Results: Methylene blue inhibits porliferation of rat NSPCs in the in vitro culture. Methylene blue treatment decreased most cyclin expression. In addition, methylene blue enhanced the self-renewal capacity of NSPCs, demonstrated by more neurosphere growth and inhibited differentiation marker expression in NSPCs. However, methylene blue did not impair committed neuronal differentiation. The change of cyclin expression is associated with the change of mTOR expression in methylene blue-treated NSPCs. Methylene blue repressed transcription of mTOR rather than enhance mTOR degradation. Consistent with in vitro data, methylene blue inhibited neural stem cell division in the subventricular zone, but did not influenced neuronal development in a short term.

Conclusions: Our findings indicate that methylene blue could delay NSPCs senescence by enhancing NSPCs self-renewal capacity. However, the long-term effects of methylene blue on the in vivo NSPC pool needs further investigation. The impact of methylene blue on NSPCs should be taken into account in future therapy with methylene blue, either for the peripheral diseases or for the CNS disorders.

Sponsor N/A

IRB/IACUC# 2012/13-43-A05

1505 Oral **Classification:** GSBS Student

Presenter: Gourav Roy Choudhury **Department:** Pharmacology & Neuroscience

Authors: Gourav Roy Choudhury, University of North Texas Health Science Center at Fort Worth; Ali Winters, University of North Texas Health Science Center at Fort Worth; Ryan Rich, University of North Texas Health Science Center at Fort Worth; Myoung-Gwi Ryou, University of North Texas Health Science Center; Zygmunt Gryczynski, University of North Texas Health Science Center; Shaohua Yang, University of North Texas Health Science Center at Fort Worth

METHYLENE BLUE PROTECTS ASTROCYTES FROM HYPOXIA-REOXYGENATION INJURY BY IMPROVING CELLULAR BIOENERGETICS

Purpose: Ischemic Stroke inflicts a double blow to the affected brain region by characteristically presenting a period of acute ischemia during which the cells are completely deprived of valuable nutrients (Glucose & oxygen) resulting in cell death, however as the blood flow is restored (Spontaneously/surgically) the surviving cells are exposed to an overwhelming levels of glucose and oxygen resulting in reperfusion injury which further aggravates the cellular injury inflicted by ischemia. Methylene Blue (MB) is a heterocyclic aromatic compound shown to function as an alternative electron carrier and improve glucose uptake, cerebral blood flow (CBF), and cerebral metabolic rate of oxygen in the brain. In our current study we aim to delineate if MB is protective in astrocyte against hypoxia-reoxygenation injury and determine its underlying mechanism.

Methods: Primary astrocytes cultures isolated from day old C57BL6 were used in the current study. Protective role of Methylene blue (MB) in primary astrocyte cultures was evaluated in an in vitro model of cellular hypoxia (0.1% O_2, 6h) and re-oxygenation (24h). The effect of MB on glucose uptake was determined by using the 2-NBDG assay. Oxygen sensitive dye Tris (2,2'-bipyridyl) dichloro Ruthenium(II) hexahydrate and Fluorescence Life Time Imaging (FLTI) was used to determine the effect of MB on intracellular oxygen concentration. ATP assay was used to determine the effect of MB on cellular energy status.

Results: Results from cell viability assay showed that MB treatment significantly protected astrocytes from hypoxia-reoxygenation induced cell death. MB treatment significantly increased cellular glucose uptake in primary astrocyte cultures. FLTI showed that MB significantly increased intracellular oxygen concentration in primary astrocytes. Astrocytes treated with MB also had significantly higher ATP concentration compared to non-treated cells.

Conclusions: Methylene Blueprotects astrocytes against hypoxia-reoxygenation injury by improving astrocyte bioenergetics.

Sponsor N/A

IRB/IACUC# 2012/13-43-A05

1506 Poster **Classification:** GSBS Student

Presenter: Rachel N. Smith **Department:** Pharmacology & Neuroscience

Authors: Rachel Smith, University of North Texas Health Science Center at Fort Worth; Eric Gonzales, PhD, University of North Texas Health Science Center at Fort Worth

MODULATION OF CHICKEN ASIC1 BY 2-GUANIDINE-4-METHYLQUINAZOLINE (GMQ) IN THE ABSENCE AND PRESENCE OF PSALMOTOXIN-1

Purpose: Acid-sensing ion channels (ASICs) are trimeric, sodium-selective channels that sense changes in extracellular acidity and are part of the epithelium sodium channel/degenerin (ENaC/DEG) family of ion channels. ASICs are sensitive to an increasing number of nonproton ligands that include natural venom peptides and guanidine compounds, such as amiloride and 2-guanidine-4-methylquinazoline (GMQ). The nonproton ligand GMQ has been shown to stimulate ASIC3 by expanding the pH range of the ASIC window current, but decreased the sensitivity of other ASIC subtypes to protons. The effect of GMQ on chicken ASIC1 (cASIC1), which has been used to elucidate the protein crystal structures, is unknown. Furthermore, cASIC1 exhibits unique channel gating properties, including the spider toxin ASIC1a Psalmotoxin-1 (PcTx1) induced activation.

Methods: We sought to elucidate the interaction of GMQ, PcTx1, and cASIC1 using whole-cell and outside-out patch clamp electrophysiology to provide additional insight into the nonproton ligand interaction with a structurally characterized ASIC construct.

Results: Our studies revealed GMQ increases the cASIC1 proton sensitivity, as observed by a leftward shift in the proton activation curve. When alone, the nonproton ligand failed to activate cASIC1. Additionally, we observed GMQ concentration-dependent enhancement of the cASIC1 PcTx1 persistent current.

Conclusions: Our data suggests that GMQ may have multiple sites of action on cASIC1 and may act as a “molecular wedge” that forces the desensitized ASIC into an open state. We anticipate that the revelation of GMQ stimulation in the cASIC1 subtype will warrant further investigations into nonproton ligand sensitivity in other ASIC subtypes and provide the foundation for the design of novel ligands that exploit the nonproton ligand site to influence ASIC activity.

Sponsor American Heart Association (12BGIA8820001), National Institute on Aging, Training in the Neurobiology of Aging (T32AG020494), UNTHSC Internal Seed Grant Program

IRB/IACUC#

1507 Poster **Classification:** GSBS Student

Presenter: Nicholas Kubelka **Department:** Pharmacology & Neuroscience

Authors: Nicholas Kubelka, University of North Texas Health Science Center at Fort Worth; Nataliya Rybalchenko, University of North Texas Health Science Center at Fort Worth; Meharvan Singh, PhD, University of North Texas Health Science Center at Fort Worth

OPTIMIZATION OF TWO METHODS FOR ASSESSING CELL VIABILITY AND CYTOPROTECTION IN C6 ASTROCYTES

Purpose: The purpose of this study was to determine the best method for measuring cell viability in the rat C6 astrocyte cell model in response to two cytotoxic insults, hydrogen peroxide (H_2O_2) and iodoacetic acid (IAA).

Methods: Two assays were evaluated: calcein-AM assay for detecting live cell number, and a flow cytometry-based assay to assess live versus dead populations. Cells were treated with 0, 10, 20 or 50 µM H_2O_2 (2 hours) or IAA (3 hours). The calcein-AM assay was evaluated in a 96-well plate format. Flow cytometry results were obtained using a C6 Accuri model Flow Cytometer, and cells were stained with both calcein-AM (peak emission range 485-535 nm, fluorescence channel 1 (FL1)) and ethidium homodimer (peak emission range 610-30 nm, fluorescence channel 3 (FL3)).

Results: Treated cells displayed a concentration dependent decrease in cell viability (calculated EC50 = 18µM for H_2O_2, 23 µM for IAA). Cells treated for 3 hours with IAA showed a concentration dependent transition from high FL1, low FL3 fluorescence to low FL1, high FL3 fluorescence, indicating a transition from high to low viability.

Conclusions: This study describes two methods for cell viability detection: calcein fluorescence by high-throughput analysis and simultaneous calcein and ethidium homodimer staining for flow cytometry cell gating for individual cell analysis. Having successfully utilized both the 96-well assay and the flow cytometry protocols to assess cell viability, we plan to extend the current studies by assessing how brain-active steroids protect glia from insults relevant to brain aging and certain neurodegenerative diseases.

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IRB/IACUC#

1508 Poster **Classification:** GSBS Student
Presenter: Nitasha Phatak **Department:** Cell Biology and Immunology
Authors: Nitasha Phatak, University of North Texas Health Science Center at Fort Worth; Raghu Krishnamoorthy, PhD, University of North Texas Health Science Center at Fort Worth

OVEREXPRESSION OF THE POU DOMAIN TRANSCRIPTION FACTOR, BRN3B CAUSES NEURITE OUTGROWTH IN CULTURED PC 12 CELLS UNDER CONDITION OF OXYGEN GLUCOSE DEPRIVATION

Purpose: Brn3b is a POU domain transcription factor shown to play a key role in regulating retinal ganglion cell axon outgrowth during development. Hypoxia is a contributing factor in many neurodegenerative diseases including glaucoma. The purpose of this study was to determine if overexpression of Brn3b could promote neurite outgrowth in cultured PC 12 cells during conditions of oxygen glucose deprivation (OGD).
Methods: Rat Pheochromocytoma cells (PC 12) were grown on poly-D-lysine coated 100 mm dishes and transfected either with pCMV6-Brn3b (an expression vector encoding Brn3b) or pCMV6-Empty (empty vector). Following 6 h of transfection, cells were maintained overnight in a differentiating medium containing NGF (100ng/ml). Subsequently, the cells were transferred to glucose free DMEM and maintained for 2 h in 0.5% O_2 and 5% CO_2 (for hypoxia) in an Invivo2 200 hypoxia chamber. For the normoxia controls, PC12 cells overexpressing Brn3b or Empty vector were maintained in differentiating medium for 2 h in 5% CO_2 and 95% air in a standard incubator. Protein extracts were isolated from these cells and analyzed for Brn3b and GAP43, TUBA-1 protein expression by immunoblot analysis. In another set of experiments, PC 12 cells were seeded on Poly-D-Lysine coated 25mm cover slips and transfected with either pCMV6-Brn3b or pCMV6 -Empty and maintained in differentiating medium for 4 days. The cells were subjected to either hypoxia (2h) or normoxia. Brn3b, GAP43 and TUBA-1 expression were analyzed using immunocytochemistry. Morphological changes in PC 12 cells transfected with Brn3b were studied by using LSM 510 confocal microscopy.
Results: Immunoblot analysis confirmed overexpression of Brn3b in PC12 cells transfected with Brn3b cDNA in normoxic as well as in OGD conditions. Interestingly, a marked upregulation of GAP-43 and ac-TUBA expression was observed in Brn3b overexpressing cells under conditions of both normoxia and OGD. Overexpression of transcription factor Brn3b in PC12 cells produced a statistically significant increase in maximum neurite length and number of neurites per cell under conditions of both normoxia and OGD. A marked increase in immunostaining for Brn3b and neurite-specific GAP-43, TUBA-1 were also observed in PC12 cells overexpressing Brn3b in condition of normoxia and OGD.
Conclusions: The POU domain transcription factor, Brn3b, could promote neurite outgrowth in PC12 cells under conditions of normoxia and as well as OGD.
Sponsor NA
IRB/IACUC#

1509 Poster **Classification:** Postdoctoral Fellow
Presenter: Richa Pandey **Department:** Cell Biology and Immunology
Authors: Richa Pandey, University of North Texas Health Science Center at Fort Worth; Anuja Ghorpade, PhD, University of North Texas Health Science Center at Fort Worth;

ROLE OF ALCOHOL IN PRIMARY HUMAN ASTROCYTES

Purpose: The aim of this study was to investigate alcohol-mediated activation of human astrocytes and subsquential alterations in their inflammatory functions.
Methods: Primary human astrocytes were incubated with or without alcohol at doses of 25, 50, 100 mM for 3, 5, and 7 days. Cells and culture supernatants were collected. Astrocyte morphology was examined by immunocytochemical staining for glial fibrillary acidic protein (GFAP). Expressions of TIMP-1 and pro-inflammatory cytokines including CXCL8 and CCL2 were measured by ELISA. Cell metabolic activity, proliferation, and apoptosis were analyzed by MTT assay, BrdU cell proliferation assay, and Cell Death Detection ELISA^{plus} assay, respectively.
Results: Alcohol exposure altered the morphology of astrocytes to a reactive phenotype as determined by GFAP immunostaining. Alcohol significantly upregulated TIMP-1 levels in dose-dependent manner ($P< 0.05$), with a peak at day 5 post-treatment. Moreover, alcohol treatment significantly upregulated CCL2 ($P< 0.05$) while CXCL8 was significantly downregulated in a dose as well as time-dependent manner ($P< 0.05$). In addition, alcohol exposure significantly decreased astrocytes viability ($P< 0.05$) and proliferation as measured by MTT and BrdU incorporation assay respectively, and significantly increased apoptosis ($P< 0.05$) in parallel experiments.
Conclusions: In summary, our results suggest that alcohol may alter astrocyte inflammatory mediators and/or regulate astrocyte functions.
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1510 Poster **Classification:** GSBS Student

Presenter: Ashwini Saxena **Department:** Physiology, Integrative

Authors: Ashwini Saxena, University of North Texas Health Science Center at Fort Worth; Martha Bachelor, University of North Texas Health Science Center at Fort Worth; Flavia Carreno, University of Texas Health Science - San Antonio; J. Cunningham, University of North Texas Health Science Center at Fort Worth

SRC-KINASE MEDIATES ANGIOTENSIN II INDUCED POTENTIATION IN TRPV4 AGONIST EVOKED CALCIUM TRANSIENTS IN HYPOTHALAMIC IMMORTALIZED NEURONAL CELL LINE 4B

Purpose: ØInappropriate Vasopressin (AVP) release causes dilutional hyponatremia associated with heart and liver failure. Although the central molecular mechanisms that mediate inappropriate AVP release are not clear, plasma angiotensin II (Ang II) has been implicated as a factor in the pathogenesis of dilutional hyponatremia. Our previous studies using a rodent model of liver failure, have shown that increased TRPV4 expression in vasopressinergic neurons and elevated circulating AVP were blunted by normalization of the renin angiotensin system (RAS). Effects of circulating Ang II on neural networks may mediate cellular adaptations associated with changes in TRPV4 expression and/or sorting ØBased on our in vivo studies we speculate that modulation of transient receptor potential vanilloid (TRPV4) channels by means of changes in its membrane sorting could alter its gating, and thus contribute to changes in neural excitability that would be consistent with increased AVP release in rats with liver failure. To examine the effects of AngII treatment upon TRPV4 we utilized the rat hypothalamic AVP expressing neuronal cell line 4B
Methods: We used Western Blots to detect changes in TRPV4 protein in membrane fraction after drug treatments. In addition, we used calcium sensitive dye Fura 2-AM to detect changes in intracellular calcium after administration of a selective TRPV4 agonist - GSK 1016790A.
Results: We characterized the presence of TRPV4 mRNA and protein in 4B cells. After Ang II (100nM;1 hr) treatment significantly increased TRPV4 levels in crude membrane fractions ($p<0.001$) and tyrosine phosphorylation of TRPV4 ($p<0.001$). Using calcium sensitive dye Fura-2AM, we noted that Ang II treated cells exhibited increased calcium transients in response to TRPV4 agonist, GSK1016790A (20nM, $p<0.05$). This increase was blocked by the Losartan (Ang II receptor antagonist) and Src-kinase inhibitor, PP2, but not by its analog PP3.
Conclusions: Our data indicate that Ang II may facilitate TRPV4 trafficking and alter the phosphorylation status of TRPV4 through Src-kinases.

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IRB/IACUC#

1511 Oral **Classification:** GSBS Student

Presenter: Shaletha Holmes **Department:** Pharmacology & Neuroscience

Authors: Shaletha Holmes, University of North Texas Health Science Center at Fort Worth; Chang Su, MD, University of North Texas Health Science Center at Fort Worth; Meharvan Singh, PhD, University of North Texas Health Science Center at Fort Worth; Rebecca Cunningham, PhD University of North Texas Health Science Center at Fort Worth, PhD

THE EFFECTS OF ANDROGENS ON CASPASE-1 MEDIATED SIGNALING IN OXIDATIVE STRESSED DOPAMINE NEURONS

Purpose: Oxidative stress and an extensive loss of dopamine neurons in the nigrostriatal pathway are hallmarks of Parkinson's disease (PD), a neurodegenerative disorder affecting millions of people. Males have a higher risk for PD than females. While the mechanisms remain elusive, one possibility may be that androgens, such as testosterone, play a potential role. Our studies suggest that androgens can increase the expression of Caspase-1, an enzyme whose activity increases with oxidative stress and can result in mitochondrial collapse, ubiquitination, alpha-synuclein–positive lewy body accumulation, inflammation and apoptosis. We hypothesize that in oxidative stress conditions, androgens suppress KLF4, a negative regulator of caspase-1, resulting in overexpression of Caspase-1 leading to toxic protein accumulation, inflammation, and apoptosis.
Methods: We exposed a dopaminergic cell line (N27 cells) to a sublethal concentration of the pro-oxidant, tert-butyl hydrogen peroxide (H_2O_2) for 24 hrs and assessed cell viability in the presence or absence of testosterone.
Results: Physiologically relevant concentrations of testosterone (0, 1, 10, 100 nM) failed to compromise cell viability in non-oxidatively stressed cells[1]. In contrast, testosterone did promote cell death in the H_2O_2 pre-treated cells. In H202 treated cells, testosterone increased caspase-1 expression and activation, as evidenced by an increase in cleaved caspase-1. In addition, KLF4 expression was decreased by testosterone in H_2O_2 treated cells. The role of KLF4 as a negative regulator of caspase-1 was confirmed in experiments showing that siRNA-mediated knockdown of KLF4 increased caspase-1 levels in H_2O_2 treated cells. Testosterone increased H202 mediated expression of COX2 signaling, a protein associated with inflammation. Also, testosterone decreased H_2O_2-induced ubiquitin expression resulting in the accumulation of toxic proteins. Further, testosterone increased H202 induced in apoptosis.
Conclusions: Overall, these results indicate that androgens such as testosterone exert negative effects under oxidative stress conditions through the suppression of KLF4 and activation of caspase-1 signaling pathways leading to cell death. Thus, supporting a role for androgens for the gender bias observed in PD.

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IRB/IACUC#

1512 Poster **Classification:** TCOM DO Student
Presenter: Jay Lee **Department:** UNT System
Authors: Jay Lee, University of North Texas Health Science Center at Fort Worth; Chang Su, PhD, University of North Texas Health Science Center at Fort Worth; Meharvan Singh, PhD, University of North Texas Health Science Center at Fort Worth

THE GLIAL RECEPTOR MECHANISM OF THE SYNTHESIS AND RELEASE OF BRAIN-DERIVED NEUROTROPHIC FACTOR WHEN EXPOSED TO PROGESTERONE IS MEDIATED VIA THE CLASSICAL PROGESTERONE RECEPTOR

Purpose: Progesterone (P4) is cytoprotective in various experimental models, but our understanding of the mechanisms involved is still incomplete. It has been implicated that brain-derived neurotrophic factor (BDNF) signaling is an important mediator of P4's protective actions. This experiment looked into a potential receptor mechanism by which progesterone can mediate BDNF synthesis, which is via the classical progesterone receptor (PR). C6 glial cells are neuronal cells that normally lack classical PR, and so it is an ideal model to look at the classical PR response to progesterone with relation to BDNF. The hypothesis is that cells that have the classical PR will synthesize more BDNF relative to cells that do not have the classical PR.
Methods: In this experiment, a set of C6 glial cell cultures were transfected with classical PR genes. After allowing for growth, both the transfected and non-transfected C6 cells were exposed to progesterone and the concentration of BDNF in the cell lysis was determined via ELISA.
Results: The results revealed that for the C6 cells that were not transfected with the classical PR, there was no significant change in the level of BDNF release regardless of the progesterone treatment (vehicle, 30 pg/mL BDNF; 0.1 nM P4, 29 pg/mL BDNF; 1 nM P4, 29 pg/mL BDNF; 10 nM P4, 31 pg/mL BDNF; 100 nM P4, 30 pg/mL BDNF; 1000 nM P4, 29 pg/mL BDNF). On the other hand, the C6 cells that were transfected with the classical PR showed an increase in BDNF production with the treatment of progesterone. The transfected C6 cells that were not treated with progesterone but rather with vehicle DMSO showed a BDNF release of 37 pg/mL. The transfected C6 cells that were treated with progesterone at concentrations of 10 nM and 100 nM showed a BDNF release of 61 pg/mL and 50 pg/mL respectively ($P < 0.01$).
Conclusions: Overall, these results show that one receptor mechanism in neuronal cells that results in BDNF synthesis is via the classical progesterone receptor. The presence of the classical PR in C6 glial cells resulted in a statistically significant difference in the synthesis of BDNF relative to those that lack PR. Identifying and elucidating the mechanism by which progesterone confers neuroprotective benefits may aid in the development of new or novel treatments and/or drugs aimed at the prevention or treatment of many neurodegenerative diseases such as Alzheimer's disease.
Sponsor N/A
IRB/IACUC#

1513 Oral **Classification:** GSBS Student
Presenter: Maninder Malik **Department:** Pharmacology & Neuroscience
Authors: Maninder Malik, University of North Texas Health Science Center at Fort Worth; Claudia Rangel-Barajas, University of North Texas Health Science Center at Fort Worth; Robert Mach, University of Pennsylvania; Robert Luedtke, University of North Texas Health Science Center at Fort Worth

THE SIGMA 1 RECEPTOR SELECTIVE LIGAND LS-1-1-137 ATTENUATES THE 2,5-DIMETHOXYIODOAMPHETAMINE - INDUCED HEAD TWITCH RESPONSE.

Purpose: 1-(2,5-dimethoxy-4-iodophenyl)-2-aminopropane (DOI) is known to cause hallucinations in humans and the administration of DOI in rodents has been reported to induce head twitches (Canal and Morgan 2012). DOI has been proposed as an animal model to identify drugs for the treatment of Tourette syndrome (TS) and other neuropsychiatric disorders. The exact mechanisms leading to head twitches in mice remain elusive. Several receptors, neural pathways and intracellular proteins have been implicated in the modulation of the HTR. However, no studies have investigated a possible role of sigma receptors in DOI-dependent HTR in mice. In this study we report the possible involvement of the sigma 1 receptor in the murine DOI dependent HTR in male DBA/2J mice and the ability of the novel sigma 1 vs. sigma 2 receptor selective compound, LS-1-137, to modulate that response.
Methods: A filtration-binding assay was used to characterize the binding properties of novel sigma compound at D2 like dopamine, muscarinic, serotonin 2A and 2C and at sigma receptors. In this study, male DBA/2J mice were used. On the day of testing, mice were weighed and placed individually in an open ended Plexiglas cylinder with a clean paper towel floor, in a dimly lighted room. Animals were allowed to habituate to the cylinder for 15 minutes prior to the injection of vehicle (5% DMSO in sterile deionized water) or test drug intraperitoneal (i.p.). Five minutes later the DOI was administered to the animal by i.p. injection and the mouse was returned to the cylinder. A head twitch response was defined as a rapid left to right (or right to left) movement of the head, without the involvement of the limbs. Two observers counted the number of head twitches by visual examination and the number of head twitches was recorded at 5-minute intervals. The data points are presented as the mean values obtained by two observers. To evaluate the drug's effect on motor performance and coordination, a Rotarod test was performed.
Results: LS-1-137 exhibits high affinity binding at sigma 1 receptors (Ki = 3.2 nM) and is 80-fold selective at sigma 1 versus sigma 2 receptors. It also binds with low affinity at D2-like (D2, D3 and D4) dopamine, muscarinic and serotonin (2A and 2C) receptors. In the present studies RHM-1-86, a sigma 2 receptor selective antagonist, was not able to attenuate the HTR. The sigma 1 receptor agonists PRE-084 and PPCC were also not able to inhibit the HTR. However, LS-1-137 and the sigma 1 antagonists haloperidol and BD1047 significantly inhibited the DOI-dependent HTR in DBA/2J mice. Furthermore, rotarod studies indicate that LS-1-137 does not compromise agility or muscular coordination in DBA/2J mice within a dose range capable of attenuating the effects of DOI.
Conclusions: These observations implicate sigma 1 receptors in mediating the DOI-dependent HTR and suggest that LS-1-137 may have antipsychotic properties in vivo.
Sponsor
IRB/IACUC# 2011/12-11-A04

1514 Poster **Classification:** Postdoctoral Fellow
Presenter: Ashutosh Singhal **Department:** Cell Biology and Immunology
Authors: Ashutosh Singhal, University of North Texas Health Science Center at Fort Worth; Anuja Ghorpade, PhD, University of North Texas Health Science Center at Fort Worth

TUMOR NECROSIS FACTOR-α CONFERS CYTOTOXICITY IN ASTROCYTES UNDER OXIDATIVE STRESS VIA INHIBITION OF NF-κB SIGNALING

Purpose: Oxidative stress and inflammation together recognized as central feature of both acute and chronic neurological disorders. In acute ischemic stroke formation of H_2O_2 causes brain injury, which appear to be exacerbated by IL-1b or TNF-a produced after reperfusion. However, evidences also show that TNF-a helps in recovery and repair. Therefore, role of TNF-a is unclear. Further, it is unknown how astrocytes are affected when oxidative stress and inflammation coexist.
Methods: Here we examined the effects of H_2O_2 on cell survival and NF-kB dynamics in cultured human astrocytes co-stimulated with TNF-a or IL-1b.
Results: Data showed H_2O_2-treatment significantly increased apoptosis in astrocytes in dose-dependent manner; however, IL-1b [illegible] did not. Interestingly, co-treatment of TNF-a, but not IL-1b with non-toxic dose of H_2O_2 significantly increased apoptosis in astrocytes. The toxicity of co-treatment of TNF-a and H_2O_2 was significantly higher than respective dose of H_2O_2-alone. Investigations of mechanisms revealed that H_2O_2 inhibited TNF-a-induced translocation of NF-kB to the nucleus in astrocytes thereby inhibiting cellular defense and/or survival pathways. H_2O_2 decreased TNFR1 associated protein, RIP1 level, necessary for IkB kinases activation, thereby inhibited IkB-a degradation and NF-kB nuclear translocation. The real time PCR analysis of oxidative stress pathway showed H_2O_2 decrease of antioxidant machinery of astrocytes. Investigation of apoptosis pathway showed that H_2O_2 increased the expression of TRAILR1/R2, Fas and FADD, which lead TNF-a-induced caspase-dependent apoptosis.
Conclusions: This study supports the evidence of H_2O_2 as a modulator of pro-inflammatory signaling and explains the increased sensitivity of astrocytes during brain injury. These data also signify need to design strategy to combat oxidative stress during neuroinflammation and repair.
Sponsor NINDS/RO1 NS48837 and RO1 NS070896-01
IRB/IACUC# IRB2007-121

1515 Poster **Classification:** TCOM DO Student
Presenter: Ryan Cheung **Department:** Neurology
Authors: Ryan Cheung, University of North Texas Health Science Center at Fort Worth; Emmanuel Mantilla Jr., University of North Texas Health Science Center at Fort Worth; Peggy Smith-Barbaro, PhD, University of North Texas Health Science Center at Fort Worth

USE OF RECOMBINANT TISSUE PLASMA ACTIVATOR (RT-PA) IN SILENT AORTIC DISSECTION PRESENTING AS AN ISCHEMIC STROKE

Purpose: This is a case study demonstrating the use of recombinant tissue plasma activator (rt-PA) in the treatment of an ischemic stroke secondary to a silent aortic dissection. In light of recent studies on clinical outcomes, there is debate about the use of rt-PA to treat a questionable stroke with a high suspicion for aortic dissection. This purpose of this case is to show that such time-sensitive, potentially life-saving treatment can be delivered without any negative side effects towards an aortic dissection such as intracranial bleeding or an aortic rupture. This case provides further evidence that rt-PA should not be delayed as the clinical benefits of reducing stroke morbidity and mortality outweighs the potential risks.
Methods: This case describes a 60 year old patient presenting to the emergency department with an ischemic stroke and treated with rt-PA. The patient initially presented with right sided gaze preference and left-sided hemiplegia. In further reassessing the patient, a Stanford Type A aortic dissection with right carotid artery involvement was discovered upon CTA. The decision was made to attempt a surgical repair of the dissection. During the surgery, the vessel defect was corrected, but the patient sustained right heart failure refractory to vasopressors. Following surgery, the patient was transferred to the ICU, intubated, and in critical condition. Despite being maintained on heparin, a repeat head CT showed no transformation from an ischemic to a hemorrhagic stroke. The patient died two days later due to complications from the surgery.
Results: During the initial assessment of the ischemic stroke, no signs of hemorrhage were present so the decision to give rt-PA was made. Following administration of rt-PA, the patient subsequently improved; there were no gaze asymmetry and left sided movements were noted. The patient did not show any signs of intracranial bleeding with rt-PA and heparin therapy. It is also important to note that administration of rt-PA did not appear to worsen the aortic dissection.
Conclusions: The results of this case study suggest that rt-PA, when indicated, is an appropriate and effective treatment in the case of ischemic stroke secondary to an aortic dissection. However, surgical corrections of aortic dissection in these cases do carry a high mortality rate, so clinical judgment must be carefully exercised for each individual case.
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IRB/IACUC# 2014-020

Other (Abstracts in the 1600s)

1600 Poster **Classification:** TCOM DO Student
Presenter: Spencer Wehring **Department:** Texas College of Osteopathic Medicine
Authors: Spencer Wehring, University of North Texas Health Science Center at Fort Worth; Claire Kirchhoff, PhD, University of North Texas Health Science Center at Fort Worth

A CADAVERIC STUDY OF HEAD AND NECK NEUROVASCULAR ANATOMICAL VARIATIONS

Purpose: While anatomical variations have long been documented because of their surgical relevance, some remain unknown. In addition, between-sample differences in the incidence of variations is under-explored. We tested whether incidence of head and neck neurovascular branching variations in a cadaveric sample from UNTHSC match previous findings. We also document previously unreported positional variations for the vagus nerve.
Methods: First-year students from the Texas College of Osteopathic Medicine recorded neurovascular variations using a standardized data sheet during their dissections. Cadavers in this study (n=29) were donated through the University of North Texas Health Science Center Willed Body Program.
Results: The ascending pharyngeal artery branched from the external carotid artery (ECA) in 74% of cases, from the common carotid artery (CCA) in 11%. The lingual artery branched from the ECA in 82% of cases; 6% shared a common trunk with the facial artery. The vagus nerve was located between the CCA and internal jugular vein in 62% of cases, posterior to the internal jugular vein in 24%, and anterior to the CCA in 4%.
Conclusions: Incidence of arterial branching variations mostly fell within previously reported ranges (Bergman, 1996). Differences with previous work are attributable to the small sample size of this study, which emphasizes the need for large samples when estimating the frequency of a variation. We also report information on positional variation of the vagus nerve. These data must be treated with caution due to possible inter-observer error, but further investigation of vagus nerve positional variation is warranted due to implications for patient safety.
Sponsor Claire Kirchhoff
IRB/IACUC#

1601 Poster **Classification:** SPH Student
Presenter: Uloma Igara Uche **Department:** Environmental & Occupational Health
Authors: Uloma Uche, University of North Texas Health Science Center at Fort Worth; Maya Nair, PhD, University of North Texas Health Science Center at Fort Worth

A PROPOSED MODEL FOR POST-APPROVAL MONITORING (PAM) OF INSTITUTIONAL BIOSAFETY PROTOCOL IN AN ACADEMIC ENVIRONMENT
Purpose: I hypothesize that a well-defined model for post-approval monitoring will enhance the efficiency of biosafety program.
To ensure that approved protocols are appropriately executed and any changes are reported for approval.
Methods: Approved protocols/IBC application Forms to conduct the post approval monitoring A program out line or Post approval monitoring An evaluation process or tool to validate the efficiency of the proposed model Methods: Prior to PAM, a project protocol has to be approved by the Institutional Biosafety Committee (IBC) and the principal Investigator proceeds with the research. With the current Biosfaty program at UNTHSC, the institutional biosafety officer will conduct an annual inspection of each of these laboratories with containment level BSL2 and BSL2+. We are proposing to develop a model for PAM of Biosafety protocols. The process involve the following steps.
Critically examined the existing biosafety auditing program. Research on existing biosafety auditing program in other academic institutions in Texas. Development of the proposed model for Post Approval monitoring program Timeline and major steps involved in the proposed model are:Inspection of the laboratory and laboratory procedures of the on-going research for compliance must be done by the Biosafety officer within 2-3 weeks after the protocol approval. The crucial component of this inspection will be an on the spot education about any deficiencies identified during the inspection. After the first year of approval, a thorough review of the protocol and laboratory procedures should be conducted by an assigned member of the institutional biosafety committee Post-visit communication to the principal investigator about any deficiency or compliance found should be recorded and communicated with the principal investigator. Any training requirement should be communicated effectively. Finally towards the end of the research, another lab procedure evaluation should be conducted.
Results: From the post-approval monitoring, there will be compliance with IBC policies/NIH guidelines and the facility and laboratory workers will be protected from hazardous materials
Conclusions: Institutional Biosafety protocol guides and ensures safety and compliance with policies. An efficient post-approval monitoring would be a tool to assist the IBC with its obligations and facilitate a successful program oversight.
Sponsor N/A
IRB/IACUC#

1602 Poster **Classification:** TCOM DO Student
Presenter: Kendall Miller **Department:** Texas College of Osteopathic Medicine
Authors: Kendall Miller, University of North Texas Health Science Center at Fort Worth; Claire Kirchhoff, PhD, University of North Texas Health Science Center at Fort Worth

ANATOMICAL VARIATION OF THE LATERAL THORACIC ARTERY: WHAT THE TEXTBOOKS AREN'T TELLING YOU

Purpose: The lateral thoracic artery is the blood supply to the serratus anterior muscle and is typically described as arising directly from the second part of the axillary artery. Students expect to find this “normal” branching pattern, as variations are seldom mentioned. Variations are, however, relatively common, suggesting that they merit inclusion in regular anatomical instruction.
Methods: Students at the Texas College of Osteopathic Medicine completed a standardized data sheet on the axillary artery branches during axillary dissection. All cadavers used in this study were acquired through the Willed Body Program at the University of North Texas Health Science Center (n=80; 20 males, 20 females).
Results: An observable lateral thoracic artery directly branching from the second part of the axillary artery was found in only 48% of the axillae observed. In 46% of axillae, an artery was observed traveling to the serratus anterior muscle branching from the thoracodorsal artery. In 25% of axillae, the lateral thoracic artery from the axillary artery was doubled by an artery branching from the thoracodorsal artery.
Conclusions: In approximately half of all axillae, the lateral thoracic artery was observed to branch from the thoracodorsal artery rather than branching directly from the axillary artery, as “normally” expected. These results support previous work on variations of the lateral thoracic artery. Given the high frequency of anatomical variations, we also propose that information on variations ought to be incorporated into anatomical education.
Sponsor N/A
IRB/IACUC#

1603 Poster **Classification:** Dual Degree student
Presenter: Andrew Gdowski **Department:** Molecular & Medical Genetics
Authors: Andrew Gdowski, University of North Texas Health Science Center at Fort Worth; Amalendu Ranjan, PhD, University of North Texas Health Science Center at Fort Worth; Anindita Mukerjee, PhD, University of North Texas Health Science Center at Fort Worth; Jamboor Vishwanatha, PhD, University of North Texas Health Science Center at Fort Worth

ANTIBODY ENCAPSULATION WITHIN POLYMERIC NANOPARTICLES

Purpose: The purpose of this study is to characterize a human monoclonal antibody encapsulated within a poly(lactic-co-glycolytic) acid (PLGA) nanoparticle. We hypothesized that encapsulation of an antibody within PLGA nanoparticles is feasible and will release in a favorable manner.
Methods: AnnexinA2 (AnxA2) IgG antibody was encapsulated within PLGA nanoparticles. Encapsulation efficiency and release kinetics were determined using polyacrylamide gel electrophoresis and coomassie brilliant blue staining. Dynamic light scattering (DLS) from Malvern Zetasizer was used to determine hydrodynamic size and zetapotential. Western blot was accomplished with cell lysates from known AnxA2 expressing cell lines to determine functionality of antibody once released from PLGA nanoparticles.
Results: Our results show acceptable encapsulation efficiency of AnxA2 within the PLGA nanoparticle. Nanoparticles were formed in a favorable monodisperse manner. Release experiments demonstrate that AnxA2 is released in a controlled manner over a period of 15 days. In addition after release the antibody maintained functionality as evidenced through Western Blot analysis.
Conclusions: We conclude that encapsulation of IgG monoclonal antibodies is feasible, exhibits sustained release kinetics, and maintains functionality upon release. Further, this encapsulation technique may be used as a method to load antibodies in targeted nanoparticles for release in a tissue specific manner.
Sponsor NA
IRB/IACUC#

1604 Poster **Classification:** Faculty (Not for Competition)
Presenter: Ryan Brem **Department:** Physical Therapy
Authors: Ryan Brem, University of North Texas Health Science Center at Fort Worth; Binky Bawa, University of North Texas Health Science Center at Fort Worth; Hiral Master, University of North Texas Health Science Center at Fort Worth; Michael Flyzik, PT, MA, University of North Texas Health Science Center at Fort Worth; Metin Yavuz, University of North Texas Health Science Center at Fort Worth

ASSOCIATION BETWEEN PLANTAR TEMPERATURE INCREASE AND PLANTAR SHEAR STRESSES IN HEALTHY SUBJECTS

Purpose: Sites of increased plantar temperature have been suggested to indicate plantar loading in previous investigations. However, this idea has not been successfully validated. The purpose of this study was to determine if a linear relationship existed between walking-induced increases in plantar temperature and measured plantar stresses. Significant relationships between the two variables would suggest thermographs to be an effective tool used to assess plantar tri-axial and/or shear loading, potentially leading to significant advancements in the study of biomechanical factors related to the diabetic amputations.
Methods: Thirteen healthy participants were recruited, and informed consent was obtained prior to the study. Pre-exercise baseline plantar temperature profiles were measured with the use of an infrared thermal camera. Participants were then asked to walk on a custom-built platform that was used to measure tri-axial plantar stress distributions. Subjects then walked barefoot on a treadmill for 10 minutes. Post-exercise temperature distribution was measured and recorded. After all data were collected, sites of increased peak temperature and peak stress for each foot were documented. The frequency in which the two different sites matched was determined. In addition, increased peak temperature values were correlated against plantar stress magnitudes.
Results: Peak temperature increase site matched the location of peak shear in 23% of participants. Peak temperature increase site also occurred at the peak resultant stress site in 39% of participants. A significant correlation was found between the magnitudes of temperature increase and peak shear ($R = 0.78$, $p = 0.02$).
Conclusions: A moderate linear relationship was established between peak plantar temperature increase and the horizontal component of plantar stresses. It may be useful to explore a potential non-linear association between these two variables. If a non-linear relationship can be modeled, predicting plantar shear may be possible. The ability to predict plantar shear could allow for assistance in assessing the risk of ulcer development in the diabetic foot and subsequent amputation. Thermographs are still not a reliable source for the prediction of shear, but our initial results warrant further investigation.
Sponsor NIH
IRB/IACUC# 2014-028

1605 Poster **Classification:** GSBS Student
Presenter: Ricardo Belmares **Department:** Integrative Physiology & Anatomy
Authors: Ricardo Belmares, University of North Texas Health Science Center at Fort Worth; Tanya Lerma, University of North Texas Health Science Center at Fort Worth; Geoffret Guttmann PhD, University of North Texas Health Science Center at Fort Worth; Victor Taylor, University of North Texas Health Science Center at Fort Worth

BIOCHEMICAL AND HISTOLOGICAL CHARACTERIZATION OF TMJ

Purpose: Characterizing biochemical and histological composition of the human temporal mandibular joint (TMJ) disc is essential to development of stem cell therapy for diseased TMJ. Components of extracellular matrix (ECM) analyzed are elastin, collagen and sulfated glycosaminoglycan (GAG).
Methods: Biochemical:Human TMJ discs were dissected from recently deceased bodies and analyzed histologically and biochemically. Five regions of the disc and six distal attachments examined. Following dissection, wet weights recorded. Samples lyophilized to obtain dry weight. Dried samples were digested in a 125mg/mL papain solution overnight at 60^0C. Follow up studies include: DNA content (measured with the Quant-iT Picrogreen dsDNA Assay Kit (Invitrogen). Following hydrolysis with 4N NaOH for 20 minutes at 110^0C, collagen content to be quantified with modified chloramine-T hydroxyproline assay. Sulfated GAG content will be quantified using Blyscan Glycosaminoglycan Assay Kit (Accurate Chemical and Scientific Corp.). N= 6 samples per group for all biochemical analysis.
Histological: Histological preparations were made with various stains: Alcian Blue for assay acidic glycans; Verhoeff's Elastic (VEG); and Hematoxylin Eosin (H&E).
Results: Elastin composition of human samples show differences compared to previous porcine studies. TMJ disc has a denser matrix with less elastic fibers than distal attachments. TMJ attachments have more visible nuclei than disc with H&E staining. TMJ complex is saturated with sulfated GAGs.
Conclusions: This study shows that ECM composition of human TMJ may differ from previous porcine studies. Further studies from human samples using various ages can further elucidate the ECM composition for targeted human TMJ stem cell therapy.
Sponsor N/A
IRB/IACUC#

1606 Poster **Classification:** Resident
Presenter: Katy Wiesman **Department:** Orthopaedic Surgery @ JPS Hospital campus
Authors: Kathryn Wiesman, JPS Health Network; Harry Kim; Vedant Kulkarni; Jamie Burgess

CAN PERFUSION MRI PERFORMED IN THE EARLY STAGES OF LEGG-CALVE-PERTHES DISEASE PREDICT LATERAL PILLAR INVOLVEMENT?

Purpose: Radiographic prognosticators of outcome for Legg-Calvé-Perthes disease (LCPD), e.g. lateral pillar classification, cannot be applied at the early stages, which is suboptimal since significant deformity of the femoral head can occur. The purpose of this study was to determine if perfusion MRI measurements of the femoral epiphysis obtained at the early stages of LCPD can predict the radiographic lateral pillar involvement at the maximum fragmentation stage.
Methods: Methods: Twenty-nine patients were prospectively enrolled and had gadolinium-enhanced perfusion MRI in the early stages and were radiographically followed. Observers measured percent perfusion of the femoral head using MRI analysis software. Percent perfusion of the lateral third of the epiphysis was measured. Radiographs obtained at maximum fragmentation stage were used for the lateral pillar classification. Intraclass correlation coefficient and logistic regression were used for statistical analysis.
Results: Results: Mean age was 7.7±1.7 years (range 5.3-11.3 years). The mean time between MRI and the xray at maximum fragmentation was 8.2±5.5 months. Intraclass correlation of MRI measurements was 0.90 (95% CI of 0.83-0.95). In the hips that developed the lateral pillar A, B, or C, the mean percent perfusion of the lateral third of the epiphysis was 92±2%, 68±18%, and 46±12%, respectively (p=0.001). At the perfusion level of 90% and above in the lateral third of the epiphysis, the odds ratio of developing lateral pillar A vs. B or C was 72.0. At the perfusion level of 55% and below in the lateral third of the epiphysis head, the odds ratio of developing lateral pillar C vs A or B was 33.3.
Conclusions: Conclusion: The lateral third epiphyseal perfusion measurements obtained at the early stages of LCPD using perfusion MRI were predictive of lateral pillar involvement at the maximum fragmentation stage.
Significance: Perfusion MRI obtained early in LCPD may yield prognostic information to guide treatment decisions.
Sponsor Texas Scottish Rite Hospital
IRB/IACUC# CR00004670 /STU 102010-188

1607 Poster **Classification:** TCOM DO Student
Presenter: Michelle Jones, Josin Kalathil **Department:** Texas College of Osteopathic Medicine
Authors: Michelle Jones, University of North Texas Health Science Center at Fort Worth; Josin Kalathil, University of North Texas Health Science Center at Fort Worth

CASE STUDY OF AN ANATOMICAL VARIATION OF THE BICEPS BRACHII MUSCLE

Purpose: As part of a dissection aiming to increase anatomical understanding of the muscles and movements of the upper arm, a unilateral anatomical variation of the biceps brachii muscle was detected. A case study of the variant is presented.
Methods: The dissection was performed on both embalmed arms of a 77 year old Caucasian female cadaver donated through the Willed Body Program at the University of North Texas Health Science Center. The epithelium and fascia were removed, and the pectoralis muscles, teres minor, and the deltoid were reflected in order to clearly view the underlying muscles along with their blood supplies and innervations.
Results: Of the two arms observed, one was found to have an accessory muscle in the anterior arm. This muscle was located deep to the long head of the biceps brachii and distal to the attachment of the coracobrachialis. A branch of the musculocutaneous nerve provided innervation to this muscle, while blood was supplied by a branch from the brachial artery. Upon inspection, the origin appeared to be medial on the mid-shaft of the humerus. The muscle then merged and inserted into the radial tuberosity by a common tendon with the biceps brachii.
Conclusions: This anatomic variant, known as supernumerary head of the biceps brachii, has been well documented in medical literature. Studies of the biceps brachii note that variation usually occurs with the origin of the supernumerary head and that it maintains a common insertion. The origin of the anomaly discovered and the fact that it is unilateral makes it one of the more commonly seen variations of the biceps brachii muscle.
Sponsor
IRB/IACUC#

1608 Poster **Classification:** GSBS Student
Presenter: Victor Taylor II **Department:** Cell Biology and Immunology
Authors: Victor Taylor II, University of North Texas Health Science Center at Fort Worth; Rustin Reeves, MS, University of North Texas Health Science Center at Fort Worth; Ricardo Belmares; Geoffrey Guttmann, PhD, University of North Texas Health Science Center at Fort Worth; Addison Wood, University of North Texas Health Science Center at Fort Worth; Theodore Crofford, Plaza Medical Center

CHANGE IN FORCE BETWEEN ILIOTIBIAL BAND CUT AND GLUTEUS MAXIMUS TENDON CUT

Purpose: Greater Trochanteric Pain Syndrome (GTPS) is a hip pain due to repeated trauma to bursa on the greater trochanter. Surgical procedure cut the iliotibial band (IT band) in order to relieve the pressure around the greater trochanter. However, the IT band may not be the primary cause of GTPS. It is hypothesized the tendon of the gluteus maximus (gmax) tendon is the primary cause of GTPS.
Methods: Force sensor test on the greater trochanter was performed on fresh cadavers. Cadavers were stabilized by the hip on a gurney. The skin on the top half of the thigh is reflected and cleans to expose the iliotibial band (IT band). Incision is made between the IT band and tensor fascia lata, and a force sensor from Tekscan was placed on the greater trochanter. Three measurements were done: Normal, IT cut, and gmax cut. Measurements will be made from 0^{o} to 20^{o} flexion and extension in increments of 10^{o} three times, each at a fixed 0^{o}, 10^{o} >, and 15^{o} adduction. SPSS was used for statistical calculation.
Results: 6 hips (3 cadavers) were observed. There were no significance between normal and IT cut, as well as, between the normal and gmax cut. There were significant difference between gmax and IT cut at 0^{o} adduction ($p=.03$) and 0^{o} adduction, 10^{o} flexion ($p=.01$).
Conclusions: This study will help to develop new treatment approach to GTPS. More data will be collected in the future.
Sponsor
IRB/IACUC#

1609 Poster **Classification:** TCOM DO Student
Presenter: Chelsea K. Stone, MA **Department:** Texas College of Osteopathic Medicine
Authors: Chelsea Stone, MA, University of North Texas Health Science Center at Fort Worth; Randall Trammell, University of North Texas Health Science Center at Fort Worth; Michael Smith, PhD, University of North Texas Health Science Center at Fort Worth; Kimberly Fulda, DrPH, University of North Texas Health Science Center at Fort Worth

CHANGING HEALTH BEHAVIORS IN FIRST YEAR MEDICAL STUDENTS: A PRE- AND POST- ANALYSIS

Purpose: First year medical students begin their classroom studies with ideals of providing healthcare while exemplifying the healthy habits they wish to impart to their patients. The reality is that this high pressure educational environment followed by 3-8 years of post-doctoral training has great potential to lead students down the path of poor health behaviors. Ample research supports a correlation between high stress situations and declining self-care behaviors. A trending cause of concern is the recent surge in energy drink consumption. Therefore, the purpose of this study is to evaluate first year medical students' health habits, their perception of stress and its relationship with energy drink consumption. We hypothesize that first year medical students energy drink consumption is associated with less positive health behaviors upon reassessment during medical school.
Methods: This study involved administration of two surveys to the incoming class of UNTHSC Texas College of Osteopathic Medicine. The pre-survey, distributed during orientation week, was completed by 221 first year medical students. Subjects were recruited with a brief oral speech provided by the principal investigator informing them that their participation was voluntary. Near the conclusion of the first semester, the survey was re-administered and 123 students completed the survey. Comparative analyses included only those subjects who completed both the pre and post surveys (n=123), consisting of 58 males and 65 females ranging from ages 21-41 with a mean age of 24+3 years. Frequency analysis were run on each of the variable categories based on the ranges listed on the survey. A dependent samples T-test was used to compare the Perceived Stress Scale between pre and post surveys. Nonparametric McNemar Tests were used to compare pre and post variables of typical hours per sleep in a 24- hour day, days per week exercised and whether the subject consumed energy drinks within the past month. An alpha of less than 0.05 was considered significant.
Results: The Perceived Stress Scale increased from a mean score of 12.9+5.8 to 18.2+6.5 ($p<0.01$). The pre-test report of sleep duration was 26.8% slept ≤ 6 hours and 73.2% slept 7 hours or more. The post- test indicated a significant decrease ($p<0.01$) in sleep with 53.7% sleeping 6 hours or less and 46.3% sleeping 7 hours or more. Similarly, with the pre-test, 36.9% reported exercising less than 2 days per week, 44.3% 3-4 times per week, 16.4% 5-6 times per week and 2.5% 7 days per week, and these rates shifted to 61.9% reported exercising less than 2 days per week, 27.4% 3-4 days per week, 8.8% 5-6 days per week and 1.8% 7 days per week. Finally, energy drink consumption increased from 29.3% at pre-test to 40.7% in the post-test analysis ($p< 0.01$).
Conclusions: Subject responses regarding the changes in health behaviors during the first semester of medical school show significant differences when compared to the data gathered before the semester began. Decreased sleep and exercise, as well as an increase in perceived stress and energy drink consumption support our hypothesis that increased energy drink consumption is associated with less positive health behaviors.
Sponsor N/A
IRB/IACUC# 2013-152

1610 Poster **Classification:** Faculty (Not for Competition)
Presenter: Hiral Master **Department:** Physical Therapy
Authors: Hiral Master, University of North Texas Health Science Center at Fort Worth; Ryan Brem, University of North Texas Health Science Center at Fort Worth; Binky Bawa, University of North Texas Health Science Center at Fort Worth; Michael Flyzik, PT, MA, University of North Texas Health Science Center at Fort Worth; Metin Yavuz, University of North Texas Health Science Center at Fort Worth

CLINICAL VALUE OF TEMPERATURE IN ASSESSING FOOT LOADING IN DIABETIC PATIENTS WITH AND WITHOUT NEUROPATHY

Purpose: Diabetic ulcers lead to an estimated 100,000 amputations every year in the United States. Ulcers are known to have a biomechanical etiology that relates to three dimensional ground reaction forces/stresses. Among these stresses, horizontal shear stress cannot be easily quantified. It was hypothesized that plantar temperatures can estimate shear loading of the foot. The purpose of this study was to explore a site-wise association between peak plantar temperature and peak pressure and shear stresses obtained from diabetic patients using a thermal camera and custom-built pressure-shear plate. If confirmed, thermographs can assist clinicians/researchers in preventing diabetic ulcer related amputations.
Methods: Two groups, each consisting of 14 diabetic patients with neuropathy (DN) or without neuropathy (DC), were recruited for the study after informed consent was obtained. Resting foot sole temperatures were recorded using an infrared thermal camera. Subjects walked on a 12 ft. walkway that accommodated the stress plate. Stress variables such as peak pressure (PP), peak shear (PS), peak pressure integral time (PTI) and peak shear-time integral (STI) were recorded from five regions of the foot (i.e., hallux, lesser toes, first metatarsal head (1< st MTH), central forefoot (2nd and 3rd MTH) and lateral forefoot (4th and 5th MTH).
Results: Pearson correlation analysis between each stress variable against temperature were statistically significant ($p<0.05$) in both groups. The r values ranged between .405 and .511. Despite significant correlation results, peak temperatures could not successfully identify peak stress locations in group DN (14-57%). Success rates were higher for the DC group (50-86%).
Conclusions: The potential association between plantar stresses and temperature is thought to have a complicated and non-linear relationship. Appropriate modeling schemes can be implemented to explore such relationships. Thus our results warrant further investigation on this topic.
Sponsor NIH
IRB/IACUC# 2014-028

1611 Poster **Classification:** Staff (Not For Competition)
Presenter: Randi Proffitt Leyva **Department:** Family Medicine
Authors: Randi Proffitt Leyva, University of North Texas Health Science Center at Fort Worth; Susan Franks, PhD, University of North Texas Health Science Center at Fort Worth

DIETARY INTAKE AND RELATED ATTITUDES TOWARD HEALTHY EATING DIFFER BETWEEN AFRICAN-AMERICAN AND HISPANIC UNDERSERVED YOUTH

Purpose: Underserved African-American (AA) and Hispanic youth are disproportionally affected by obesity. This comparative study examined dietary intake and attitudes toward healthy food intake between AA and Hispanic underserved youth.
Methods: Participants (n=112) ages 8 to 12 (X= 9.2) were assessed prior to beginning an after-school obesity prevention program at various community centers in Fort Worth, Texas. Forty-two percent were normal weight and 58% were overweight or obese. Youth completed a 24-hour dietary recall, and cumulative scores for Healthy Food (HF) and Unhealthy Food (UF) intake were obtained. Self-report surveys included confidence for increasing fruit/vegetable intake (FV) and for reducing fat intake (FAT), and intrinsic motivation for healthy eating (MOT). Differences between Hispanic and AA youth for HF, UF, MOT, FV and FAT were analyzed using Mann-Whitney U. Relationships among variables were analyzed using Spearman correlation. Bonferroni correction was applied.
Results: AA as compared to Hispanic youth reported less HF ($p=.003$). Between group comparisons for other variables were non-significant. HF was correlated with FV for AA ($r=.395$, $p=.003$) and Hispanics ($r=.452$, $p=.001$), and with MOT for AA ($r=.419$, $p=.002$). All other correlations were non-significant
Conclusions: Among underserved youth, AA may be consuming much less healthy food than Hispanics. Although they did not differ in motivation or confidence for healthy eating, intake of healthy food appears highly related to degree of confidence for choosing fruits and vegetables for both groups. A focus on improvement in motivation also may be valuable in improving healthy food intake for AA. Results have implications for the development of culturally sensitive dietary interventions.
Sponsor Coca Cola & UNTHSC Foundation
IRB/IACUC# 2011-003

1612 Poster **Classification:** TCOM DO Student
Presenter: Jason Hoffman **Department:** Biomedical Sciences
Authors: Jason Hoffman, University of North Texas Health Science Center at Fort Worth; Brian Carter, University of North Texas Health Science Center at Fort Worth; Victor Kosmopoulos, PhD, University of North Texas Health Science Center at Fort Worth; John Schetz, PhD, University of North Texas Health Science Center at Fort Worth

DISCOVERY AND DEVELOPMENT OF A BIO-INSPIRED SURGICAL ADHESIVE

Purpose: Our goal is to develop an adhesive for securing bone to bone, metal to bone, and tissue to bone. As the aging population increases, the number of fractures due to falls and loss of bone density will increase. The incidence of bone fractures in elderly women, ages 50-79, exceeds the combined incidents for all types of cardiovascular disease and breast cancer. Although there are bone "fillers" (e.g., putties, cements and fillers), there are currently no true adhesives for bone. Drawbacks of current filler-type products complicating their use include the need to completely dry bone prior to application and high curing temperatures which can damage surrounding tissue.
Methods: In light of naturally-occurring glues from aquatic mussels being able to harden underwater, we adapted the same type of chemistries for our approach. Specifically, we utilized catechol-like chemistries to strengthen protein-based adhesives. A bone surrogate model consisting of hydroxyapatite was employed to measure the tensile strength.
Results: In previous proof of concept stages, we were able to secure bone to bone but were able to achieve only a small fraction of our target adhesive strength. Using new protein-based approaches we have improved our technology to obtain thousand-fold higher tensile strengths.
Conclusions: We envision future applications of this adhesive medical device technology to include bone reconstruction, securing screws and metal plates to bone, and cartilage or ligaments to bone. Having a bone adhesive with sufficient strength to serve as a stabilizing force for immediate weight bearing would promote bone regrowth and accelerated healing.
Sponsor
IRB/IACUC#

1613 Poster **Classification:** SPH Student
Presenter: Tanjina Shabu **Department:** Texas Prevention Institute
Authors: Tanjina Shabu, University of North Texas Health Science Center at Fort Worth; Kimberly Fulda, DrPH, University of North Texas Health Science Center at Fort Worth; Anna Espionza, MD, University of North Texas Health Science Center at Fort Worth; Roberto Cardarelli, DO, MPH

DOES RESEARCH TOPIC OF INTEREST DIFFER BY GENDER AND RACE/ETHNICITY? RESULTS FROM THE NORTEX REGISTRY PROJECT.

Purpose: NorTex is a collaboration of over 110 clinics that conduct research important to primary care, public health, and the community. The purpose of the NorTex Registry Project (NRP) is to develop and maintain a database of individuals who may be contacted for future NorTex studies. The current study examined gender and racial/ethnic differences in research topics of interest for diabetes, cardiovascular disease, cancer, and mental health among NRP participants.

Methods: Patients 18 years or older at participating clinics may complete a 4X6 index card (English or Spanish) giving permission to be contacted for NorTex studies. Index cards include contact information, demographic information, medical problems, and topics on which the participant would like more research conducted. Chi-square analysis was performed to determine differences in cardiovascular disease, diabetes, cancer, and mental health research interest by gender and race/ethnicity.
Results: The NRP includes a total of 1285 participants. Of these, 901(70.1%) are female, 470(36.6%) are Caucasian, 409(31.8%) African American, 297(23.1%) Hispanic, and 109(8.5%) other. 265(76.6%) males and 612(68.3%) females ($p=0.004$) are interested in cardiovascular disease (CVD) research. 189(54.6%) males and 417(46.5%) females are interested in diabetes research ($p=0.011$). Racial/ethnic differences exist for interest in diabetes ($p<0.001$) and mental health ($p=0.001$) research. No other differences were observed.
Conclusions: There is a significant difference in research interest between races/ethnicities for diabetes and mental health. Gender differences exist for interest in cardiovascular disease and diabetes. These findings will allow NorTex to conduct research in areas of interest to the community.
Sponsor
IRB/IACUC# 2007-133

1614 Poster **Classification:** Select your classification
Presenter: Parul Chaudhary **Department:** Integrative Physiology & Anatomy
Authors: Parul Chaudhary, University of North Texas Health Science Center at Fort Worth; Claire Kirchhoff, University of North Texas Health Science Center at Fort Worth

DOES SAMPLE SIZE AFFECT ANATOMICAL VARIATION REPORTS? CASE STUDY: ACCESSORY RENAL ARTERIES

Purpose: Knowledge of variations in vascularization is essential for surgical procedures. Each kidney is normally supplied by a single artery arising from the abdominal aorta. Previous work indicates that an additional artery may supply the kidney in 9-76% of cases. We present a cadaveric study on incidence of accessory renal arteries, highlighting how sample size may affect variation in the reported incidence across studies. We hypothesize that the wide range of reported incidences may be skewed by small sample sizes. We propose a minimum required sample size for investigating the incidence of anatomical variations.
Methods: Presence/absence and location of accessory renal arteries was recorded using a standardized data sheet by 1st year students from the Texas College of Osteopathic Medicine. Cadavers (n=34) observed for this study were acquired through the UNTHSC Willed Body Program. Z-score and chi-square tests were employed to compare results to previous work.
Results: Of the 34 cadavers examined, 12 (35%) had accessory renal arteries. A similar incidence (30%) is reported by Bergman et al. 2014) based on 45 studies they compiled. However, a methodologically similar study by Saritha et al. (2013) reported a much lower incidence of 12%.
Conclusions: We hypothesize that Sarithaet al.'s results are divergent from this study despite similar methodologies because of a smaller sample size (n=25). This may guide us towards a better understanding of what constitutes a representative sample in studies of anatomical variation, and propose that samples larger than 30 individuals are required to accurately reflect population-level incidence of anatomical variations.
Sponsor n/a
IRB/IACUC# This is not human research. This is not animal research.

1615 Poster **Classification:** GSBS Student
Presenter: Sean Dolan **Department:** Pharmacology & Neuroscience
Authors: Sean Dolan, University of North Texas Health Science Center at Fort Worth; Michael Gatch PhD, University of North Texas Health Science Center at Fort Worth

DOSE-RESPONSE PATTERN OF REWARD OF THREE SUBSTITUTED CATHINONES

Purpose: Synthetic cathinones, sold online and in head shops as "bath salts," have seen a tremendous increase in popularity since 2007. Consequently, the number of cathinone-related hospitalizations has increased, hitting a peak in 2011. Although cathinone usage and hospitalization has decreased since the Synthetic Drug Prevention Act was passed in 2012, the drugs remain popular amongst young people and dance club frequenters. While the literature on synthetic cathinones has been steadily accumulating, behavioral data still remains sparse, especially in regards to abuse liability. The current study examined the dose-dependent rewarding effects of three substituted cathinones: MDAI (0.1, 0.3, 1, 3, 10 mg/kg), flephedrone (4-FMC, 3, 10, 30 mg/kg), and butylone (1, 3, 10 mg/kg).
Methods: A biased conditioned place preference model of drug reward was utilized. For each drug, doses between 0.1-30 mg/kg were administered to generate a dose-response curve.
Results: MDAI resulted in increased time on the drug-paired floor from 0.3-10 mg/kg, with 3 mg/kg yielding the largest increase. Flephedrone produced an inverted U-shaped dose-response curve with 10 mg/kg resulting in an increase in drug-paired floor time, but not 3 or 30 mg/kg. Butylone produced a dose-dependent increase in drug-paired floor time from 1 to 10 mg/kg.
Conclusions: These results suggest that MDAI, flephedrone, and butylone produce rewarding effects. Given earlier findings that these compounds produced cocaine- and methamphetamine-like discriminative stimulus effects, they have a strong potential to be abused. Potency, efficacy, and dose-response pattern differed among the three drugs, with MDAI being the most potent, followed by butylone, then flephedrone.
Sponsor National Instute on Drug Abuse
IRB/IACUC# 2012/13-52-A04

1616 Poster **Classification:** Resident
Presenter: Andrew W. Chambers, MD **Department:** Orthopaedic Surgery
Authors: Andrew Chambers, MD, John Peter Smith Hosptial; Addison Wood, MS, University of North Texas Health Science Center at Fort Worth; Victor Kosmopoulos PhD, University of North Texas Health Science Center at Fort Worth; Hugo Sanchez, MD, PhD, University of North Texas Health Science Center at Fort Worth; Russell Wagner, MD, University of North Texas Health Science Center at Fort Worth

EFFECT OF TIBIAL SLOPE ON FLEXION AND FEMORAL ROLLBACK IN TOTAL KNEE ARTHROPLASTY: A CADAVERIC STUDY

Purpose: Reduced posterior tibial slope (PTS) and posterior tibiofemoral translation (PTFT) in posterior cruciate retaining (PCR) total knee arthroplasty (TKA) has been shown to result in suboptimal postoperative knee flexion due to the occurrence of tibiofemoral impingement. Although reduced PTS and PTFT have been shown independently to negatively affect total knee flexion following TKA, there has never been a study to our knowledge that has shown the effect of PTS on PTFT. We evaluated the relationship between PTS, PTFT, and total knee flexion in a cadaveric model after TKA.
Methods: We obtained nine transfemoral fresh frozen cadaver specimens and preformed a balanced PCR TKA. The pre-operative and post-operative PTS were precisely measured with c arm fluoroscopy and the post-operative PTS was changed in 1 degree increments using custom shims for the TKA trial components. We successively measured the total flexion using a motion tracking system in response to a 25 lb force applied to the hamstrings at 1 degree increments of posterior tibial slope (1-10 degrees). Relative PTFT was measured at maximal flexion with C-arm fluoroscopy.
Results: We used Tukey ANOVA test to determine significant changes in flexion and PTFT as a function of PTS. We found that there was an average increase in flexion of 2.3 o per degree increase of PTS from 1o (1 degree) to 5 o (p
Conclusions: Small increases in PTS in the range of 1o to 5o appear to significantly increase knee flexion and PTFT. As the PTS is further increased above 5 o, these findings suggest that flexion and PTFT do not continue to increase significantly. This is the first study to find a direct relationship between PTS and PTFT. These findings may be explained by changes in PCL tension with different PTS. As the flexion gap is loosened above a threshold (5 o) with increased PTS, the relatively lax PCL likely fails to initiate PTFT and subsequent total knee flexion is subsequently decreased due to posterior tibiofemoral soft tissue impingement. Additionally, we did not observe a correlation between native PTS and optimal degree of post-operative PTS. Although these results suggest that increasing PTS above 5o does not improve flexion or PTFT, clinical judgment and proper flexion gap balancing remain paramount in maximizing post-operative knee flexion. In vivo studies will be necessary to further substantiate these conclusions.
Sponsor John Peter Smith Intramural Grant
IRB/IACUC# n/a- cadaver studyn/a

1617 Poster **Classification:** SPH Student
Presenter: Devynn Taylor **Department:** UNT Health
Authors: Devynn Taylor, University of North Texas Health Science Center at Fort Worth; Rachael Waverka, University of North Texas Health Science Center at Fort Worth; Janhavi Mallaiah, The University of North Texas Health Science Center; Dawn Nguyen, University of North Texas Health Science Center at Fort Worth; Doug Fox; Heather Kitzman-Ulrich, PhD, University of North Texas Health Science Center at Fort Worth
EVALUATING CLINIC TO COMMUNITY REFERRAL SYSTEMS TO ADDRESS OBESITY RELATED HEALTH DISPARITIES

Purpose: The prevalence of obesity among high-socioeconomic status youth has decreased in recent years, whereas the prevalence of obesity among their low-socioeconomic status peers has continued to increase. Several programs and resources exist to provide obesity treatment, prevention and reductions in obesity related chronic diseases in youth. However, referral systems between these entities are often lacking. Thus, the goal of this project was to evaluate referral systems between clinic and community organizations in order to identify gaps for future implementation efforts in a primarily low-income, ethnic minority community.
Methods: Assessment interviews were conducted with nineteen community organization members ranging from community and school-based organizational directors to clinical physicians. (Community-Based Organizations =5; Clinics =11; School-Based Organizations = 3). Four individuals were trained to administer surveys that assessed (1) access to healthcare facilities & preventative screenings (2) healthy eating (3) physical activity, (4) referral systems, and (5) chronic disease care.
Results: Scores for each component were averaged per site, along with summing scores to create an overall indicator of clinic to community practices related to obesity-related health behaviors. The clinic to community assessments found an overall score of 62% (out of 100%) with PA screening, nutrition screening, chronic disease referral systems, and stroke care all falling below 60%. Tobacco screening (62%), chronic disease screening (68%), chronic disease education and counseling (67%), and pre-diabetes (71%) were all above 60%. Community-based organizations that provided outreach services (N=2) had very low levels of screening (0 – 1%), however both had high ratings related to chronic disease referrals (67% – 75%).
Conclusions: To be successful in promoting health equity, we must close gaps between groups by offering better access through community organizations. Research is needed to determine how to improve the referral infrastructure between clinics, community-based, and school-based organizations to address obesity-related health disparities.

Sponsor
IRB/IACUC#

1618 Poster **Classification:** Alumni (Not for Competition)
Presenter: Kiran Bhandarkar Srinvas **Department:** Environmental & Occupational Health
Authors: Kiran Bhandarkar Srinivas, University of North Texas Health Science Center at Fort Worth; Brandon Bennett, Public Health and Codes Department, City of Fort Worth; Joon-Hak Lee, PhD, University of North Texas Health Science Center at Fort Worth

EVALUATION OF STORM DRAIN SYSTEM COMPONENTS FOR ABUNDANCE OF THE PRIMARY WEST NILE VIRUS VECTOR IN FORT WORTH

Purpose: In order to better assess and control the risk of human exposure to the West Nile virus (WNV), it is necessary to identify breeding habitats of the WNV mosquito vector and understand habitat-associated environmental factors affecting dynamics of the mosquito population. In an urban setting, storm drain systems have been considered a primary breeding site for the primary WNV vector mosquito, Culex quinquefasciatus.
The objective of this study was to associate the abundance of the primary West Nile virus vector with components of the urban storm drain system in Fort Worth.
Methods: Weekly abundance of the primary WNV mosquito was monitored in 50 locations across the City of Fort Worth from June through October, 2013. The data on the storm drain systems was obtained from the City of Fort Worth. In order to test an association of the WNV primary vector abundance with each component of the City's storm drain system, Spearman's correlation, t-test or ANOVA was used.
Results: Spearman's correlation showed that more mosquitoes were captured at the collection sites that had a manhole within an area with 400 feet ($\rho = 0.293$, p-value = 0.039) from the collection site. The female Culex mosquito counts were considerably higher in areas that had a pond within the circled area of 800 feet ($\rho = 0.303$, p-value = 0.033) from the collection site. The number of storm drain inlets, in falls, outfalls and swimming pools however, had considerably lower number of captured mosquitoes. Further analysis was done using ANOVA and t-test to determine association. Significant association was seen with manholes at 400 feet (t= -2.320, p value = 0.025, df = 48) from the trapping site while inlets and ponds at any distance did not show any significant association.
Conclusions: The number of storm drain inlets which is considered to be a primary breeding site for the Culex quinquefasciatus mosquito does not have any relationship in determining the mosquito population. The presence of manhole or ponds appeared to have an influence on the vector population abundance. An increase in the sample size would be necessary to establish an association between the storm drain inlet and mosquito abundance.
Sponsor City of Fort Worth
IRB/IACUC#

1619 Poster **Classification:** Alumni (Not for Competition)
Presenter: Kiran Bhandarkar Srinivas **Department:** Environmental & Occupational Health
Authors: Kiran Bhandarkar Srinivas, University of North Texas Health Science Center at Fort Worth; Brandon Bennett, Public Health and Codes Department, City of Fort Worth; Joon-Hak Lee, PhD, University of North Texas Health Science Center at Fort Worth

EVALUATION OF WEATHER FACTORS FOR ABUNDANCE OF THE PRIMARY WEST NILE VIRUS VECTOR IN FORT WORTH
Purpose: Vector-borne diseases like Malaria, Dengue, Japanese Encephalitis, Filariasis and West Nile fever have been affecting millions of people around the world. In vector-borne diseases, vector distribution and abundance is critical factor to predict occurrence and magnitude of a vector-borne disease. West Nile encephalitis is a vector-borne disease of concern in Texas, particularly in the Dallas-Fort Worth region: however, little attempt has been made to associate the abundance of the vector population with local weather patterns.The objective of this study was to associate abundance of the primary West Nile virus vector, Culex quinequefasciatus, with local weather factors in the City of Fort Worth.
Methods: Abundance of the primary WNV vector mosquito population was monitored by weekly mosquito trappings using CDC gravid mosquito traps. Fifty sites across the City of Fort Worth were selected to estimate abundance of the vector mosquito population and mosquito trappings were conducted from mid-April through end of October. Local weather data from Dallas-Fort Worth International Airport were obtained from the National Climate Data Center. Pearson's correlation was used to identify a linear relationship and determine the strength association between the mosquito abundance and the various components of weather.
Results: Analysis showed a peak in the mosquito population during the months of June, July and September while the rest of the months had comparatively lower counts. These mosquito numbers showed to have strong positive linear relationships with weekly average ($r = 0.703$, $p = 0.000$), maximum ($r = 0.704$, $p = 0.000$) and minimum ($r = 0.693$, $p = 0.000$) temperatures and 3 day precipitation ($r = 0.439$, $p = 0.022$) while the weekly average wind speed ($r = -0.453$, $p = 0.018$) and minimum humidity ($r = -0.390$, $p = 0.045$) had significant negative correlations. Linear positive associations were also noticed with the 3 day temperature and collection day temperature averages.
Conclusions: Weekly temperature averages and 3day precipitation are strongly associated with the abundance of the West Nile virus vector mosquito population while humidity and wind speed showed little effect on the vector abundance. Further analysis will be conducted.
Sponsor City of Fort Worth
IRB/IACUC#

1620 Poster **Classification:** Resident
Presenter: Michael P. Elliott **Department:** Orthopaedic Surgery
Authors: Michael Elliott, John Peter Smith Hospital/ University of North Texas Health Science Center at Fort Worth; Arvind Nana, MD, University of North Texas Health Science Center at Fort Worth Orthopedic Surgery

FACTORS ASSOCIATED WITH THE DEVELOPMENT OF SYMPTOMATIC INTERLOCKING SCREWS WITH INTRAMEDULLARY NAIL STABILIZATION OF TIBIA FRACTURES

Purpose: The primary purpose of this study is to identify reasons for removal of interlocking screws after treatment of tibial shaft fractures with intramedullary nail stabilization. The secondary goal is to assess factors associated with development of symptomatic interlocking screws.
Methods: A retrospective chart review was performed to identify a consecutive series of patients who underwent stabilization of a tibial shaft fracture with intramedullary nail from July 1st, 2005 to July 1 st, 2011. We then identified those who underwent removal of interlocking screws at a later date (Group 1). These patients were then compared with a control-matched group (Group 2) who did not require removal of interlocking screws. Patients with pain identified at the interlocking screw sites either proximally or distally were considered to be symptomatic. Patients' charts were reviewed to obtain demographic, radiographic, and clinical data. Statistical analysis was then performed comparing certain factors between the two groups.
Results: 20 patients (Group 1) were identified who underwent removal of interlocking screws, 16 (80%) for symptomatic screws and 4 (20%) for dynamization due to non-union. 30 patients (Group 2) were identified who did not require screw removal. Of the patients undergoing screw removal for symptomatic screws, 15 (93%) had complete resolution of symptoms after screw removal. All patients undergoing screw removal for dynamization/non-union purposes went on to fracture union. Group 1 had a higher percentage of males vs. females compared to group 2 ($p = 0.019$). Average time to fracture union for Group 1 was 32.7 weeks vs. 15.5 weeks for Group 2 ($p = 0.014$). 14/20 (70%) patients were smokers in Group 1 vs. 13/30 (43%) in Group 2 ($p = 0.003$). Average Injury Severity Scores (ISS) and Mangled Extremity Scores (MES) for Group 1 were 16.1 and 3.3 respectively, and 6.6 and 3.2 respectively for Group 2 ($p = 0.007/0.66$). Group 1 had a higher percentage of open fractures (60%) vs. Group 2 (20%). Group 1 had a higher percentage of shaft fractures (40%) vs. Group 2 (27%) ($p = 0.007$). Group 1 had a higher likelihood and number of associated injuries vs. Group 2 (0.025). The groups did not differ significantly with respect to age, BMI, mechanism of injury, time to surgery, or associated fibula fracture.
Conclusions: The most common reason for removal of tibial intramedullary nail interlocking screws was not for dynamization, but for pain. Removal of interlocking screws resulted in resolution of pain in 93% of patients. Patients who develop symptomatic interlocking screws were more likely to be male,have delayed fracture union, smoke, have higher ISS scores, open fractures, and higher number of associated injuries. By identifying those that are at higher risk for development of symptomatic interlocking screws after intramedullary nail stabilization of tibia fractures (smokers, males, open shaft fractures, delayed union, higher ISS scores, and presence/greater number of associated injuries) we may have a better ability to counsel patient's about their expected outcome and possible development of complications.
Sponsor N/A
IRB/IACUC# 2011-110

1621 Poster **Classification:** Resident
Presenter: Bryan Ming **Department:** Orthopaedic Surgery
Authors: Bryan Ming; Cory Collinge, MD

FRACTURE OF THE FAR CORTEX DURING LARGE FRAGMENT SCREW INSERTION: A POORLY DESCRIBED MEANS OF SQUANDERING SCREW HOLES AND PLACING PLATE FIXATION AT RISK

Purpose: Design: Retrospective study of patient records and plain radiographs to determine the incidence and characteristics of iatrogenic fracture caused by screws themselves while using large fragment screw fixation
Methods: Setting: Level II regional trauma center and tertiary referral center Patients: Single surgeon cohort of patients treated surgically for acute fractures or fracture nonunions using large fragment plate and screw fixation. Methods: Retrospective cohort retrieved from an experienced fellowship-trained orthopedic traumatologist's billing database. Demographics, injury, and treatment details were obtained from patient's medical and radiographic records.
Results: Results: Seven instances of iatrogenic unicortical fracture of the distant cortex while using large fragment screw fixation was found in 246 cases, representing 3% incidence. Five were recognized and treatment altered by redrilling and applying a screw in a different trajectory (4), and in one case a plate was revised to a longer plate. In the two other cases, the fracture may have been unrecognized as the screw was left in situ.
Conclusions: Conclusions: Unicortical fracture of the distant cortex around the pilot hole during screw insertion is poorly described iatrogenic complication, occurring in 3% of our cases where large fragment plate fixation was utilized. This circumstance suggests a few potential problem scenarios. First, some of these cases were unrecognized and the risk of treatment failure may be increased by loss of a screw's purchase or by creation of a significant stress riser. Second, when the cases were recognized, measures were taken to improve stability, which included simply changing a screw's axis, but also by revision by extending a plate in one case. Vigilant analysis of radiographs (both intraoperative and postoperative), focus on proper technique with placement of large fragment screws, and awareness of treatment options in the face of this uncommon complication can help minimize the impact of far cortical fracture.
Sponsor
IRB/IACUC#

1622 Poster **Classification:** TCOM DO Student
Presenter: Joe Hidrogo III **Department:** Physical Therapy
Authors: Joe Hidrogo III, University of North Texas Health Science Center at Fort Worth; Gordon Stevens, Baker Orthotics & Prosthetics; Rita Patterson, PhD, University of North Texas Health Science Center at Fort Worth; Nicoleta Bugnariu, PT, PhD, University of North Texas Health Science Center at Fort Worth

FUNCTIONAL ASSESSMENT OF BALANCE AND GAIT IN TRANSTIBIAL AMPUTEES USING K2 VS. K3 PROSTHETIC FEET

Purpose: The K-Level classification of prosthetic feet is used in conjunction with a similar classification of functional level of amputees to determine which prosthetic feet will be prescribed and reimbursed. Individuals classified as ambulatory level 2, receive a K2 prosthetic foot and not the higher functioning K3 prosthetic. This provides less technology to the patients who need it most, limiting them in their current and potential abilities. We aimed to evaluate gait and balance in transtibial amputees ambulating with either a lower cost K2 prosthetic foot or the more functional dynamic response K3 prosthesis. We hypothesized that K3 prosthesis will show immediate improvements in gait and balance, and a 2- week trial with a K3 would increase functional level and quality of life.
Methods: Research participants with transtibial amputations secondary to diabetes or vascular disease were fitted by a certified Prostestist-Orthotist with either a K2 or K3 prosthesis. On the initial study visit the quality of life baseline established using standardized questionnaires for reintegration after amputation. Also, the V-gait CAREN (Computer Assisted Rehabilitation Environment Network) system was used to establish baseline balance and gait measures and immediate effects of switching type of prosthesis. The participants were then randomized into groups for a 2-week trial period of wearing a prosthetic foot (K2 or K3) that was either at, above or below the current functional level of the amputee. Post-trial measurements of balance, gait, and quality of life were reassessed.
Results: To date two subjects have been enrolled in the study. Both subjects expressed limitations and changes in quality of life due to amputation. Balance was compromised in conditions of dual tasks and subjects had significant difficulties walking up and down ramps illustrated by changes in lower limb kinematics. When tested with a K2 prosthetic, one subject was unable to maintain baseline gait velocity even on level ground.
Conclusions: Preliminary results confirm that K3 prosthetic foot provides additional benefits for balance and gait function compared to K2. Providing higher level prosthetic feet to patients who are classified at lower functional level could improve their balance, prevent serious costly injuries caused by trips and falls, and facilitate transition to higher functional status. Therefore, it is pertinent that the proper K level prosthetic be prescribed.
Sponsor
IRB/IACUC# 2013-184

1623 Poster **Classification:** Resident
Presenter: Ashley Burdex, DO **Department:** Family Medicine
Authors: Ashley Burdex, DO, University of North Texas Health Science Center at Fort Worth; Vicki Nejtek, PhD, University of North Texas Health Science Center at Fort Worth; Deepika Talari, University of North Texas Health Science Center at Fort Worth; Steven Koehl, JPS

HEALTH PROFESSIONALS' ATTITUDES TOWARDS THE HOMELESS

Purpose: About 50% of Tarrant County homeless (n=2,123) have co-occurring medical disorders, receive inconsistent medical care, are at high risk for repeated crisis care hospitalization, and are often discharged prior to full stabilization. Whether or not medical crisis recidivism is influenced by clinical attitudes towards treating the homeless is uncertain. Here, we examined medical student, resident, and physician attitudes about the homeless condition and treating homeless patients. We hypothesize that medical students MS 1-4, residents, and physicians significantly differ in their attitudes in treating homeless patients.
Methods: A prospective, cross-sectional between-group comparison of the attitudes towards treating homeless patients among medical school students, residents, and physicians (n=238) was conducted. Data were analyzed using analysis of variance (ANOVA) and Chi-square procedures. Statistical significance was determined using a 95% confidence interval and a probability alpha of 0.05.
Results: The MS 1-2, residents, and physicians showed more empathy and had a higher interest in treating homeless patients than MS 3-4 ($p=0.004$). In contrast to other groups, MS 3-4 regard homeless people as lazy ($p=0.001$) and rude ($p=0.028$). Compared to medical students, physicians and residents believe that health dollars should be directed toward serving the poor and homeless ($p=0.001$). In comparison to physicians, MS 3-4 do not perceive homelessness as a health issue ($p=0.002$), and all medical students judged that government should not waste money on homelessness ($p=0.001$). Further, compared to other groups (especially physicians), MS 3-4 reported that alcoholism is a personal weakness ($p=0.003$) rather than a medical illness and think that clinicians should only address physical and not social problems ($p=0.014$).
Conclusions: Overall, MS 3-4 are significantly more cynical and judgmental about the homeless condition and treating homeless patients than any other group. The lack of biological insight about the medical needs of the poor and homeless expressed by MS 3-4 is truly concerning. These data indicate a critical need for specialized education that will better inform medical students about socioeconomic conditions that significantly influence medical disease onset, etiology and prognostic outcomes in this vulnerable, complex, and difficult-to-treat patient population.
Sponsor n/a
IRB/IACUC#

1624 Poster **Classification:** School of Health Professions Student
Presenter: Gemma Rose **Department:** Physical Therapy Program
Authors: Gemma Rose, University of North Texas Health Science Center at Fort Worth; Amy Nordon-Craft, University of Denver; Roozbeh Jaffari, UTD; Rita Patterson, PhD, University of North Texas Health Science Center at Fort Worth; Nicoleta Bugnariu, PT, PhD, University of North Texas Health Science Center at Fort Worth

ISCHEMIA-INDUCED REDUCTION OF SOMATOSENSORY INPUT DECREASES BALANCE; ADDED VIBRATORY NOISE PARTIALLY RESTORES FUNCTION

Purpose: We investigated the feasibility of using vibrotactile biofeedback to improve balance in healthy young adults in which the somatosensory information from their feet has been temporarily decreased. We hypothesized that though stochastic resonance, vibratory noise applied just proximal to a region of reduced somatosensation will improve ability to maintain balance.
Methods: Ten healthy young individuals aged 18 to 25 years old gave informed consent and participated in this study.
We experimentally induced "somatosensory loss" in non-diabetic young healthy subjects using pressure cuffs wrapped around the ankles, kept inflated at 220-250mmHg for 35 min. A vibrotactile biofeedback system was positioned just above the pressure cuffs. An array of vibrotactile actuators, under a Texas Instruments MSP430 microcontroller, produced vibration at two frequencies: a barely perceptible low frequency and a high vibration frequency. Data was collected at baseline before the pressure cuffs were inflated and during the last 15 minutes of the ischemic protocol under three conditions: no vibration, low frequency and high frequency vibrations. Outcome measures included: centre of pressure (COP) variability with subjects standing with feet side by side/ one foot, with eyes open/closed; plantar surface pressure sensation and vibratory threshold evaluated with Siemens Monofilaments and Rydel-Seiffer tuning fork, respectively.
Results: In single limb support with eyes closed, ischemia increases the COP variability (p=.01) and the addition of vibrotactile feedback at both frequencies decreases it baseline values. Plantar surface pressure sensation threshold increased after ischemia (p=.03) and was decreased with the added vibrotactile feedback. The vibratory extension threshold measured at the hallux IP joint was decreased by ischemia (p
Conclusions: The ischemic protocol produced balance changes in healthy young adults. The vibratory biofeedback was able to partially compensate for the experimental induced sensory loss and improve balance function. Most diabetic patients become "visually dependent" due to peripheral neuropathy, and may experience falls at night or when they turn their head or talk to someone while walking. The next step of this research is to test the effectiveness of a vibrotactile biofeedback to decrease the risk for falls in diabetic adults with peripheral neuropathies.
Sponsor TxMRC
IRB/IACUC# 2012-007

1625 Poster **Classification:** Select your classification
Presenter: John Allen **Department:** Geriatrics
Authors: John Allen, University of North Texas Health Science Center at Fort Worth; Leigh Johnson, University of North Texas Health Science Center at Fort Worth; Ashlee Loewen, University of North Texas Health Science Center at Fort Worth; Ashley Martin, University of North Texas Health Science Center at Fort Worth; Valerie Johnson, University of North Texas Health Science Center at Fort Worth; Kathlene Camp, University of North Texas Health Science Center at Fort Worth; Ashley Toale, University of North Texas Health Science Center at Fort Worth; Margarita Rice, University of North Texas Health Science Center at Fort Worth

MINIMIZING 30-DAY HOSPITAL READMISSIONS AND FALLS AND IMPROVING QUALITY OF LIFE THROUGH THE SAFE TRANSITIONS FOR THE ELDERLY PATIENT (STEP) PROGRAM

Purpose: The STEP Program was designed to improve the coordination and continuity of care for Medicaid eligible patients 65 years of age and older transitioning from the hospital to the home setting following discharge. The primary goals of the STEP program are to reduce all-cause 30 day hospital readmissions, improve quality of life, and decrease falls among the elderly.
Methods: The STEP Program will provide care transition services for 750 patients from October 1, 2013, to September 30, 2016, via referrals received from local hospital partners. STEP faculty and staff have developed evidence based protocols and communication strategies aimed at meeting or exceeding performance metrics for reducing hospital readmission, decreasing falls, and improving Quality of Life. The NEXTGEN EMR will be the primary means for gathering data for these metrics and assessing the impact of the evidence based protocols and communication strategies. Plan-Do-Study-Act methodology will be used to regularly evaluate and re-evaluate STEP Program practices to not only meet or exceed performance metrics, but to continuously improve performance. In addition, STEP team members have worked to finalize business agreements with hospital partners (which will serve as patient referral sources) and have begun to market to and partner with community resources that will help meet the social, spiritual, financial, physical, medical and other identified needs of the STEP Program's target patient population. STEP Team members have met with more than 15 community resources and have hosted outreach events to provide an overview of the STEP Program.
Results: The STEP Program must demonstrate a 5% and 10% improvement in federal fiscal years 2015 and 2016, respectively, for reducing hospital readmissions, decreasing falls, and improving Quality of Life among the elderly. Baseline data will be gathered during federal fiscal year 2014.
Conclusions: Care transition models are effective in providing a safer and more successful recovery for high risk elderly patients recently discharged from the hospital. Coordination of efficient, interdisciplinary transitional care is believed to be critical for reducing 30-day hospital readmissions, falls, and healthcare costs and increasing quality of life in patients. Data collected during the STEP program is expected to reflect a decrease fall and hospital readmission rates and improve quality of life outcomes. This program will demonstrate a unique transitional care model that may improve health care delivery post-hospitalization.
Sponsor N/A
IRB/IACUC#

1626 Poster **Classification:** SPH Student

Presenter: Matthew E Rossheim **Department:** Behavioral & Community Health

Authors: Matthew Rossheim, University of North Texas Health Science Center at Fort Worth; Mayra Rodgriguez, University of North Texas Health Science Center at Fort Worth; Scott Walters, PhD, University of North Texas Health Science Center at Fort Worth; Jennifer Lerch, George Mason University; Faye Taxman, George Mason University

MULTIPLE FRUIT-FLAVORED ALCOHOLIC DRINK IN A CAN (MFAC) USE AMONG SUBSTANCE USING ADULTS ON PROBATION

Purpose: Over the last decade, an emerging class of large, canned alcohol products (e.g. Four Loko, Joose, Blast) have been marketed in the U.S. Research suggests that consumption of these MFAC products could contribute to hazardous alcohol consumption. However, little is known about their consumption and related harm.

Methods: In Dallas, TX and Baltimore, MD, 211 interviews were conducted with adults on probation who were participating in a larger clinical trial. Inclusion criteria included (1) being on probation, (2) being 18 years or older, (3) speaking English, and (4) either (a) using any illicit drug in the past 90 days or (b) consuming 5 alcoholic drinks (or 4 for women) on a single occasion in the past 90 days.

Results: For our analyses, we sub-selected individuals with a recent history of alcohol consumption; 143 participants (68%) consumed alcohol in the past 30 days. This sample was mostly black (71%) males (64%). Among this sample, 22 (15.4%) had consumed an MFAC in the past 30 days. A nearly equal proportion of black and white, Hispanic and non-Hispanic, and male and female participants reported consuming these products in this time period. Interestingly, individuals who reported being homeless in the past 30 days were nearly twice as likely to consume an MFAC during this time period compared to those who were not homeless (32% vs. 12%).

Conclusions: Because of their marketing, these products were thought to largely appeal to youth. Among a national sample of underage youth who consumed alcohol in the past 30 days, 8% (6-11%, 95% CI) reported consuming at least one MFAC in the past 30 days. Recent consumption of MFACs among our sample of high-risk substance using individuals on probation is even greater than these rates. Given the inexpensive cost of per unit of alcohol and large number of calories these products afford, it is possible that these products provide lower socio-economic individuals with added benefits. An examination of the types of users might add to a small literature on how such products are attractive to different groups. Further work might be needed to compare this to other groups or a nationally representative sample.

Sponsor National Institute on Drug Abuse (R01 DA029010-01; Multiple PI: Walters/Taxman)

IRB/IACUC# 2011-125

1627 Poster **Classification:** School of Health Professions Student

Presenter: Rebecca Perez **Department:** Physical Therapy Program

Authors: Rebecca Perez, University of North Texas Health Science Center at Fort Worth; Brandi Stroud, University of North Texas Health Science Center at Fort Worth; Hao (Howe) Liu, University of North Texas Health Science Center at Fort Worth; Dianne Altuna Medical City Children's Hospital; Kanlaya Ditthakasem, Medical City Children's Hospital; Yasser Salem, PT, PhD, University of North Texas Health Science Center at Fort Worth

PHYSICAL FUNCTION IN INDIVIDUALS WITH DIGEORGE SYNDROME

Purpose: DiGeorge syndrome, also known as velo-cardio-facial syndrome (VCFS) or 22q11.2 deletion syndrome, is the most common chromosomal deletion syndrome, with an estimated incidence of approximately 1 in 2,000 to 7,000 live births. Clinical presentation of VCFS is highly variable and has more than 180 distinct clinical manifestations. Previous studies have shown, children with VCFS exhibit gross motor abnormalities and global developmental delay. However, little is known about physical function in individuals with VCFS. This preliminary study compares physical function in individuals with and without the syndrome.

Methods: This study was conducted on 43 individuals, 24 with VCFS (13 males, 11 females) and 19 healthy individuals (6 males, 13 females). Physical function was tested: Timed Up and Go (TUG) test to measure power and velocity, Sit-to-Stand Test (STS) to measure lower extremity strength, Single Leg Stance (SLS) to measure posture stability, handheld dynamometer to measure grip strength, and the 2-minute walk test (2MWT) to measure endurance and gait velocity. Descriptive statistics and the ANOVA test were used to assess differences in physical function between groups and within the group with the syndrome.

Results: Significant differences between the group with VCFS and the group with healthy individuals were identified in the TUG (7.40±1.45 vs 6.33±1.04; $p < .01$); right SLS (12.62±12.81 vs 52.27±34.54; $p < .001$); left SLS (10.09±9.02 vs 52.60±36.19; $p < .001$); and the 2MWT (469.08±74.09 vs 580.58±105.07; $p < .001$), but no difference was identified in STS and grip strength. Additionally, significant differences within the group with the syndrome, based on age difference (<9, 10-19, and >20 yrs of age), were identified in the 2-minute walk ($p<.006$) and both right and left grip strength ($p<.0001$).

Conclusions: Data from this preliminary study indicate individuals with VCFS present with decreased physical function as compared to healthy individuals. Results suggest early assessment procedures for individuals with this condition should include assessment of physical function, especially mobility function. Continued assessment of physical function across the lifespan is essential in order to maintain physical abilities, better educate families, and bring a higher quality of life to individuals with this disorder.

Sponsor N/A

IRB/IACUC# 2013-090

1628 Poster **Classification:** TCOM DO Student
Presenter: Sina Najafi **Department:** Geriatrics
Authors: Sina Najafi, University of North Texas Health Science Center at Fort Worth; Janet Lieto, University of North Texas Health Science Center at Fort Worth; Leigh Johnson, PhD, University of North Texas Health Science Center at Fort Worth

PHYSICIANS PRACTICES AND END OF LIFE

Purpose: The numbers of people who spend their last months of their life in nursing homes and hospices are increasing rapidly. The percentage of older people who received hospice care in the last 30 days of life increased from 19 percent in 1999 to 43 percent in 2009. The percentage of older Americans who died in hospitals dropped from 49 percent in 1999 to 32 percent in 2009. The percentage that died at home increased from 15 percent in 1999 to 24 percent in 2009. This increase in hospice care requires more consideration of palliative care and end of life (EOL) decisions. Physicians often play a role in EOL of their patients in the nursing home setting, and are integral in discussing EOL decision related to care. Thus more research is needed to understand the clinician's perceptions of spirituality and what constitutes a good death.
The goal of this study was toassess healthcare providers' practices that influence end of life care in the nursing home and identify those factors that are associated with what practitioners deem to be a "good death."
Methods: A group of 57 healthcare providers working in nursing homes in the United States completed surveys on the end of life experiences of 259 patients. A brief anonymous survey including both open- and closed-ended questions assessed the provider's practices and perceptions of end of life practices of up to 10 of their patients that had just died. The survey included the demographics of healthcare providers, patients, and institutions. There were also questions regarding the availability of services (e.g., hospice care) within the nursing home and practice patterns of providers and institutions. Lastly, respondents were asked if they felt their patient(s) experienced a "good death."
Results: The majority of the surveys were completed by Physicians (90%), and the rest were completed by Physicians Assistants or Nurse Practitioners. Most facilities (35%) surveyed contained between 100-150 patient beds, and over 85% of the patients died in the nursing home facility, with only 10% dying at the hospitals. The provider felt that over 49% of the patients spiritual needs were met, 10% did not feel needs were met, 20% responded NA, and the rest felt they were unsure due to advanced dementia of the patient. Lastly, 77% of providers felt the patient experienced a "good death", and 13% (34) did not feel the patient had a good death. The most common attributes associated with a good death were pain free, family present, and sudden or peaceful death. Severe pain or patients uncomfortable were most commonly reported for a "bad death."
Conclusions: With continuing advances in medical technology, pharmaceuticals, and aging research, the elderly population of the United States is growing. To that end, it is important for providers to be prepared to address issues related to EOL decisions. A provider's personal practices, perception and help in transitioning patients at the end of life are important factors to understand so that more patients can experience a good death.
Sponsor N/A
IRB/IACUC# 2014-022

1629 Poster **Classification:** TCOM DO Student
Presenter: Tonya Sweezer **Department:** UNT Health Pediatrics
Authors: Tonya Sweezer, University of North Texas Health Science Center at Fort Worth; W Paul Bowman, MD, University of North Texas Health Science Center at Fort Worth; Clarissa Johnson, MD, Cook Children's Medical Center

PROGRESSIVE CEREBRAL ARTERIAL DISEASE DESPITE A SUCCESSFUL HEMATOPOIETIC STEM CELL TRANSPLANT FOR SICKLE CELL ANEMIA

Purpose: Sickle Cell disease often results in cerebral arterial disease including stroke and moyamoya syndrome. Hematopeoietic stem cell transpant (HSCT) is the definitive cure for sickle cell disease, and often slows or stops the progression of the related cerebral arterial disease. A case is presented of a patient whose cerebral arterial disease progressed despite successful stem cell transplant. This project will describe this patient's clinical couse and briefly explore outcome expectations post HSCT in patients with existing moyamoya syndrome.
Methods: A medical chart review of one case was conducted.
Results: A 9 year old female experienced cerebral arterial complications of sickle cell disease resulting in stroke. She was then started on monthly transfusions to prevent further strokes. During workup for hematopoietic stem cell transplant (HSCT), she was found to have progressive cerebral arteriopathy (Moyamoya syndrome). She then underwent successful transplant using unrelated cord blood. Shortly following HSCT, she experienced relatively common complications including chronic graft versus host disease, thrombocytopenia, anemia, Epstein-Barr disease reactivation, and several bacterial and fungal infections. These conditions resolved with treatment. HSCT was successful in completely resolving the sickle cell disease. Despite this, she experienced seizures, progression of moyamoya syndrome and a new cerebral infarct. Revascularization surgery has been recommended.
Conclusions: In some cases, cerebral arterial disease may progress despite successful hematopoietic stem cell transplantation. These cases may suggest a need for further research into the outcomes of sickle cell patients with existing moyamoya syndrome prior to HSCT.
Sponsor N/A
IRB/IACUC#

1630 Poster **Classification:** Resident
Presenter: Kurt Icenogle, MD **Department:** Orthopaedic Surgery
Authors: Kurt Icenogle, MD, Tarrant County Affiliated Orthopedic Surgery Residency, UNT Orthopedic Surgery; Arvind Nana, MD, University of North Texas Health Science Center at Fort Worth Orthopedic Surgery

PSOAS AND SACROSPINALIS MUSCLE SIZE AND DENSITY: AN INDICATOR OF FALL RISK IN THE GERIATRIC POPULATION

Purpose: The sequlae of fragility fractures continue to be a major source of morbidity and mortality, as well as a contributing factor in the rising cost of healthcare. The risks of fragility fracture are multifactorial with the current screening paradigm focused on detecting and treating decreased bone mineral density. Physiologic aging is associated with sarcopenia, and decreasing muscle mass has also been described as an independent risk factor for fragility fracture. This study hypothesized that the observed cross sectional area of the psoas and sacrospinalis muscles would be smaller in patients who developed fragility fractures.
Methods: To test this hypothesis we performed a retrospective chart review comparing the cross sectional area of Illiopsoas and Sacrospinalis muscles in 145 patients over 50 years of age with fragility fractures compared with 55 controls (patients over age 50 undergoing CT scan for cholelithiasis).
Results: We found that the population of patients admitted with femoral neck fractures had significantly smaller illiopsoas and sacrospinalis cross sectional areas than controls ($P < 0.05$).
Conclusions: The study identifies a quantifiable independent risk factor for fragility fracture that is not currently included in standard screening protocols. Future prospective work will seek to verify if psoas and sacrospinalis muscle morphology is predictive of fracture risk. Ultimately a more predictive multifactorial model of fragility factor risk may be developed that includes screening for both osteoporosis and sarcopenia.
Sponsor N/A
IRB/IACUC# 2011-157

1631 Poster **Classification:** Resident
Presenter: Bryan Ming, MD **Department:** Orthopaedic Surgery
Authors: Bryan Ming, MD, JPS; Cory Collinge, MD

RESULTS OF PROXIMAL FEMORAL LOCKING PLATES FOR PROXIMAL FEMORAL NON-UNIONS

Purpose: Review clinical reports from multiple centers that have used Proximal Femoral Locking Compression Plates (PFLCPs) for non-unions of the proximal femur to elicit reasons for failure in an effort to prevent similar failures in the future.
Methods: Retrospective chart review of 21 adult patients at 3 separate regional Level I and Level II institutions who underwent open treatment of non9nionos of the proximal femur with PFLCPs. Outcomes measured was mechanical failure defined by hardware failure and secondary outcomes including patient and construct variables that may act as predictors for mechanical failure. These included time to failure, bony union, nonunion, time to union, need for additional procedures, type of additional procedures, BMI.
Results: At 22 months follow up, 5 hardware failures occurred (24%) and 1 persistent nonunion (5%)occurred requiring hardware removal and conversion to total hip arthroplasty. There was no statistically significant association between hardware failure and patient BMI, quality of reduction, plating technique, or bone graft use. A significant difference between cases with and without failure was medial column stability; only 40% of those with hardware failure achieved medial column stability versus 94% of those without hardware failure.
Conclusions: Proximal Femoral Locking Compression Plates have a high rate of mechanical failure with use for non-union of the proximal femur. Our experience shows a similar rate of mechanical failure compared to previously reported experiences with the use of PFLCPs in acute fractures. Medial column instability was the only significant association of failure with the use of PFLCPs in nonunion surgery.
Sponsor
IRB/IACUC#

1632 Poster **Classification:** School of Health Professions Student
Presenter: Meena M. Krishnan **Department:** Physical Therapy
Authors: Meena Krishnan, University of North Texas Health Science Center at Fort Worth; Haylie Miller, University of North Texas Health Science Center at Fort Worth; Nicoleta Bugnariu, PT, PhD, University of North Texas Health Science Center at Fort Worth

THE CURRENT USE OF VIRTUAL ENVIRONMENTS FOR ASSESSMENT AND TREATMENT OF AUTISM SPECTRUM DISORDER

Purpose: We aim to provide a comprehensive review of immersive large screen Virtual Environments (VEs), and to determine whether immersive VEs are effective for assessing and treating behavioral, social and motor symptoms of Autism Spectrum Disorder (ASD). Understanding applications of VEs will facilitate better understanding of the benefits of controlling naturalistic experiences balanced with the ability to repeat experiences the same way every time. This will assist researchers and clinicians in their ability to diagnose and treat symptoms of ASD related to social skills, movement awareness/coordination, and behavioral regulation.
Methods: Six search engines were used: PubMed, Scopus, Ebsco via Medline, CINHAL, PsycINFO, and PsycARTICLES. Search dates were July–October 2013. Keywords used were: Autism, Autism Spectrum Disorder, ASD, Asperger, Pervasive Developmental Disorder, PDD, virtual reality, VR, virtual environment, and augmented reality. 71 articles were found. Articles were sorted according to level of immersion. 7 articles met the final criteria for immersive VEs with large screen presentation.
Results: The majority of studies involving VEs used a traditional computer monitor display, rather than an immersive setting. Studies using large screen presentation of VEs focused primarily on gross motor movements (Cai et al., 2013; Cook et al., 2013; Cheng et al., 2012; Greffou et al., 2012) or a combination of motor and social skills (Jung et al., 2006). Two studies focused on social skills and engagement with the VE (Mineo et al., 2009; Wallace et al., 2010). In 6 of the 7 studies reviewed, participants with ASD were successfully either treated or assessed using VE technology. However, there is a clear need for more research evaluating cognitive and behavioral abilities in ASD using immersive VEs.
Conclusions: Immersive VE is a promising tool for use in studies of children and adults with ASD. The use of immersive VEs for assessment/treatment of ASD is still new, and therefore not well-understood. However, several studies have demonstrated that both interactive and non-interactive VEs are an effective and engaging tool for assessing motor and social skills in ASD across a broad age range, and may be effective for delivering interventions. This technology also has potential for use as an assessment tool in non-verbal ASD populations (Cai et al., 2013). This growing body of work highlights the potential utility of VEs for assessment and treatment of ASD.
Sponsor N/A
IRB/IACUC#

1633 Poster **Classification:** Resident
Presenter: Kevin Luttrell, MD **Department:** Orthopaedic Surgery
Authors: Kevin Luttrell, MD, JPS; Arvind Nana, MD, University of North Texas Health Science Center at Fort Worth Orthopedic Surgery

THE EFFECT OF PREOPERATIVE TRANSTHORACIC ECHOCARDIOGRAM ON MORTALITY AND SURGICAL TIMING IN ELDERLY HIP FRACTURE PATIENTS

Purpose: Heart disease is the most common cause of postoperative mortality in elderly hip fracture patients, and transthoracic echocardiogram (TTE) is often used to assess cardiac function prior to surgery. The purpose of our study was to evaluate the effect of preoperative TTE on mortality, postoperative complications, surgical timing, and length of stay in surgically treated hip fracture patients.
Methods: A retrospective chart review was performed on 694 consecutive hip fracture patients >60 years of age treated surgically at two local hospitals. Patients were identified by billing codes over a 30 month time period from July 1st 2009 to December 31st 2011. Hospital records were reviewed for age, sex, timing of admission, medical clearance, operation and discharge, admitting service, fracture and treatment type, medical comorbidities, American Society of Anesthesiologists (ASA) score, preoperative testing ordered (TTE), preoperative cardiac intervention, complications, and mortality. The social security death index was used for thirty day and one year mortality data when not available in the hospital records. Our primary outcome measure was in-hospital, thirty day, and one year mortality following hip fracture surgery in patients that receive preoperative TTE. Secondary outcome measures included complications (particularly cardiovascular) and time required for medical clearance and operative treatment.
Results: Preoperative echocardiogram was performed on 131 patients (18.9%). Patients admitted by the medicine service were 1.76 times more likely to receive preoperative TTE ($p < .01$). Patients were 2.28 times more likely to receive TTE if they had a history of coronary artery disease ($p < .001$), and 2.12 times more likely if they had a history of arrhythmia ($p < .001$). Five patients in the TTE group and one patient in the control group underwent cardiac catheterization prior to surgery, but none of these patients required angioplasty or stent placement. There was no difference in mortality between the TTE group and the control group in hospital (3.8% versus 1.8%, $p = .176$), at 30 days (6.9% versus 6.6%, $p = .90$), or at one year (20.6% versus 20.1%, $p = .89$) respectively. There was no significant difference in major cardiac complications between groups. Average time from admission to operative treatment was 66.5 hours in the TTE group and 34.8 hours in the control group ($p < .001$). Average time from admission to medical clearance was 43.2 hours in the TTE group and 12.4 hours in the control group ($p < .001$). There was no difference in the time between medical clearance and operative treatment between the two groups (23.3 hours versus 22.4 hours, $p = .639$). The TTE group also had a significantly longer length of stay at 8.68 days compared to 6.44 days in the control group ($p < .001$).
Conclusions: Preoperative TTE does not help reduce mortality rates in elderly hip fracture patients in either short or long term postoperative periods. In addition TTE delayed surgical treatment, resulted in no cardiac intervention, and increased length of stay. The American Heart Association (AHA) and the American College of Cardiology (ACC) have developed guidelines for perioperative assessment of patients in case of non-cardiac surgery. TTE should not be used as a screening tool in hip fracture patients, but instead used to further evaluate active cardiac conditions.
Sponsor N/a
IRB/IACUC# 2012-004

1634 Poster **Classification:** TCOM DO Student

Presenter: Daniel J. Sumko **Department:** Orthopaedic Surgery

Authors: Dan Sumko, University of North Texas Health Science Center at Fort Worth; Russell Wagner, MD, University of North Texas Health Science Center at Fort Worth; Michael Sumko

TOPAZ RADIOFREQUENCY COBLATION FOR LATERAL EPICONDYLITIS: A RETROSPECTIVE STUDY

Purpose: To evaluate outcomes of TOPAZ radiofreqency coblation for recalcitrant lateral epicondylitis.

Methods: The pool of subjects ranged in age from 41 to 72 and had a history of at least 3 months of conservative treatment to include NSAIDs, activity modification, bracing, night splints, and at least 3 steroid injections. All of these had failed to give any long term relief. Subjects were prepared for surgery by marking out the tender area on the skin in a usual rectangular shape. After adequate anesthesia, varying from local with sedation to general, a longitudinal incision was made in the mid-area of the pre-op delineated rectangular area. Most were done without the aid of a tourniquet. The radio-frequency (TOPAZ) tip was touched to the surface of the tendon every 3-4 mm, and every third touch penetrated the tendon surface to a depth of 3-4 mm. When the area of the tendon corresponding to the rectangular skin markings was treated, (making a checkerboard pattern) the wound was closed with subcuticular 3'0 monocryl suture and steri-stripped. A dressing of a simple fluff was held in place with a curlex roll and coban. The patient was instructed to keep the dressing dry until the first post op visit at day 7-10, with no excessive lifting (greater than one pound for 1 week and then no greater than 8 pounds for an additional 2 weeks). Return to normal activities was permitted at week 6 weeks. 87 patients who had undergone TOPAZ radiofrequency coblation therapy for lateral epicondylitis by the same surgeon during a period from 1996-2012 were contacted via telephone. In addition to eliciting the Numeric Pain Scale for the operative elbow, the patients were also asked a series of additional questions pertaining to their satisfaction and results of the procedure seen below.

Was the procedure performed on your right or left elbow? Or Bilaterally?* How would you rate the overall results of your procedure on a scale of 0-10, 10 being a perfect outcome? Does your elbow have a negative impact on your daily activities? Never, Occasionally, Always?

How would you rate the appearance of the scar from the procedure, on a scale of 0-10, 10 being a perfect scar that is hardly noticeable? How would you rate your pain since the procedure, on a scale of 0-10, 10 being excrucitating? Postoperatively, do you experience a decreased range of motion? Postoperatively, do you experience any weakness on that side? 8. How would you rate your overall relief of previous pain: Total, Partial, or None? *If both elbows were operated on, questions 2, 4, & 5 were asked for both sides separately.

Results: Of the 87 patients surveyed, 21 had received TOPAZ bilaterally accounting for 108 total elbows. Male 45% Female 55% Age Mean: 56 years old (s=7.85) Years Since Procedure Mean: 9.2 years (s=3.39) Left Elbow 43% Right Elbow 57% Bilateral TOPAZ 24% Overall Satisfaction out of 10 Mean: 8.6 (s=2.17) Negative impact on ADLs? No: 86% Yes:8% Partially: 7% Appearance of Scar out of 10 Mean: 7.50 (s=2.31) Pain Since Surgery (Numeric Pain Scale) Mean: 1.70 (s=2.81) Experience decreased ROM? None: 98% Partial: 2% Complete: 0% Experience weakness? Never: 87% Sometimes: 11% Always: 2% Relief of symptoms Total: 86% Partial: 10% None: 4%

Conclusions: TOPAZ has been shown to be an effective, minimally invasive modality for treatment of recalcitrant lateral epicondylitis.

Sponsor N/A

IRB/IACUC# 2014-006

1700 Poster **Classification:** GSBS Student
Presenter: Kayla Richardson **Department:** Molecular & Medical Genetics
Authors: Kayla Richardson, University of North Texas Health Science Center at Fort Worth; Deanna Cross, University of North Texas Health Science Center at Fort Worth; Cathy Kearns, University of North Texas Health Science Center at Fort Worth; John Planz, PhD, University of North Texas Health Science Center at Fort Worth; John Licciardone, DO, University of North Texas Health Science Center at Fort Worth

DETERMINATION OF GENETIC FACTORS ASSOCIATED WITH RESPONSE TO OSTEOPATHIC MANIPULATIVE TREATMENT IN INDIVIDUALS WITH CHRONIC LOWER BACK PAIN

Purpose: OMT (Osteopathic Manipulative Treatment) is an often overlooked, low risk treatment option for management of (Chronic Lower Back Pain) CLBP. Underutilization of OMT is partially due to an undefined mechanism of action for the therapy. Our overarching hypothesis is through analysis of genotypic attributes; it is possible to determine which individuals are more likely to respond to OMT leading to insights into mechanisms of action. The current study investigated potential polymorphisms associated with OMT and pain reduction using data previously collected from a CLBP clinical study, which was part of The OSTEOPATHIC Trials.
Methods: We performed a candidate gene study using single nucleotide polymorphisms (SNPs) within genes previously associated with pain: Catechol-o-methyltransferase (COMT), beta 2 adrenergic receptor (ADRB2), GTP cyclohydrolase GCH1, Interleukin 1 alpha (IL1A), interleukin 1 beta (IL1B), interleukin 1 receptor antagonist (IL1RN), Interleukin 8 (IL8), and like- glycosyltransferase (LARGE). Genotypes from subjects who benefited from OMT (responders) were compared to subjects who did not benefit from OMT (non-responders) using a chi-square analysis to test for associations. For SNPs that showed significance (α=0.05) an odds ratio (O.R.) was calculated. The study utilized 216 samples consisting of 111 individuals who received OMT, and a placebo group of 105 individuals who received a sham treatment.
Results: SNPs in IL-8, GCH1, and LARGE showed significance (α=0.05) in the OMT group only: IL-8 SNP rs2227543 (O.R. 2.2824 CT, confidence interval (C.I.) 1.0053-5.1818), LARGE SNP rs240070 (O.R. 2.8546 TA, 1.0508-7.7548), and GCH1 SNP rs998259 (O.R. 0.4016 GA, C.I. 0.1600-1.0080). A SNP by SNP interaction was detected within GCH1 between rs998259 and rs3783641. When the rs998259 genotype is GG, rs3783641 is associated with response to OMT (α=0.05, O.R. 2.9630 TA, C.I. 1.1269-7.7907).
Conclusions: There is an association between genetics and response to OMT in individuals who suffer from CLBP. Individuals with genotype CT in rs2227543 or TA in rs240070 are more likely to respond to OMT whereas individuals with genotype GA in rs998259 are less likely to respond to OMT. Furthermore, if an individual has genotype GG in rs998259 and TA in rs3783641 they are more likely to respond to OMT. Genes in neuronal, immunological, and muscular pathways affect OMT response.
Sponsor NIH NCCAM: K24 AT002422, Osteopathic Heritage Foundation, UNTHSC
IRB/IACUC# 2014-023

1701 Poster **Classification:** TCOM DO Student
Presenter: John D. Myers **Department:** Osteopathic Manipulative Medicine
Authors: David Mason, DO, FACOFP, University of North Texas Health Science Center at Fort Worth; John Myers, University of North Texas Health Science Center at Fort Worth

ENHANCING PATIENT AND DOCTOR EXPERIENCE IN AN OUTPATIENT OSTEOPATHIC MANIPULATIVE MEDICINE (OMM) CLINIC VIA UTILIZATION OF ELECTRONIC MEDICAL RECORD (EMR) SCRIBES

Purpose: Osteopathic Manipulative Medicine (OMM) is both patient-centered and hands-on. Therefore, successfully integrating electronic medical records (EMR) into the OMM physician's practice presents a unique challenge. The purpose of our study was to determine whether the presence of scribes (people trained to take notes for the doctor while they interview, examine, and treat the patient) within an OMM clinic would increase both physician and patient satisfaction by allowing physicians to devote increased attention to the patient. Similar research had been conducted in emergency departments and allopathic outpatient offices, but we believed the benefit in an osteopathic manipulative environment would be higher because EMR physically prevented the osteopath from performing manipulative techniques.
Methods: The study was conducted by a scribe who was employed within the Osteopathic Manipulative Medicine (OMM) outpatient office at the University of North Texas-Health Science Center (UNTHSC) during the time period of June 10 through July 11, 2013. The study was structured to gather data via two sets of surveys. One survey was given to all practice physicians before the scribe on-boarding date and again after termination of scribe employment. This survey's purpose was to judge scribe impact on physician satisfaction. The second survey was given to each patient who visited the practice between June 10 and July 11. It's purpose was to determine scribe impact on patient satisfaction.
Results: The findings of the study were inconclusive. It was not possible to determine whether scribe presence influenced either physician or patient satisfaction. This outcome was the result of factors that were not taken into account at project commencement. For example, third year medical students sometimes took notes for physicians in the Osteopathic Manipulative Medicine (OMM) office. This confused patients: many believed the student was a scribe which skewed study results.
Conclusions: Despite these difficulties, we continue to believe scribes would be beneficial for the Osteopathic Manipulative Medicine (OMM) outpatient office environment. Therefore, we anticipate further studies will be undertaken which better elucidate this theory.
Sponsor N/A
IRB/IACUC# 2013-131

1702 Poster **Classification:** TCOM DO Student
Presenter: Asmani Patel **Department:** Osteopathic Manipulative Medicine
Authors: Asmani Patel, University of North Texas Health Science Center at Fort Worth; Rita Patterson, University of North Texas Health Science Center at Fort Worth; David Mason, DO, FACOFP, University of North Texas Health Science Center at Fort Worth

OSTEOPATHIC MANIPULATIVE TREATMENT IN HISPANIC PATIENTS: A RETROSPECTIVE CHART STUDY

Purpose: To understand the incidence of Hispanic patients presenting to the Osteopathic Manipulative Medicine (OMM) Clinic, and to compare their demographics to the Hispanic and other ethnic populations in Tarrant County.
Methods: Data for this retrospective chart study was collected for Hispanics patients who had visited the OMM Clinic from June 25, 2012 to June 25, 2013. Patient charts were reviewed for the following data: demographics, somatic dysfunction, osteopathic manipulative treatment, and assessment/diagnosis. Data for demographics of the population in Tarrant County was obtained through HealthyNorthTexas.Org.
Results: The data for patients attending the OMM Clinic showed that 75.9% of patients were White, Non-Hispanic and 7.6% of the patients were Hispanic. In Tarrant County, 50.7% of the population is White, Non-Hispanic and 27.4% of the population is Hispanic. 82.5% of the White, Non-Hispanic population and 47.5% of the Hispanic population has health insurance. When comparing the data from the OMM Clinic and Tarrant County, it is evident that 41.8% of the White, Non-Hispanics in Tarrant County should be coming to the OMM Clinic based on health insurance status, and 13% of the Hispanics should be coming to the OMM Clinic. The Hispanics come into the OMM Clinic at a rate of 1:10 (1 Hispanic patient for every 10 White, Non-Hispanic patients). However, Hispanics should be coming to the OMM Clinic at a rate of 1:3.
Conclusions: The study established that the Hispanic population does not come into the OMM Clinic at the same rate as the White, Non-Hispanic population does, despite having health insurance. Therefore, it is necessary to educate the Hispanic population on the benefits of Osteopathic Manipulative Treatment (OMT).
Sponsor
IRB/IACUC# 2013-102

1703 Poster **Classification:** TCOM DO Student
Presenter: Callum G McCormick, MS **Department:** Texas College of Osteopathic Medicine
Authors: Callum McCormick, MS, Texas College of Osteopathic Medicine; KiahRae Carter, University of North Texas Health Science Center at Fort Worth; Ashley Orlowski, University of North Texas Health Science Center at Fort Worth; Lisa Hodge, PhD, University of North Texas Health Science Center at Fort Worth

THE EFFECT OF LYMPHATIC PUMP TECHNIQUE ON PRIMARY TUMOR GROWTH IN RATS

Purpose: Osteopathic Physicians perform lymphatic pump treatments (LPT) to improve lymphatic circulation, enhance immunity and reduce hospital stay in patients with infection and edema. Cancer is a contraindication for the use of LPT, which limits clinical practice; however, there are no published studies to support this conclusion. The purpose of this study was to determine if LPT enhances primary tumor growth. Specifically, we hypothesized that LPT would not increase the size of primary breast tumours.
Methods: Breast cancer was induced in female rats by subcutaneous injection in the right mammary fat pad with MTLn3 tumor cells. The infected rats were randomized into Control Diseased (Dz), Sham LPT (Sham), and LPT. Healthy(Hy) animals were also included for disease comparison. Rats were weighed weekly to calculate percent body weight change. LPT and Sham were performed as previously described under isoflurane anesthesia on days 14 to 24 post-induction. On day 25 the rats were euthanized and cardiac puncture was performed for a blood differential count. The primary tumor, spleen, lung and axillary lymph nodes(LNs) were also removed and weighed.
Results: There was no change in primary tumor size across the groups. Body weight increased in all groups until day 14. Of interest, Dz and Hy continued to gain weight while Sham and LPT decreased in size between days 14-25 of disease. There were no differences between groups in the size of the opposite LN, spleens or lung tissue. However, the adjacent LN in Dz, Sham and LPT increased in size compared to Hy, suggesting sentinel node disease. The blood differential showed leukocytosis with predominant neutrophils in Dz compared to Hy, indicating a cancer-induced inflammatory response. Sham and LPT response were lower in comparison to Dz, suggesting the inflammatory response was impaired in these animals.
Conclusions: Our data demonstrates that LPT did not enhance primary tumor growth. MTLn3 induced an inflammatory response, which was impaired during Sham and LPT; however, the effect of this impairment on disease metastasis was not measured. In addition, Sham and LPT induced weight loss during disease. Anesthetics have been shown to suppress appetite and immunity. This may account for the decreased body weight and immune response in Sham and LPT. Future studies on metastasis and secondary growth are required to ascertain whether LPT is safe in patients with breast cancer.
Sponsor
IRB/IACUC# 2010/11-45-AO5

1800 Poster **Classification:** GSBS Student
Presenter: Rahul Chib **Department:** Cell Biology and Immunology
Authors: Rahul Chib, University of North Texas Health Science Center at Fort Worth; Sangram Raut, University of North Texas Health Science Center at Fort Worth; Sarika Sabnis, University of North Texas Health Science Center at Fort Worth; Preeti Singhal, University of North Texas Health Science Center at Fort Worth; Zygmunt Gryczynski, PhD, University of North Texas Health Science Center at Fort Worth; Ignacy Gryczynski, PhD, University of North Texas Health Science Center at Fort Worth

ASSOCIATED ANISOTROPY DECAY OF ETHIDIUM BROMIDE INTERACTING WITH DNA.

Purpose: To study the interaction of DNA with ethidium bromide.
Methods: 1) Steady state fluorescence intensity measurement. 2) Time resolved measurements. 3) Steady state anisotropy.
Results: Increase in fluorescence lifetime and fluorescence anisotropy when ethidium bromide interact with DNA.
Conclusions: We believe that assays involving EB and DNA should be analyzed with the associated decay model. Neglecting this type of decay pattern can lead to false interpretation of results.
Sponsor RO1EB12003(ZG) NSFgrant CBET-1264608(IG)
IRB/IACUC#

1801 Oral **Classification:** GSBS Student
Presenter: Fatima Sahyouni **Department:** Pharmacology & Neuroscience
Authors: Fatima Sahyouni, University of North Texas Health Science Center at Fort Worth; Szabolcs Szarka, University of North Texas Health Science Center at Fort Worth; Vien Nguyen, PhD, University of North Texas Health Science Center at Fort Worth; Katalin Prokai-Tatrai, PhD, University of North Texas Health Science Center at Fort Worth; Laszlo Prokai, PhD, University of North Texas Health Science Center at Fort Worth

QUANTITATIVE PROTEOMIC INVESTIGATION OF ESTROGENIC ENDOCRINE-DISRUPTING EFFECTS IN THE RAT UTERUS USING SYSTEMS BIOLOGY

Purpose: To validate potential markers of estrogenicity of discovery identified differentially expressed estrogen-induced proteins in rat uterine tissue using quantitative proteomics.
Methods: Ovariectomized rats were treated short-term with subcutaneous E2 injections using corn oil as a vehicle. Approximately 10 mg of tissue were dissected from the uterus of vehicle-treated control and E2-treated animals for proteomic analyses. Uterine proteins were extracted with 8M urea for 30 minutes and subsequently processed by reduction, alkylation and digestion for mass spectrometry analysis. The samples were analyzed using a hybrid linear ion trap–Fourier transform ion cyclotron mass spectrometer equipped with an electrospray ionization source and connected to a nanoflow liquid chromatography system. MS/MS data was searched against a composite UniProt rat protein database using the Mascot software. Quantitation was performed using an MS-based total precursor intensity approach using the Scaffold software. Additionally, the differentially expressed proteins were mapped to signaling networks and biological processes using Ingenuity Pathway Analysis (IPA).
Results: The mammalian uterus increases its weight due to fluid imbibition and cell proliferation by exogenously administered estrogenic compounds. With the observation of weight gain in the treated uterus compared to non-treated control rats, we confirmed E2's uterotrophic effects for our subsequent proteomics study. Estrogen-regulated proteins were identified using an MS-based label-free quantitative approach. With $p<0.05$ considered statistically significant and >2-fold change as threshold, 135 proteins were differentially regulated by the hormone. Of these significantly differentially regulated proteins, 97 were up-regulated in E2-treated uteri and 38 were down-regulated in E2-treated uteri. When these 135 proteins were submitted for bioinformatic pathway analysis, 131 proteins were mapped into 14 networks that merged into E2-regulated pathways. Major molecular processes involve metabolic pathways, steroid signaling, and inflammatory signaling. Top networks include post-translational modification, protein folding, carbohydrate metabolism, cell death and survival, cancer, and endocrine system disorders. Implicated diseases include endocrine system and metabolic disorders. Proteotypic peptides from proteins that were strongly influenced by E2 administration have been selected for targeted validation studies.
Conclusions: In addition to confirming the expected increase in wet uterine weights, we have derived interaction networks that mechanistically dissect E2's uterotrophic effect at the proteome level. We have selected proteotypic peptides of strongly regulated proteins for future targeted validation as a potential biomarker panel for estrogenicity.
(Supported by the Robert A. Welch Foundation, BK-0031, and the NIH grant AG031535)
Sponsor Supported by the Robert A. Welch Foundation, BK-0031, and the NIH grant AG031535
IRB/IACUC# 2011/12-28-A05

1900 Poster **Classification:** Dual Degree student
Presenter: Siya Mehtani **Department:** Texas College of Osteopathic Medicine
Authors: Siya Mehtani, University of North Texas Health Science Center at Fort Worth; Department of Ecology and Evolutionary Biology at Rice University; Lesley Campbell, Department of Ecology and Evolutionary Biology at Rice University; Department of Chemistry and Biology at Ryerson University; Mary Dozier, Department of Ecology and Evolutionary Biology at Rice University; Janice Rinehart, National Science Foundation ADVANCE Program at Rice University

GENDER-HETEROGENEOUS WORKING GROUPS PRODUCE HIGHER QUALITY SCIENCE

Purpose: Here we present the first empirical evidence to support the hypothesis that a gender- heterogeneous problem-solving team generally produced journal articles perceived to be higher quality by peers than a team comprised of highly-performing individuals of the same gender. Given that women can and have made an enormous impact on the study of ecology as a minority population, it is important to understand the conditions that promote their equitable participation. However, it is rare to find replicated conditions under which we can compare the opportunities women receive for leadership, participation in academic discussions, and authorship, and the consequent benefits received due to their participation. Here, we quantified patterns of participation and productivity by women in working groups (WGs) at the National Center for Ecological Analysis & Synthesis (NCEAS) by measuring the relative participation of women as PIs, womens' inclusion in WGs, and as authors.
Methods: Using data provided by the NCEAS website, we collected information on 157 WGs that started by 1996 and were finished by December 2008. WGs include 10 to 15 researchers who visit NCEAS for 1 to 2 weeks to focus on the analysis and synthesis of existing ecological data. For each WG, we tabulated data on the number and gender of PIs, participants and authors in WGs, and gathered information on PIs' publication history, quantifying their impact on ecological literature using h-factor, total number of citations, and average number of citations per paper. Using statistical analyses, we assessed consistent differences in participation among male and female participants, PIs and authors.
Results: Although women were historically underrepresented as PIs of WGs, their frequency as PIs at NCEAS Is now comparable to the national frequencies in biology, and they are now equally qualified, in terms of impact on the ecological literature (h-index). While women continue to be underrepresented as WG participants, peer-reviewed publications with gender-heterogeneous authorship teams received 34% more citations than publications produced by gender-uniform authorship teams.
Conclusions: Promoting diversity not only promotes representation and fairness but may lead to higher quality science. It is important to understand the conditions that promote women's impact and equitable participation. By actively funding proposals with female PIs, NCEAS and other institutions can predictably change the participation and productivity of female participants.

Sponsor Department of Ecology and Evolutionary Biology and National Science Foundation ADVANCE program, Rice University
IRB/IACUC# 2014-024

Receptor Pharmacology & Drug Delivery (Abstracts in the 2000s)

2000 Poster **Classification:** GSBS Student
Presenter: Amruta Agharkar **Department:** Pharmacology & Neuroscience
Authors: Amruta Agharkar, University of North Texas Health Science Center at Fort Worth; Eric Gonzales, PhD, University of North Texas Health Science Center at Fort Worth

DIETARY SUPPLEMENTS INFLUENCE ACTIVITY OF ACID-SENSING ION CHANNELS

Purpose: Dietary supplements and nutraceuticals have been the focus of research to identify novel therapeutics for a variety of pathologies, including the prevention of long-term consequences of stroke and reducing pain. Ion channels offer a growing group of molecular targets for treatment, which include the acid-sensing ion channels (ASICs). Acid-sensing ion channels (ASICs) are sodium channels that are sensitive to changes in extracellular pH, specifically those changes following injury and ischemia. These channels are expressed most prominently in peripheral and central nervous system. Their role in physiology is yet to be fully understood, but these channels have been implicated in pain sensation and centrally in the neurodegeneration following ischemic stroke. We identified an over-the-counter dietary supplement (DS) that shares similarity to guanidine compounds that selectively modulate acid-sensing ion channels. Thus, we hypothesize that this dietary supplement inhibits channel activity in acid-sensing ion channels.
Methods: We will utilize whole cell patch-clamp electrophysiology technique to determine the intrinsic activity of DS on ASICs. The current elicited in absence and presence of DS at various pH will be normalized to maximum peak current obtained with control.
Results: Our preliminary data show that DS decreased the ASIC1a pH sensitivity by shifting the observed proton activation profile to the right. Furthermore, we observed a change in the Hill coefficient of the DS influenced ASIC1a steady-state desensitization profile.
Conclusions: Based on our preliminary data, we can conclude that DS influences ASIC current amplitude and steady state desensitization profile. Future experiments will focus on determining the influence of DS on other acid-sensing ion channel subtypes and identifying the DS binding site with the protein structure.
Sponsor American Heart Association (12BGIA8820001)
IRB/IACUC#

2001 Poster **Classification:** TCOM DO Student
Presenter: Gaile Vitug **Department:** Integrative Physiology & Anatomy
Authors: Gaile Vitug, University of North Texas Health Science Center at Fort Worth; Nirupama Sabnis, University of North Texas Health Science Center at Fort Worth; Yi Shi, University of North Texas Health Science Center at Fort Worth; Anthony Di Pasqua, University of North Texas Health Science Center at Fort Worth; W. Paul Bowman, MD, University of North Texas Health Science Center at Fort Worth; Andras Lacko, PhD, University of North Texas Health Science Center at Fort Worth

EVALUATION OF A "TROJAN HORSE" STRATEGY TO COMBAT NEUROBLASTOMA

Purpose: Neuroblastoma (NB) is the most common type of cancer in children less than a year old and stems from early neural cells that fail to differentiate into neurons or adrenal medulla cells. Upon initial diagnosis, 67% of cases show metastases to the lymph nodes or other organs; therefore, chemotherapy effectiveness is of particular concern. Currently, there are no FDA approved treatments or designs specifically available for NB patients and most are designed for different types of adult cancers with dose-limiting toxicities as a significant concern. Present study evaluates the therapeutic potential of a novel drug delivery system utilizing reconstituted high density lipoprotein (rHDL) containing hydrophobic analogue of Cisplatin (CisX) nanoparticles that act as a “Trojan horse” towards tumor cells.
Methods: rHDL-CisX nanoparticles was prepared by lyophilization followed by cholate dialysis
Chemical composition of rHDL-CisX nanoparticles was determined using BCA protein assay kit and enzymatic reagent assay kits (phospolipid C and cholesterol E)Encapsulation efficiency of CisX was determined by Inductively Coupled Plasma Mass Spectrometry (ICPMS)
Size estimations were determined using dynamic light scattering The Neuroblastoma cell line, SJ-N-KP, was plated in 96 well plates and incubated at 5% CO2 at 37ºC for 72 hours Comparative cytotoxicity was examined by CCK-8 assay (Dojindo) using Free CisX and rHDL-CisX nanoparticles at various concentrations
Results: The characterization studies of CisX reveal sizes of the particles ranging from 14 nm to 164.9 nm with a mean diameter of 69.46 nm. An encapsulation efficiency was observed to be 26.34%. The cytotoxicity studies of free CisX vs rHDL-CisX towards NB cell line SJ-N-KP show 5.1 times lower IC_{50} value for the rHDL-CisX.
Conclusions: This study reveals the potential of rHDL as a novel delivery method for chemotherapeutic drugs in the treatment of NB and warrants more investigation. Additional studies using rHDL towards normal cells are also needed to further evaluate their therapeutic potential.
Sponsor ConnorTeam Children's Cancer Foundation
IRB/IACUC#

2002 Poster **Classification:** GSBS Student

Presenter: Heather Snell **Department:** Pharmacology & Neuroscience

Authors: Heather Snell, University of North Texas Health Science Center at Fort Worth; Eric Gonzales, PhD, University of North Texas Health Science Center at Fort Worth

NOVEL GABAA-RHO1 INTERACTIONS WITH ACID SENSING ION CHANNEL LIGANDS

Purpose: γ- amino butyric acid (GABA) is the major inhibitory neurotransmitter in the vertebrate brain, and targets the ionotropic GABAA receptors. GABAC, or GABAA-rho, is a subclass of GABAA receptors composed entirely of rho (ρ) subunits and are located on the axonal terminal of retinal bipolar cells, where it not only exhibits a tonic inhibitory current, but also regulates the GABA-A and other GABAA-rho synaptic currents. GABAA-rho exhibits unique properties, such as insensitivity to select antagonists of the heteromeric GABAA receptors. A group of ligands, which possess a guanidine group, have been shown to influence GABAA receptors. These compounds, such as (S)-2-Guanidinopropionic acid and guanidine acetic acid were competitive antagonists for the GABAA-rho1 receptor. Other guanidine compounds that are acid sensing ion channel (ASIC) ligands, might also exhibit unique effects on the GABAA-rho1 receptor.We hypothesize that these ASIC ligands will exhibit unique intrinsic activities on the GABAA-rho1 receptor, which is different from that of the heteromeric GABAA receptor.
Methods: The human GABAA-rho1 receptors were expressed in HEK-293T cells, and activity was analyzed using whole cell patch-clamp electrophysiology.
Results: When co-applied with GABA and compared to the GABA concentration profile, one ligand was found to decrease the maximal response, with no change in the GABA EC50,while a different ligand with the same guandine group, shifted the GABA EC50 to lower GABA concentrations. When applied alone, it failed to directly activate GABAA-rho1 receptors.
Conclusions: These contrasting effects suggest that these ligands act at two binding sites within the GABAA-rho architecture. Future experiments will focus on additional characterization of these novel effects on GABAA-rho receptors and offer a novel chemical structure to design novel GABAA-rho therapeutics.

Sponsor
IRB/IACUC#

Women's Health (Abstracts in the 2100s)

2100 Poster **Classification:** TCOM DO Student
Presenter: Gabrianna Saks **Department:** Behavioral & Community Health
Authors: Gabrianna Saks, University of North Texas Health Science Center School of Public Health; Emily Spence-Almaguer, MSW, PhD, University of North Texas Health Science Center at Fort Worth; Shlesma Chhetri, University of North Texas Health Science Center at Fort Worth; Cindy Crain, Tarrant County Homeless Coalition

"IT HAPPENS OUT HERE" - THE VICTIMIZATION EXPERIENCES AND HEALTH CHALLENGES OF WOMEN WHO ARE HOMELESS

Purpose: The Homeless Women's Health and Victimization Study was conducted in order to explore the unique experience of violence and victimization among homeless women and the effects these experiences have on physical and mental health.
Methods: This study utilized non-random, purposive sampling of women utilizing emergency shelter services in the East Lancaster area of Fort Worth, Texas. A total of 150 face-to-face interviews were conducted with homeless women by trained volunteers from December 2012 to May 2013. The interview consisted of closed and open ended questions covering recent victimization, service utilization, mental and physical health, healthcare utilization, prior abuse, transactional sex, and personal safety and health strategies. Quantitative data analysis was performed using statistical software and a grounded theory approach was used for qualitative data analysis.
Results: The majority (60.1%) of participants reported at least one form of physical or sexual violence, stalking, threats, or verbal abuse in the last 12 months. One in 6 women (17.3%) reported experiences that meet the legal definition of rape in Texas, 46% were physically or sexually attacked, 20.7% reported intimate partner violence. These attacks have had significant health consequences, with 23% of women reporting injuries incurred as a result of their attacks. In addition, 78% of women reporting recent abuse and 88.5% of women reporting recent rape met the threshold for psychiatric distress. There was a clear relationship between prior victimization and recent violence. Among those reporting physical or sexual violence in the past 12 months, the majority were abused as a child (62.5%) or abused by an intimate partner (65%).
Conclusions: Violence and victimization is a painful reality for many of the women experiencing homelessness in our community. The homeless services delivery system and community stakeholders must work together to identify solutions that will improve the safety of women on East Lancaster, as well as help women leave the East Lancaster region.
Sponsor Tarrant County Homeless Coalition
IRB/IACUC# IRB 2012-203

2101 Poster **Classification:** SPH Student
Presenter: Jennifer Miller **Department:** School of Public Health
Authors: Marcy Paul, MA, University of North Texas Health Science Center at Fort Worth; Lindsey Eley, University of North Texas Health Science Center at Fort Worth; Jennifer Miller, University of North Texas Health Science Center at Fort Worth; Anna Espinoza, University of North Texas Health Science Center at Fort Worth

365 DAYS OF INFANT MORTALITY USING PHOTOVOICE TO UNDERSTAND INFANT MORTALITY AS AN ISSUE FOR SOCIAL CHANGE

Purpose: African Americans have an infant mortality rate more than twice the rate of Whites; yet there is limited information about parents' experience of an infant death and their perceptions about the causes of racial disparity in infant mortality. Photovoice, a documentary photography technique, was used to give a voice to parents who experienced an infant loss, and to better understand the causes and effects of racial disparity in infant mortality. To date, no known Photovoice projects have focused solely on the perceptions of parents who suffered an infant death.
Methods: North Texas parents who experienced an infant loss were recruited using convenience sampling techniques. Participants were provided digital cameras, and asked to photograph and journal about community resources which were helpful to them as they grieved, and community resources, or lack thereof, they felt may have contributed to the death of their baby. Participants were divided into two groups based on current residency (Fort Worth or Dallas, Texas). These groups met monthly, giving participants an opportunity to discuss their photos, journal entries, and experiences during the project. Photographs and journal entries will be on display at a local art gallery as an exhibit, "Eight Warrior Mamas: Survivors of Infant Mortality – Empty Arms, Broken Hearts, and Grieving Wombs."
Results: African American women (n=6) and White women (n=2) participated in the project. From their photographs and group discussions three themes emerged. The first theme was poor post-partum care. Many of the mothers reported feeling that the health provider they visited after delivery was insensitive, and the post-partum examinations were uncomfortable. The second theme was loneliness and isolation. The mothers described finding it difficult to locate support groups and other resources to help them during the grieving process. The third theme was the poor/inappropriate response from health insurers and regulatory agencies such as Child Protective Services. The mothers expressed that they were treated in a cold and distant manner when communicating with different systems about their deceased child.
Conclusions: This project is an innovative approach to identifying systemic issues that contribute to racial disparity in infant mortality. Through the exhibit parents who suffered an infant death have a platform to voice their loss and their concerns about needed social change. Additionally, the exhibit increases community awareness of the issue of infant mortality. These findings suggest the importance of continuing to raise awareness about infant mortality and the need to further assess institutional polices' effect on racial disparities in infant mortality.
Sponsor March of Dimes Texas Chapter
IRB/IACUC# 2013-194

2102 Poster **Classification:** TCOM DO Student
Presenter: Brighton R. Miller **Department:** Texas College of Osteopathic Medicine
Authors: Brighton Miller, University of North Texas Health Science Center at Fort Worth; Kollier Hinkle, MD, University of North Texas Health Science Center at Fort Worth

A LIFE-THREATENING CASE OF SEXUAL ASSAULT

Purpose: Once reported to police, cases of sexual assault must be assessed by appropriate hospital staff who are trained in gathering biologic evidence of the sexual encounter and examining the patient for possible injuries. According to the Bureau of Justice Statistics, "Seventeen percent of the 135,550 completed or attempted sexual assaults annually against females ages 12 or older resulted in injury"5. Victims of sexual assault who are injured are more likely to receive medical treatment if reported to police. The case presented exemplifies the importance of seeking medical attention after sexual assault because it involved life-threatening injuries.

Methods: A 28-year-old woman who had suffered sexual assault presented to the emergency department with a total of nineteen stab-wounds to the face, neck, anterior chest, upper abdomen, back, both upper extremities and lower extremities. A primary and secondary survey of the patient was completed and the patient presented hemodynamically stable. A Sexual Assault Nurse Examiner completed a thorough medical forensics exam, collected evidence of assault and treated patient prophylactically for possible infection and pregnancy. A Computed Tomography was completed which showed concern for a hemopneuothorax. The patient remained in stable condition in the emergency department for three hours. Treatment A right tube thoracostomy was placed for the patient's hemopneumothorax. Next, a diagnostic laparoscopy was performed. Exploration of the abdomen was initiated and a laceration to the diaphragm was noted through which the patients beating heart could be seen. A decision was made to convert to an open exploratory laparotomy. A pericardial window was made in the preperitoneal space below the xiphoid. A 1.5 to 2 cm laceration in the apex of the heart was seen. The laceration was repaired. The laceration to the diaphragm was repaired. All stab wounds were thoroughly irrigated and closed with staples. Finally, a flexible esophagoscopy and sigmoidoscopy was performed to screen for any other possible injuries.

Results: The assessment and treatment of the present case proved to be effective in identifying an underlying heart laceration. The necessary steps were taken to evaluate a hemodynamically stable stab wound patient. Berardoni et al, explain, "Although it is widely accepted that patients demonstrating signs of hemodynamic instability, peritonitis or evisceration should undergo timely exploratory laparotomy, the proper conservative evaluation in hemodynamically stable patients with AASWs remain indefinable despite the multitude of proposed clinical pathways"1 Another study by Paydar et al, comparing the use of conservative management versus exploratory laparotomy found that "of the patients in the CM group, 11% needed delayed laparotomy"4. When an anterior abdominal stab wound patient is hemodynamically stable, it can be difficult to determine the proper course of management for that patient as shown by the statistical evidence of these studies. The conversion to exploratory laparotomy in this case was therapeutic in providing surgical intervention for a myocardial stab wound.

Conclusions: In conclusion, it is important to fully evaluate victims of violent sexual assault both surgically and psychologically. A study by Koss et al. stated, "Findings indicated that severely victimized women, compared with nonvictims, reported more distress and less well-being, made physician visits twice as frequently in the index year, and had outpatient costs that were 2.5 times greater…long-term deleterious effects suggest that criminally victimized women's needs for medical treatment transcend the traditional focus on emergency care and forensic evaluation."3. After a victim of rape recovers physically, the need for emotional, spiritual and psychological healing is indicated. it is important to treat the whole patient; keeping in mind that complete healing occurs when all aspects of human disease are treated.

Sponsor For Her Foundation
IRB/IACUC# 2014-036n/a

2103 Poster **Classification:** SPH Student
Presenter: Saritha Bangara, PhD **Department:** Obstetrics and Gynecology
Authors: Saritha Bangara, PhD, University of North Texas Health Science Center at Fort Worth; Monique Shuler, MS, University of North Texas Health Science Center at Fort Worth; Raquel Qualls-Hampton, PhD, University of North Texas Health Science Center at Fort Worth; Martha Felini, PhD, University of North Texas Health Science Center at Fort Worth

ACCEPTABILITY OF SELF-ADMINISTERED PAP SMEARS AMONG SUBSTANCE ABUSING POPULATIONS

Purpose: Prior studies have revealed high acceptability rates for using self-administered Pap smears as an alternative in populations where barriers may prevent access to conventional in-office cervical screening examinations. However, few studies to date have examined whether this self-screening tool would be an option among indigent women engaging in high-risk behaviors.

The objective of this study was to assess the acceptability of self-administered Pap smears among women in treatment for substance abuse and co-occurring disorders at the Nexus Recovery Center, Dallas's largest female substance abuse treatment center.

Methods: Six focus groups (N=48 women) were conducted among women participating in treatment at the Nexus Recovery Center. A separate focus group was conducted among members of our project advisory board (medical professionals, social workers, and recovering addicts) who guided the research. A mixed methods approach was used to analyze the data and identify themes from participants' responses.

Results: In assessing the participants' utilization of cervical cancer screenings, 30 (63%) had a Pap smear in the last two years. Preliminary analysis suggests that the acceptability of self-administered Pap smears in our study population is low.

Conclusions: The low acceptability of self-administered Pap tests in our study population is due to a perceived lack of trust in the effectiveness of this tool. This finding will be considered when developing a trauma-informed, culturally sensitive cervical cancer education program that can be integrated into substance abuse treatment centers as part of this project.

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2104 Poster **Classification:** SPH Student
Presenter: Amy Board **Department:** Obstetrics and Gynecology
Authors: Amy Board, University of North Texas Health Science Center at Fort Worth; Amy Raines-Milenkov, University of North Texas Health Science Center at Fort Worth; Emelda Thein, University of North Texas Health Science Center at Fort Worth; Ralph Anderson, MD, University of North Texas Health Science Center at Fort Worth

PROMOTING HEALTHY PREGNANCY BEHAVIORS AMONG KAREN BURMESE REFUGEES

Purpose: To identify baseline understanding of healthy pregnancy behaviors as well as gaps in knowledge and access to pregnancy-related care for Karen Burmese refugee women in Fort Worth.
Methods: Focus groups were designed to identify the baseline level of pregnancy knowledge and access to care. Discussion with key players in the Karen community led to the selection a natural leader within the population to conduct the focus groups, which were held on two different days and times in the apartment complex where the majority of the population resides.
Results: Respondents shared both positive and negative reactions regarding delivering a baby in the U.S based upon their personal experiences or stories they had heard from friends and relatives who had given birth. Positive responses included the ability to receive an epidural to relieve labor pain, access to prenatal vitamins, vaccines, and medicines, and the sentiment that in America, doctors are able to use tests and technology to make sure the baby receives good care. Negative responses included a lack of proper or culturally sensitive interpretation at provider visits, lack of proper information sharing by staff about the purposes of and alternatives for medical procedures, and long wait times at the hospital before receiving care. Barriers cited to receiving proper care include transportation, lack of insurance coverage, limited English proficiency, and anxiety about not being able to navigate the health system.
Conclusions: Karen Burmese women in Fort Worth view the American health care system with a mixture of gratitude and trepidation. Full integration and use of this system for early access to prenatal care will involve outreach and education efforts among the Karen as well as greater understanding and flexibility on the part of health care providers.
Sponsor Sid Richardson Foundation
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2105 Poster **Classification:** SPH Student
Presenter: Shlesma Chhetri **Department:** Behavioral & Community Health
Authors: Shlesma Chhetri, University of North Texas Health Science Center at Fort Worth; Gabrianna Saks, University of North Texas Health Science Center School of Public Health; Emily Spence-Almaguer, MSW, PhD, University of North Texas Health Science Center at Fort Worth; Cindy Crain, Tarrant County Homeless Coalition

SURVIVAL SEX ON THE STREETS: RESULTS FROM THE HOMELESS WOMEN'S HEALTH AND VICTIMIZATION STUDY

Purpose: The Homeless Women's Health and Victimization Study was conducted in order to explore the unique experience of violence and victimization among homeless women and the effects these experiences have on physical and mental health. This poster will focus on the results related to transactional sex.
Methods: This study utilized non-random, purposive sampling of women utilizing emergency shelter services in the East Lancaster area of Fort Worth, Texas. A total of 150 face-to-face interviews were conducted with homeless women by trained volunteers from December 2012 to May 2013. The interview consisted of closed and open ended questions covering recent victimization, service utilization, mental and physical health, healthcare utilization, prior abuse, and transactional sex. Quantitative data analysis was performed using statistical software and a grounded theory approach was used for qualitative data analysis.
Results: One in every 4 participants reported that they had engaged in survival sex, or transactional sex acts intended to meet subsistence needs or substance dependencies. Many of those who had traded sex did so to meet their most basic needs. One in every 6 women had exchanged sex for a safe place to stay and 13% had traded sex for something to eat. Women who had engaged in survival sex activities were significantly more likely to report victimization in the past 12 months (p=.001), prior intimate partner violence (p=.03), and childhood physical and sexual abuse (p=.007). Sexual or physical victimization during childhood appeared to have an influential role: 75% of those who engaged in sex trade reported childhood victimization compared to 38% of women who reported no engagement in sex trade. Those engaged in survival sex were also significantly more likely to show signs of psychiatric distress (p=.004) and other health indicators.
Conclusions: These findings contribute to a comprehensive understanding of the complex experience of homelessness and give new insight into the prevalence, context, and correlates of survival sex among women who are homeless. The results indicate that victimization may play a role as both a precursor and product of engaging in survival sex. The increased risk for psychiatric distress and other health conditions emphasize the serious health implications of transactional sex among homeless women.
Sponsor Tarrant County Homeless Coalition
IRB/IACUC# IRB 2012-203

2106 Poster **Classification:** GSBS Student
Presenter: Rizwan Nazarali **Department:** Pharmacology & Neuroscience
Authors: Rizwan Nazarali, University of North Texas Health Science Center at Fort Worth; Rebecca Cunningham, PhD, University of North Texas Health Science Center at Fort Worth

TESTOSTERONE REPLACEMENT THERAPY: ONE SIZE FITS ALL?

Purpose: Testosterone replacement therapy (TRT) has been used to improve libido and overall well-being in men. Recently, there has been a rise in off-label TRT to treat diminished libido in women. Current studies from our laboratory have shown that testosterone is linked with cognition and memory in aging men. However, the relationship is murkier when associating cognitive impairment with testosterone in aging women. A key component of aging is oxidative stress (OS). Previous studies by our laboratory have shown that OS and the male sex hormone, testosterone, have a significant impact on neuronal viability, and subsequently cognition.

Methods: An analysis of plasma biomarker proteins for OS (homocysteine) and testosterone was conducted on 177 Mexican-American women, 185 Caucasian women, 117 Mexican-American men, and 116 Caucasian men with a mean age of 72 from the Texas Alzheimer's Research and Care Consortium (TARCC) to determine their role on memory and cognitive impairment. Participants were stratified according to their OS status (Low OS < 12 mol/L and High OS >12 mol/L of homocysteine). Participants were diagnosed as cognitively intact, mild cognitive impairment, or Alzheimer's disease.

Results: Our results show that OS was significantly higher in men relative to women. Under a low oxidative stress environment, testosterone did not have a significant impact on memory or cognitive impairment, regardless of ethnicity or gender. However, in a high OS environment, testosterone significantly improved memory function and decreased cognitive impairment in Mexican-American men. Furthermore, testosterone had a negative impact in Caucasian men, in which testosterone increased cognitive impairment. Testosterone had no effect on memory or cognitive impairment in women, irrespective of ethnicity.

Conclusions: Collectively, the data support the hypotheses that: 1) testosterone mediates cognitive impairment in Caucasian men with high OS, 2) TRT therapy may be a viable option for Mexican-American men and, 3) testosterone does not alter memory or cognitive impairment in women. Therefore, the use of TRT should be tailored to an individual with respect to ethnicity and gender.

Sponsor Texas Garvey Foundation to RLC
IRB/IACUC# TARCC IRB protocol#: 2007-137TARCC Consortium

2107 Poster **Classification:** TCOM DO Student
Presenter: Laura Baker **Department:** Rural Medicine
Authors: Laura Baker, University of North Texas Health Science Center at Fort Worth; Pinal Patel, University of North Texas Health Science Center at Fort Worth; Ana Chiapa-Scifres, MS, MPH, University of North Texas Health Science Center at Fort Worth; John Bowling, DO, University of North Texas Health Science Center at Fort Worth

WHAT ARE THE BARRIERS TO BREAST CANCER SCREENING/MAMMOGRAPHY IN FREDERICKSBURG, TX?

Purpose: There are many barriers to breast cancer screening. Research has shown that lack of information about mammography, lower socioeconomic status, lower education level, lack of insurance, and travel burden are barriers to breast cancer screening. A lot of these barriers tend to exist in different proportions in a rural community versus an urban city. These barriers exist in Fredericksburg, but to varying degrees than other areas. The aim of this study was to determine what the barriers to breast cancer screening are in Fredericksburg, TX.

Methods: Surveys were distributed to female patients over the age of 40 in Fredericksburg Clinic. The study sample included 36 surveys collected from January to March of 2013. The survey included demographic information, medical history, and factors related to breast cancer screening.

Results: Average age of surveyed patients was 61.4 years. About 70% of respondents said that travel was not a burden to getting an annual mammogram out of the 91.2% that were screened. Out of 77.1% surveyed who thought that travelling was not a burden to getting an annual mammogram, 60% would need to drive less than 20 miles for a mammogram. The relationship between doctor recommendation of a mammogram and insurance coverage was investigated using Pearson product-moment correlation coefficient. There was a positive correlation between the two variables, $r=.46$, $n=36$, $p=0.005$.

Conclusions: A statistically significant association was found between travel distance and whether they thought travel was a burden. Most patients will travel in order to get a once yearly mammogram but it can be considered to be a burden. Efforts to decrease the distance that some patients have to drive for a mammogram would increase the rates of women that get recommended screenings. Patients that had health insurance were more likely to see a doctor regularly and be recommended further health screenings. With an increase of healthcare coverage, doctors should be able to better recommend preventative health practices to patients.

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