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•ABSTRACT SUPPLEMENT•

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• Oral Presentations •

1 **ApoE-ε4 has mild, negative impact on the cognition of cognitively healthy Puerto Rican young-olds**. *José R. Carrión-Baralt*, Youssef Ahmad-Pereira†, Mary Sano‡, Irina Bespalova‡, Jeremy M. Silverman‡*. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Private Practice; ‡Mount Sinai School of Medicine, New York, New York, United States of America

Background: The apolipoprotein E ε4 (APOE ε4) allele is the sole major known genetic risk factor for late-onset familial and sporadic Alzheimer's Disease. It has also been associated with cognitive impairment and cognitive decline in non-demented elderly (especially young-olds, those people aged 60-74), but the strength of these associations has been shown to vary by cognitive domain, population and age group. Hypothesis: We hypothesized that the cognitive performance of the ε4 carriers would be worse than that of non-carriers, especially in verbal memory and executive function tasks. Objective: This study sought to assess the impact of APOE ε4 on the cognitive performance of a sample of cognitively healthy Puerto Ricans aged 60 or above. Methods: The sample consisted of 141 subjects. The evaluation of neuropsychological performance was based on the CERAD battery and variables were aggregated by principal component analysis (PCA). Comparison of neuropsychological performance between ε4 carriers and non-carriers was conducted using a multivariate analysis of variance. Results: There were 39 ε4 carriers and 102 ε4 non-carriers. PCA resulted in a solution of six cognitive factors. APOE ε4 carriers performed significantly worse than non-carriers in the Episodic Memory, Processing Speed and Semantic Fluency factors and in overall cognition ($p < .050$ in all tests). Conclusions: Our results suggest that, in this sample of cognitively healthy Spanish-speaking young-olds, being an ε4 carrier is associated with worse cognitive performance. Funding: This research was supported by NIA grant 1 K01 AG025203.

2 **Mutagenesis of Key Residues in a Dehydratase Domain from a Bacterial Polyunsaturated Fatty Acid Synthase**. *Delise J. Oyola-Robles*, John M. Sánchez-Pares†, Abel Baerga-Ortiz**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Rio Piedras, Puerto Rico

Polyunsaturated fatty acids (PUFAs) are components of human health and nutrition. PUFAs from deep-sea bacteria are synthesized by a modular polyketide synthase, which contains two conserved dehydratase (DH) domains responsible for the introduction of double bonds into the fatty acid. In order to study how the DH domains act to generate the double bonds in PUFAs, we performed site-specific mutagenesis of key amino acid residues in individual protein fragments from a bacterial PUFA synthase. Using this mutagenesis strategy we will be able to interrogate the individual functions within the multidomain protein. Both histidine and glutamic acid residues in positions 70 and 84', respectively, were mutated since they are thought to be the catalytic residues essential for the reaction to occur. Two different site-specific mutagenesis protocols were employed. Active site His70 residues were replaced for alanine by Site-Specific Megaprimer Mutagenesis protocols in both DH1 and DH2 domains. Additionally, we performed QuickChange Site-Directed Mutagenesis to replace the Glu84' residues for alanine in both domains. Double mutants of both His70 and Glu84' residues were generated by Site-Specific Megaprimer Mutagenesis protocols. We are presenting the enzyme assays developed in our laboratory to determine the effect of the mutations on the activity and mechanism of double bond formation, along with activity results of mutant proteins. Results demonstrate that both mutagenic methodologies are viable in the creation of mutant DNA. This work was funded by Grant CHE0953254 from the NSF to and MBRS-RISE Program (R25GM061838) of the UPR-MSC.

3 **Torque Expression Capacity of Wire-Ligated and Self-Ligated Orthodontic Brackets**. *Rudolph M. Wagner-Martínez, Timothy J. Flynn, Sona Tumanyan, Augusto R. Elías-Boneta, José E. López*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Background: In orthodontics, torque is a rotational force exerted along the horizontal axis of the bracket. Recent orthodontic studies have demonstrated variability in torque expression between active and passive self-ligating, and conventionally ligated brackets, indicating a discrepancy amongst their results. Objective: Evaluate torque expression capacity of orthodontic active and passive self-ligating brackets compared to the metallic wire-ligated brackets. Methods: This is an orthodontic experimental in-vitro study. Three different 0.022-inch slot bracket systems were used: Damon 3MX (passive self-ligating), In-Ovation–R (active self-ligating), and Ovation (wire-ligated). All brackets were torqued using the Torque Testing Machine (TTM) with 0.016x0.022-inch and 0.019x0.025-inch stainless steel archwires (N=24). Torque was applied in increments of 5 degrees (5º- 45º), and torque expression (g) was repeatedly measured for each bracket-wire combination four times. We used analysis of covariance (ANCOVA) to evaluate differences in torque expression between different types of brackets, while adjusting for archwire type and degree of torque. Results: In-Ovation showed the highest adjusted mean expression of Torque (509.75g), and Damon the lowest (479g), when compared to the control, Ovation (498g), $p<0.0001$. Torque expression was higher with higher degree of rotation ($p<0.0001$) and for the thicker archwire ($p<0.01$). Conclusions: In Orthodontics, active self-ligating brackets are more effective in torque expression followed by wire-ligated and then passive self-ligating brackets.

4 Anti-FhTP16.5 Antibody-Detection: Serodiagnosis of Fascioliasis. *José F. Gaudier-Pagán, Ana M. Espino*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Fasciola hepatica, also known as the liver fluke, causes an estimated annual deficit of $2billion to the global livestock industry and is also emerging as a major human pathogen. It is estimated that 2.4-17 million persons are infected and 180 million are at risk of infection. Infection is acquired following the ingestion of vegetation contaminated with metacercariae. The cost of treatment and the emergence of drug resistance, as seems in veterinary settings, suggest a need to identify proteins with potential for the development of serodiagnosis kits and vaccines. By searching a cDNA library of adult fluke using a rabbit serum with 4 wk of infection we isolated and characterized a cDNA encoding a 16.5kDa tegumental protein termed FhTP16.5. The aim of the current work is to assess the usefulness of this protein as an antigen in the serodiagnosis of human chronic fascioliasis using an indirect enzyme-linked immunosorbent assay (ELISA). A total of 148 human serum samples were obtained from serum banks of the National University of Cajamarca, Perú, the Infectious Diseases Hospital "Dr. Carlos G. Malbran", Buenos Aires, Argentina, the Central University of Venezuela and the Infectious Diseases Division, Washington University School of Medicine. Anti-FhTP16.5 antibodies were detected in the 94.23% of sera of humans with chronic fascioliasis and only minor cross-reactions with other parasitic diseases were found, which confirmed the potential use of this antigen to diagnose human fascioliasis and for epidemiological surveys. Research supported by the NIH/NIAID grant 1SC1AI096108-01A2 and the MBRS-RISE Program R25GM061838.

5 Metformin exerts beneficial effects against oxidative damage in cardiomyocytes: the role of acetylation of mitochondrial proteins. *Giselle A. Barreto-Torres, Sabzali Javadov*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Activation of AMP-kinase (AMPK) has been shown to exert cardioprotective effects against oxidative stress however molecular mechanisms underlying these effects remain elusive. In this study, we examined whether the beneficial effects of AMPK activation by metformin (Met) can be mediated through the acetylation of mitochondrial proteins. H9c2 cardioblast cells were divided into the following groups: 1) Control: no treatment; 2) H2O2: cells treated for 1 h with 100 μM H2O2; 3) Met: cells treated for 1 h with 10 mM Met; 4) Met+H2O2: cells pre-treated with 10 mM Met for 1 h followed by 1 h treatment with 100 μM H2O2. Hydrogen peroxide reduced the P-AMPK level by 32% ($P<0.05$) while Met increased phosphorylation of AMPK by 45% ($P<0.05$) compared to control, when both agents were used individually. Dephosphorylation of AMPK induced by oxidative stress was associated with mitochondrial dysfunction (loss of $\Delta\psi m$), ROS accumulation, and increased protein acetylation. Pre-treatment with Met prevented H2O2-induced inactivation of AMPK, enhanced $\Delta\psi m$, and reduced ROS production. The protective effects of Met against oxidative stress were associated with regulation of protein acetylation in mitochondria. Thus, our data demonstrates that the activation of AMPK has protective effects against oxidative stress in cultured cardiomyocytes due to the normalization of acetylation of proteins. Supported by NHLBI NIH, and APS.

6 Percepción de los estudiantes de enfermería sobre la efectividad de la enseñanza mediante el uso de simuladores humanos de mediana y alta fidelidad. *Naomi E. Tirado-Feliciano, Elizabeth Román*. Escuela de Enfermería, Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

El uso de simuladores de alta y mediana fidelidad surge como estrategia educativa respondiendo a los cambios en el cuidado de salud, en la educación y en la tecnología. Requieren evaluación de las estrategias usadas en la educación de los profesionales actuales y futuros. La integración exhaustiva de la práctica clínica, trabajo en equipo y la comunicación en un entorno seguro aumenta la probabilidad de reducir las tasas de errores en la prestación de servicios de salud. Objetivo: Examinar la percepción de los estudiantes de enfermería sobre la efectividad de la enseñanza mediante el uso de simuladores humanos de mediana y alta fidelidad. Metodología: Estudio de carácter descriptivo con una muestra participante de tipo no aleatoria por disponibilidad, integrada por 100 estudiantes. Implicaciones: Este primer estudio ayudará a generar datos en Puerto Rico que pueden ser utilizados para aumentar el número de escuelas que fomentan el uso de la tecnología de simuladores de mediana y alta fidelidad como estrategia educativa. Los currículos y las estrategias instruccionales que se usan en la preparación de profesionales de la salud, serán más adecuadas a las exigencias de servicio de salud seguro y efectivo. Hallazgos: Las conclusiones del estudio permiten establecer la importancia de la estrategia de la simulación con simuladores humanos de alta y mediana fidelidad como útil, segura y eficaz donde los estudiantes de Enfermería, la mayoría está de acuerdo que el uso de los simuladores es efectivo y de gran importancia en la enseñanza y aprendizaje. Approved by IRB.A8100411 junio 21, 2011.

7 Doxorubicin-loaded zirconium phosphate nanoparticles for selective anticancer drug delivery to breast cancer cells. *Millie L. González-Laboy*, Jennifer Cabán*, Mayra Ortíz*, Jorge L. Colón†, Adriana Báez**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto, Rio Piedras, Puerto Rico

Although Doxorubicin (DOX), has been extensively used for cancer treatment, it causes significant adverse effects such as cardiotoxicity. We have shown that zirconium phosphate nano-

particles (ZrP) are effective carriers of DOX into breast cancer cells MCF-7, and may potentially reduce DOX toxicity to healthy cells. Confocal microscopy (CM) was used to assess internalization and localization of doxorubicin-loaded ZrP nanoparticles (DOX:ZrP) in MCF-10A mammary cells (normal) and compared to MCF-7 breast cancer cells. Cytotoxicity of ZrP and DOX:ZrP was studied using MTT assay and changes in cell cycle were assessed by flow cytometry. Cellular uptake of DOX:ZrP was higher in MCF-7 than in MCF-10A cells. ZrP showed negligible cytotoxicity to MCF-7 and MCF-10A cells. DOX:ZrP and free DOX showed comparable cytotoxicity toward MCF-7 cells. Higher inhibition of cell proliferation was observed in MCF-10A cells treated with DOX versus those treated with DOX:ZrP. Both DOX and DOX:ZrP altered MCF-10A and MCF-7 cell cycles. But, the effect was more evident with MCF-7 cells as G1 and S phases were reduced and cells were arrested in G2-M. Our results show that ZrP nanoparticles have the potential of being a versatile platform to transport anticancer agents resulting in improved anticancer therapy by reducing the cytotoxic effect on healthy tissue. This work was partially supported by the Department of Otolaryngology, the Associate Deanship for Biomedical Sciences, and the NIH grants R25GM061838, 2G12-RR00305, 8G12-MD007600, ISI0RR-13705-01 and DBI-0923132.

8 **Ciliary neurotrophic factor (CNTF) affects the speed and number of regenerating axons after optic nerve injury**. *Giam S. Vega-Meléndez, Jonathan M. Blagburn, Rosa E. Blanco*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Ciliary neurotrophic factor (CNTF) promotes survival and axonal regeneration after neuronal damage. In the present study we investigate the effects of exogenous application of CNTF on the speed, number and distribution of regenerating axons after optic nerve crush. We are interested in comparing the relative efficacy of this factor when compared with other growth factors like brain-derived neurotrophic factor (BDNF) and basic fibroblast growth factor (FGF-2); and also in determining whether applications intraocularly or to the optic nerve have different effects. To that end we performed optic nerve crush and applied either saline solution or growth factors (CNTF, BDNF or FGF-2) and examined the optic nerves at one, two and three weeks after axotomy. An antibody against GAP-43 protein was used as a marker for regenerating axons. We performed measurements of the length, number and density of axons projecting beyond the lesion. All three factors, whether applied to the optic nerve or intraocularly, significantly enhanced the speed of the regenerating axons, with CNTF doubling the speed of regeneration. The number of regenerating axons at two weeks was also significantly increased by CNTF and FGF-2, but not BDNF. All the effects described above are inhibited by the appropriate receptor-blocking antibodies. We conclude that FGF-2 and CNTF, in particular the latter, play an important role in optic nerve regeneration in the amphibian visual system and we need to further understand the mechanisms of these effects. This work was supported by NIH-GM093869, RCMI-G12 RR03051, NSF-DBI-0959225, and NSF-DBI-0115825.

9 **Non-Coding RNA in Breast Cancer Therapy Resistance**. *Luis D. Borrero-García*, Linette Castillo†, Roxana Redis‡, George Calin‡, Suranganie Dharmawardhane**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Universidad Central del Caribe, Bayamón, Puerto Rico; ‡University of Texas MD Anderson Cancer Center, Texas, United States of America

Increased epidermal growth factor receptor (EGFR) expression contributes to breast cancer malignancy. Our objective is to identify mechanisms of EGFR therapy resistance in breast cancer. The hypothesis is that non-coding RNAs(ncRNAs) regulate EGFR therapy resistance via modulation of cancer gene expression. Anti-EGFR therapy (gefitinib) resistant variant of the gefitinib sensitive human breast cancer cell line SKBR3 (SKBR3 GR) was developed. Differentially expressed ncRNAs in SKBR3 GR and parental cells were identified from qRT-PCR analysis. We found a novel long ncRNA LONG1 to be downregulated in the SKBR3 GR cells compared to parental cells. The microRNAs (miR-) 221/222, putatively regulated by LONG1 and associated with cancer malignancy, were upregulated in the SKBR3 GR cells. miRs-221/222 promote cancer by negative regulation of a number of tumor suppressors to promote epithelial-to-mesenchymal transition (EMT), and these targets were downregulated in the SKBR3 GR cells. We also found miR-200a, a negative regulator of EMT to be downregulated in SKBR3 GR cells. SKBR3 GR cells also upregulated the miR-200 targets: Zeb1, a transcriptional repressor of E-cadherin, an epithelial cell marker; and β-catenin, a regulator of pro-cancer gene transcription in the absence of an E-cadherin axis. Therefore, the downregulation of LONG1 and upregulation of miR-221/222, coupled with downregulation of miR-200a, results in increased EMT and contribute to the acquisition of therapy resistance. Grant support:NIH/NIGMS SC3GM094824(SD), NIH2G12RR003035(UCC) and G12RR03051(UPRMSC), and PR Science, Technology and Research Trust.

10 **Characterization of an Acyl Carrier Protein from a Polyunsaturated Fatty Acid Synthase**. *Uldaeliz Trujillo-Rodríguez*, Edwin Vázquez-Rosa†, Delise Oyola-Robles*, Carol González†, Irvin E. Vega†, Orestes Quesada†, Abel Baerga-Ortiz**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Rio Piedras, Puerto Rico

Acyl carrier protein (ACP) is a highly conserved domain that plays an essential role in the biosynthesis of polyunsaturated

fatty acids (PUFAS). Activation of ACP occurs by a covalent attachment of a 4'-phosphopantetheinyl group derived from coenzyme A (CoA) by a phosphopantetheinyl transferase (PPTase) in a reaction describe as phosphopantetheinylation (Ppant). Absence of PPTase compromises the efficiency of PUFA production; therefore, this modification is considered a bottleneck in PUFA biosynthesis. During the course of our research, we have observed an unprecedented self-phosphopantetheinylation activity in the first ACP domain of the PUFA synthase. We have performed a bioinformatic analysis to identify potential residues involved in this activity and mutated them by site-directed mutagenesis. The wild type ACP and mutants (E12A, D31A, D33A, S44A and R76A) were expressed and purified using column chromatography method and the incorporation of Ppant was measured by mass spectrometry. The wild-type ACP becomes self-modified in the presence of CoA. The mutants did not show any self-modification, indicating that these residues are indeed, involved in the auto-catalyzed chemical transformation. Keywords: Acyl Carrier Protein, Polyunsaturated fatty acid, Phosphopantetheinylation, Phosphopantetheinyl Transferase. This work was funded by MBRS-RISE Program, Grant R25GM061838.

11 Significant mitochondrial DNA damage in skeletal muscle from Huntington's disease mouse models. *Sulay Rivera-Sánchez, Karina Acevedo-Torres, Lourdes Colón-Ortiz, Joan Ballista-Hernández, María R. Castro, Carlos A. Torres-Ramos, Sylvette Ayala-Peña*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Huntington's disease (HD) is a fatal neurodegenerative disease caused by a mutation in the huntingtin gene that targets mainly striatal neurons. HD symptoms include motor decline and cognitive and emotional impairment; however, weight loss and muscle wasting are also characteristic symptoms in HD, suggesting that skeletal muscle (SKM) is also a target of mutant huntingtin (mhtt). The mechanisms leading to HD are unknown, but evidence strongly supports a role for oxidative stress and mitochondrial dysfunction. Our laboratory demonstrated that mitochondrial DNA (mtDNA) damage in brain is a hallmark of HD. However, the effects of mhtt on SKM mtDNA are unknown. We hypothesize that mtDNA damage is increased in SKM as in brain and that antioxidants prevent this damage. In this study, we evaluated mtDNA damage by quantitative PCR and the antioxidants tested were coenzyme Q10 and idebenone. Our findings showed age-dependent increases in mtDNA lesions and mtDNA depletion in SKM from two mouse models of HD (R6/2 and HD150KI) compared to wild type (WT) mice. Treatment with coenzyme Q10 restored SKM mtDNA abundance to WT levels, whereas idebenone improved mitochondrial respiration and protected striatum and cerebral cortex from mtDNA damage. Both antioxidants improved motor performance as tested by rotarod and prevented weight loss. Overall, these findings support a role for SKM mtDNA damage in HD and suggest that antioxidants that target both the brain and SKM may represent a promising pharmacological approach to prevent HD pathogenesis. Supported by NINDS U54-NS039408, NCRR R25-GM061838, NCRR 2G12-RR003051, and 8G12-MD007600.

12 Proteomic Analysis of Molecular Interactions of the Macrophage-derived Protease Cathepsin B During HIV-1 Infection In Vitro. *Yisel M. Cantres-Rosario*, Marines Plaud-Valentín*, Raymond Quiles†, Juliana Pérez-Laspiur*, Yolanda Rodríguez*, Loyda M. Meléndez**. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; *Interamerican University and University of Puerto Rico, Rio Piedras, Puerto Rico

Background: Human immunodeficiency virus type 1 (HIV-1) infection can lead to HIV-associated neurocognitive disorders (HAND). Neurodegeneration is known to be important in HAND. Lysosomal cysteine protease cathepsin B is secreted from HIV-1 infected monocyte derived macrophages (MDM) and involved in neuronal death in vitro. We hypothesized that cathepsin B is part of a network of proteins in the extracellular environment related to neurodegeneration. Methods: We cultured MDM from 5 donors and infected with HIV-1ADA. Supernatants were collected at day 12 post-infection, dialyzed and subjected to immunoprecipitation (IP) using cathepsin B monoclonal antibody. To identify co-immunoprecipitated peptides, samples were analyzed by liquid chromatography mass spectrometry (LC-MS/MS). Uninfected and HIV-infected MDM samples were compared using the unique peptides. Relevant proteins were analyzed using Ingenuity Pathway Analysis (IPA) software. Results: A total of 14 differentially expressed proteins were identified between HIV-1 infected and control MDM. Annexin A2, macrophage metalloelastase (MMP12) and matrix metalloproteinase 9 (MMP9) co-IP with cathepsin B. These proteins were important hubs in the network provided by IPA, suggesting modifications of the extracellular matrix. Conclusions: Lack of inhibition of cathepsin B and its association with other proteases might be triggering signaling cascades and contributing to extracellular matrix modification. Further studies on these networks are needed, to determine the actual mechanisms of the neurotoxicity involving MDM-derived cathepsin B during HIV-1 neuropathogenesis.

13 A Computer Simulation of Radiotherapy Treatment of Prostate Carcinoma. *Verónica De La Rosa-Rosario, Ernesto P. Esteban, Giovanni R. Deliz*. University of Puerto Rico, Humacao, Puerto Rico

Prostate cancers detected in any country including Puerto Rico have been increasing among men forty years and older. If the prostate cancer is confined, prostatectomy surgery and radiotherapy are the standard treatments. However, if metasta-

sis occur, chemotherapy followed by a radiotherapy treatment may provide relieve but cancer may have spread to other body organs and could be lethal. In this research, we use a developed biomathematical model (PRHSJ, vol 29, 3, 2010) to simulate external beam radiation to the prostate. Low and high dose brachytherapy could also be mimicked. Because prostatic cancers are significantly sensitive to changes in dose fractionation, the goal in this research is to obtain the optimal fractionation for the treatment of prostatic cancer using either low or high dose rates. Also, using the developed computer program is possible to estimate when a recurrence could take place. Finally, the obtained results are compared with the standard linear-quadratic model. This research was supported by the University of Puerto Rico-Humacao and the NIH-RISE program.

14 **Reprogramming nonfunctional stem cells into a functional state**. *Ricardo A. Rossello-Nevares*, Andreas Pfenning†*. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Massachusetts Institute of Technology, Boston, United States of America

Cell reprogramming is a powerful tool that may be used to address a plethora of issues in biology ranging from understanding evolution, to studying and treating diseases. Derivation of embryonic stem cells (ESCs) is a lengthy process that sometimes produces cell lines that have all of the features inherent in this cell type, but fail to incorporate into the germline. Identifying this limitation may take up to several months, while the cell line is established. Here, we determine the differential expression patterns in 3 pairs of mouse cell lines derived from different strains (3 functional and 3 nonfunctional) and test the hypothesis that ESC functionality can be restored. Using microarray and bioinformatic analysis, we determined a priority list of differentially expressed genes. The list included genes such as HBEGF, CCR5, and ERAS, which were downregulated in the nonfunctional ESCs. Validation was performed by qRTPCR. Gene cassettes and lentiviral vectors were generated and nonfunctional cells were induced to overexpress these genes. Here we report that, at least one combination of transfections (ERAS+HBEGF) in non-functional cells was able to alter the expression profile and establish functionality. This was determined by in-vivo chimeric generation of mouse embryos with reprogrammed nonfunctional cells. This suggests that, through reprogramming, it is possible to restore the functional naïve state of a nonfunctional ESC. The results may be a translational gateway into reprogramming primed Human ESCs, (currently, the only hESC state), into a naïve state with full ESC features and function.

15 **HCN2 channel and its potential implication in cocaine addiction**. *Bermary Santos-Vera*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Disruption of biological activities among neuronal components of the Mesocorticolimbic system (MCL) has been implicated in the pathophysiology of drug abuse. Changes in the electrophysiological properties of neurons involved in the reward circuit seem to be of utmost importance in addiction. The Hyperpolarization-Activated Cyclic-Nucleotide Current, Ih, is a prominent mixed cation current present in neurons. The biophysical properties of the Ih current and its modulatory role in cell excitability depend on the expression profile of the Hyperpolarization-activated cyclic nucleotide gated channel (HCN) subunits. We investigated whether cocaine-induced behavioral sensitization, an animal model of drug addiction, provokes region-specific changes in the protein expression of the HCN2 channel's subunit in the MCL system. Brain samples from the ventral tegmental area, prefrontal cortex, nucleus accumbens and hippocampus were analyzed using Western Blot technique. Our findings show that cocaine treatment induced a significant increase in the expression profile of the HCN2 subunit in both, its glycosylated and non-glycosylated protein isoforms, in all areas tested. The increase in the glycosylated isoform was only observed in the ventral tegmental area. Together, these data suggest that the observed changes in MCL excitability during cocaine addiction might be associated to alterations in the subunit composition of their HCN channels.

16 **Capillary Malformation: Expression of Angiogenic and Vasculogenic Factors**. *Rafael A. Couto BA*, Javier A. Couto BS*, Reid A. Maclellan MD*, Joyce Bischoff PhD†, Matthew Vivero BS*, Patricia Purcell PhD*, Steven J. Fishman MD†, John B. Mulliken MD*, Arin K. Greene MD, MMSc**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Maclellan Children's Hospital Boston/Harvard Medical School Vascular Anomalies Center, Boston, United States of America

Background: Capillary malformations are associated with soft-tissue hypertrophy. The purpose of this study was to determine if angiogenesis or vasculogenesis is upregulated in this overgrowth condition. Methods: Capillary malformation specimens were collected prospectively from nine patients after resection: lip (n=6), lower extremity (n=3). The average age of the cohort was 25.9 years (range 10-49 years). Neovascularization was compared to normal control tissue. Specimens were analyzed by immunohistochemistry for CD31 (microvascular density), CD31/H3 (proliferating endothelial cells), and CD34/CD133 (endothelial progenitor cells). Quantitative real-time reverse-transcriptase polymerase chain reaction (qRT-PCR) was used to determine mRNA expression of progenitor cells (CD133) and factors that recruit them: vascular endothelial growth factor (VEGF-A), hypoxia-inducible factor-1α (HIF-1α), matrix metalloproteinase-9 (MMP-9), and stromal cell–derived factor-1α (SDF-1α). An-

giopoetin-1,-2 (ANG-1,-2) and VEGF receptors (VEGFR1,2 and neuropilin1,2) also were quantified using qRT-PCR. Results: Microvascular density (6.2%) was greater in capillary malformations compared to normal specimens (2.8%) (p = 0.03). Endothelial proliferation was noted in capillary malformations (5.1/field), but not in normal tissue (p = 0.01). Endothelial progenitor cells were absent in both study and control tissues. ANG-2 (2.7-fold), neuropilin 1 (2.0-fold), and neuropilin 2 (3.3-fold) were increased in capillary malformations (p = 0.005), whereas VEGF-A (0.5-fold), VEGFR1 (0.8-fold), VEGFR2 (1.7-fold), ANG-1 (1.1-fold), HIF-1α (0.7-fold), MMP-9 (1.8-fold), SDF-1α (1.6-fold), and CD133 (0.4-fold) were not elevated (p = 0.6). Conclusions: Capillary malformations exhibit elevated vasculature and proliferating endothelial cells; progenitor cells are not present. Neovascularization by angiogenesis may be involved in the evolution of capillary malformations. Further investigation may enable the prevention of soft-tissue overgrowth using pharmacotherapy.

17 **Caveolin-1 Supports the P2Y2 Nucleotide Receptor Signaling**. *Namyr A. Martínez-Alicea*, Alondra Mali-Ayala*, Magdiel Martínez*, Mónica Quiñones†, Jorge D. Miranda*, Walter Iván Silva**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Interamerican University, San Juan, Puerto Rico

Damage to the CNS cells' can cause a differential spatiotemporal release of multiple factors into the extracellular space. Among such factors, nucleotides, and their interaction with the P2Y2 nucleotide receptors (P2Y2Rs) have gained prominence as putative modulators of gliotic responses after CNS injury. Understanding this receptor's activation and signal transduction is imperative as it might potentially unveil new venues for disease treatment and/or modification. Yet, the molecular mechanisms underlying these interactions and responses remain to be explored. Discontinuous sucrose density gradient separation of 1321N1 cells (expressing recombinant hP2Y2R) homogenates revealed co-fractionation of P2Y2Rs in cav-1 (+) membrane-raft fractions. Likewise, confocal microscopy revealed that a significant percent of P2Y2Rs co-localized with cav-1 in its sub-cellular distribution. Immunoprecipitation studies of the P2Y2R revealed a possible interaction with cav-1. Blocking cav-1 expression in hP2Y2-1321N1 cells elicited abnormal intracellular Ca2+ mobilization responses and uncharacteristic patterns of AKT and P38 phosphorylation levels when stimulated with nucleotide agonists, as determined by microfluorometric calcium imaging analyses and immunoblotting, respectively. Our findings suggest that P2Y2Rs reside in membrane caveolae of non-stimulated 1321N1 cells and that this sub-cellular compartment may couple its downstream signaling machinery. We hypothesize that P2Y2Rs' signaling cascades are linked to their expression in cav-1 positive microdomains.

18 **Alteplase: Non-surgical strategy for severe pulmonary empyema treatment**. *Mariana S. Middelhof-Ayala*, Gilberto Puig†, Anabel Puig†*. *San Juan City Hospital, San Juan, Puerto Rico; †University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Case of 6-week-old male patient presented to Emergency Room with history of cough for 5 days, quantified fever of 38ºC for 2 days, and mild respiratory difficulty with negative RSV and influenza test. Patient was admitted with diagnosis of bronchiolitis and clinical sepsis. After 24 hours, he developed moderate respiratory distress with associated pleural effusion, being admitted to the Pediatric Intensive Care Unit for cardiorespiratory support. Patient deteriorated and developed a spontaneous left pneumothorax for which a chest tube was placed and treated with targeted therapy for Staphylococcus. Pleural fluid analysis confirmed empyema and a culture positive for Staphylococcus aureus. Pleural effusions turn quickly from an exudative to a fibrinopurulent stage. Due to the enormous pleural effusion that was not resolved; a second chest tube was placed for drainage. Patient's condition begins to improve after two doses of alteplase (0.1mg/kg). A fluid drainage of less than 40 ml per day during the next 5 days was observed. Our patient underwent chest radiograph approximately 3 weeks after resolution of symptoms, showing a complete resolution of parapneumonic effusions without residual pulmonary injury. Despite the improvement in the technology available for diagnosing and treating empyema, the management of empyema in children remains controversial. Fibrinolytic therapy with alteplase was effective with limited side effects compared with video-assisted thoracic surgery, which in turn is an alternative tool for scenarios where there is no immediate availability of a thoracic surgeon and/or equipment.

19 **Series of Sudden Unexpected Deaths of Captive Rhesus Macaques caused by Encephalomyocarditis Virus**. *Alexandra M. González-Vélez*, Olga D. González DVM, ACVP†*. *University of Puerto Rico, Rio Piedras, Puerto Rico; †Caribbean Primate Research Center, University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Encephalomyocarditis virus (EMCV) is a rodent transmitted picornavirus that can cause sudden unexpected death in captive rhesus macaques. We report multiple recent sporadic cases of EMCV at the Caribbean Primate Research Center (CPRC). Rhesus macaques infected with EMCV die of acute severe pulmonary edema. Distinct gross lesions in the heart or brain are usually unapparent. Some of the cases may have minimal to moderate myocarditis. Definitive diagnosis of all of the suspected cases has been established via Real-Time Polymerase Chain Reaction (RT-PCR) utilizing heart tissue. These cases typically lacked histopathologic lesions of the central nervous system and in addition had negative RT-PCR of brain tissue suggesting

there may be a particular tissue tropism. Viral serological surveys of rhesus macaques at Cayo Santiago performed in the late 1980s confirmed a low prevalence for EMCV, indicating that not all cases of EMCV in rhesus macaque have a fatal outcome. To the authors knowledge there are no published reports regarding morbidity of EMCV in the human population of Puerto Rico. We report these cases to alert the medical community about EMCV due to its zoonotic potential. EMCV has been implicated as a rare cause of myocarditis and encephalitis in humans. It should be considered as a differential in cases of undetermined myocarditis and/or encephalitis in humans.

20 Evolution of Human Immunodeficiency Virus: a translational view into Pulmonary Hypertension? *Robert A. López-Astacio*, Samantha M. Reno†, Rachel O. Schoen†, Sonia Flores†, Sharilyn Almodóvar†*. *University of Puerto Rico, Ponce, Puerto Rico; †University of Colorado Denver, Colorado, United States of America

Individuals infected with Human Immunodeficiency Virus (HIV) are prone to pulmonary hypertension (PH), which affects more HIV+ (0.05%) than HIV- (0.001%) people; this may be underestimated because HIV+ people are not routinely tested for PH. The causes of HIV-PH remain unknown however, HIV proteins may play a crucial role; recently, we found mutations in HIV-Nef associated with PH in humans. Because the virus may evolve as a whole, we thought that HIV Envelope (Env) may also harbor PH-associated mutations. We hypothesized that with Nef mutations, HIV-PH patients will also harbor Env with more selective pressures, fitter to evade the immune system (more glycosylated), and more pathogenic (T-tropic viruses vs. M-tropic), compared to controls; which can be predicted in silico. We cloned HIV-nef and env from the blood of 8 HIV+ patients attending an HIV Clinic in San Francisco, who are tested for PH. We analyzed 232 HIV Env & Nef sequences; we found more Env selective pressures and T-tropic viruses along with mutations in Nef and more T-tropic viruses in HIV-PH samples. Our data suggest that mutations in HIV, in the view of PH may also involve Env. Further studies may confirm co-evolution of HIV Env-Nef in PH in a larger sample size. Our highly translational studies may offer HIV evolutionary hints to scientists. Furthermore, these biomarkers may help expedite testing for PH in HIV+ people who may be still undiagnosed worldwide; this may also help estimating the incidence of HIV-PH in Puerto Rico, which remains unknown. This study was supported by UPR-PRISE (NIH/NIGMS-R25GM096955), NHLBI K01HL103196, and R01HL083491.

21 The Emotional Dysregulation model in Puerto Rican Anxious and Healthy subjects. *Carlos M. Morales-Rodríguez*, Laura López-Roca†, Polaris González-Barrios‡, Karen G. Martínez-González**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Caguas School of Medicine, Caguas, Puerto Rico; ‡Ponce School of Medicine and Health Sciences, Ponce, Puerto Rico

The emotional dysregulation model proposes the interaction of biological factors and stressors with the person's affective style can lead to emotional dysregulation (ED) and then pathology. We studied these components and their interactions and evaluated if they play a role in the presence of pathology in our Puerto Rican sample. Fifty-eight Puerto Ricans (43 anxiety disorder and 15 healthy) were included for analysis. The ED model was tested using the personality five-factor model (NEO-FFI) inventory and trait anxiety as measures of biological risk factors for anxiety, Childhood Trauma Questionnaire (CTQ) as a measure of stressors, the positive and negative affect scale (PANAS-T), and the Emotional-Dysregulation scale (EDS). Analysis included t-tests, Pearson-Correlations and a Logistic Regression model. In comparison, anxiety subjects showed statistically significant increased scores in emotional dysregulation, neuroticism, trait anxiety and negative affect. Anxiety subjects also reported more history of childhood neglect. Strong ($r>0.50$) correlations were seen between EDS and trait, negative affect, and neuroticism; and moderate ($r>0.25$) correlations with CTQ subscales, and extraversion. The predictive model for anxiety diagnosis presence ($r2= .688$) only included EDS ($\beta= .161$, $p= .050$), Age ($\beta= .209$, $p= .031$). We were able to confirm that ED is not only related to many risk factors for anxiety in our sample, but that it was the only predictive factor for the presence of anxiety disorder. This is an important finding given the importance of emotion regulation techniques in the treatment of Hispanic patients with anxiety.

22 Macrolide use as prophylaxis for ventilator associated pneumonia. *Esteban A. Del Pilar-Morales, Carlos Sánchez-Sergenton, Marivelisse Soto-Salgado*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Background. Macrolides have shown beneficial nonantibiotic effects in experimental studies and chronic pulmonary conditions, its efficacy to prevent ventilator-associated pneumonia (VAP) in patients on mechanical ventilation was tested. Methods. Twenty patients on mechanical ventilation without evidence of VAP were enrolled in a double-blind, randomized, single center trial from August 2011 to March 2012. Patients assigned to either a) Azithromycin, b) Clarithromycin, or c) placebo. Patients received therapy for 14 days and observed closely. Main outcomes were development of VAP, time to development of VAP, duration of mechanical ventilation, and mortality. Results. Groups well matched for demographic characteristics, disease severity, and admission diagnosis. Analysis of 20 patients enrolled revealed 71.43% who did not receive macrolide developed VAP at a median time of 5 days. No patients on either macrolide showed evidence of VAP at the end of the observation period ($p<0.004$). Patients on macrolides had fewer tracheal secretions when compared to control. We observed that those

receiving macrolides had median intubation time shorter than control (azithromycin: 3.4±1.7 days, clarithromycin: 8.8±3.6, and control: 14.5±11.0 days; p=0.035). No statistical significance for all-cause mortality between groups. Conclusions. Macrolides showed to be an effective method for prevention of VAP, accelerated weaning from mechanical ventilation and improved overall clinical state. The mortality rate at day 14 was not altered. Results are encouraging and render new perspectives on the management of patients on mechanical ventilations.

23 **Development of Culturally Sensitive Preventive Interventions for Elders: From Theory to Practice**. *Elsa M. Orellano-Colón*, Jennifer Cardona*, Linell Vargas*, Mariel Volci*, Daniel Lloret*, Guillermo Bernal†, Nelson Varas†*. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Rio Piedras, Puerto Rico

Despite clear mandate for culturally competent practice to achieve health equity and access to populations of different cultural backgrounds, little practical guidance is available to develop culturally sensitive interventions. The aim of this study was to develop an activity-based health promotion intervention to meet the daily participation needs of Hispanic older adults who live alone using a culturally sensitive framework to increase its ecological validity. A concurrent transformative mixed method design was used for the content validation of the intervention. It involved the collection of quantitative and qualitative data at the same time in one data collection phase. Twelve community members from two activity centers for the elderly in Puerto Rico and six aging experts were included. Quantitative data were collected using a content validity exercise and qualitative data through three focus groups. A working version of the activity-based intervention protocol targeted to Hispanic older adults who live alone was developed addressing the eight dimensions of the Ecological Validity Model. This process resulted in the successful development of a culturally sensitive intervention protocol that will be used to assess its feasibility and acceptability in a future study. The Ecological Validity Model can be used to culturally center health promotion interventions to others ethnic minority groups to augment the external validity and cultural competence of a treatment study. Supported by Grant Number R25RR017589 from the NCRR / R25MD007607 from the NIMHD. Approved by IRB.

24 **The Role Of FAAHC385A In Human Threat Anticipation**. *Francisco J. Amador-Miranda*, Carmen L. Cadilla*, Andrew Holmes†, Gregory J. Quirk*, Karen G. Martínez**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †National Institute on Alcohol Abuse and Alcoholism, Laboratory of Behavioral and Genomic Neuroscience

FAAH (fatty acid amide hydroxylase) breaks down the endogenous endocannabinoid anandamide. A common genetic variation (FAAHC385A, A-allele) results in 50% less enzyme activity and therefore increased endocannabinoid levels. In humans, the A-allele is associated with increased substance abuse and obesity. A recent publication reports that healthy Caucasian A-allele carriers showed faster habituation during threat. Our aim was to investigate fear conditioning, together with neuroticism and threat processing. 48 consenting healthy adults (31 female, mean age 32) were screened with a Clinical Interview, matched by demographics, and grouped as A-allele carriers & C-allele non-carriers from saliva samples. Subjects completed the NEO personality inventory & STAI questionnaires, performed the Emotional Stroop Test (EST), and were trained in fear conditioning and extinction. Our Hispanic population showed a high A-allele frequency (A=0.40, C=0.60, HWE x2=1.2, p=0.297). Both carriers & non-carriers expressed similar levels of conditioned fear during conditioning & recall of extinction phases. However, A-allele carriers showed higher levels of neuroticism (52 vs. 43; p=0.005), and delayed disengagement to threat words in the EST (-4ms vs. -26ms; p=0.024). They also chose lower shock levels (1.9mA vs. 2.7mA; p=0.014). There was no difference in STAI levels. Early findings suggest that A-allele carriers have increased anticipation to threat, however, there were no differences in physiological fear responses. The higher frequency of the A-allele within the Hispanic population suggests an increased risk for reward-related pathologies.

25 **Facial Profile Esthetic Preferences in Puerto Ricans Seeking Orthodontic Treatment**. *Sebastián Rodríguez-Guerra, Mario Polo, Francis Picón, Omar García, Carmen Buxo, Augusto Elías-Boneta, Jazmín Oliva*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Little is known about facial profile preferences among Hispanic people supporting the need for research in order to satisfy their esthetic demands. Objective: To evaluate the influence of facial convexity and lip protrusion on the perception of facial attractiveness. Methods: A cross-sectional study was undertaken in two hundred and nine (51 males, 157 females) Puerto Ricans ages 15-66 at UPR's Orthodontic clinic and two private practices in San Juan. Subjects rated the attractiveness of a sequence of altered male and female profile images representing different degrees of profile convexities and lip protrusion. Attractiveness scores were obtained from the visual assessment of these digitally altered images. Median scores were calculated and non-parametric median tests were employed for comparison between different participants' personal profile, age groups and genders. Results: Both female and male concave profiles were scored as the least attractive. Subjects in our study scored straight to slightly convex male and female profiles as most attractive. Overall, participants' personal profile, age and gender did not have significant (p>0.05) influence on the perception of attractiveness of the profile patterns presented.

Conclusions: Although no statistical significant differences were found, our study suggests that our study group perceived male and female straight profiles as most attractive, as described elsewhere in the literature. However, raters favored convex tendencies for both male and female profiles. More research is needed in other Hispanic populations to better understand their esthetic preferences.

26 Considering How Anxiety Influences Selective Attention In Hispanic Subjects: Moving Beyond Differential Reaction Time In Emotional Stroop Task. *Polaris González-Barrios*, Rafael González†, Carlos Morales†, Karen G. Martínez†*. *Ponce School of Medicine and Health Sciences, Ponce, Puerto Rico; †University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

The Emotional Stroop Task (EST) has been employed to understand selective attention in anxiety disorders (AD). Limited focus on differential reaction time (RT) has prevented reaching such knowledge. This study considers how selective attention to neutral/threat words is influenced by state, trait and an anxiety disorder (AD) using EST average RT and accuracy (Acc). Method 102 subjects (46% AD) completed the State/Trait Anxiety Inventory and the EST. The sample was divided into high/low- State/Trait scores. We tested EST differences between groups with non-parametric assumptions. Repeated measures ANOVAs were performed for within subjects effects on RT and Acc across 6-block average trials, and between AD and high/low- State/Trait groups. Results High State group displayed slower RT to threat words ($P < .05$) than the Low State; this was not seen with Trait Anxiety. Within average blocks comprising neutral/threat words, there is a significant effect of State Anxiety on subjects' accuracy and RT ($F = 5.41$; $P < .05$), whereas Trait Anxiety is only associated to Acc ($F = 3.94$; $P < .05$). Additional repeated measures analyses, AD vs. Non-AD between group factor, displayed an effect in RT ($F = 19.73$; $P < .05$), providing corroboration of high levels of anxiety influence on overall EST. Discussion Our findings demonstrate the effect of anxiety in selective attention to threat stimuli, suggestive of automaticity of amygdala responses in the presence of threat (Bishop, 2008). Based on these preliminary findings, anxiety treatments should consider attentional systems networks.

27 Characteristics and Outcomes of Infants with Retinopathy of Prematurity (ROP) Who Required Pars Plana Vitrectomy. *Elisa Basora-Rovira, Juan Carlos Jiménez MD, Raul Pérez MD, Gloria Reyes*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Background: ROP affects premature infants and is one of the leading causes of blindness and visual impairment in this population. Prethreshold ROP infants are treated with thermal laser application. Those who do not respond appropriately, require surgery. Objective: Describe characteristics of infants with Prethreshold ROP screened at UPH during years 2004-2010 and compare with visual acuity after surgery. Methods: Medical records of infants with Severe ROP who underwent PPV during the years 2004-2010 were reviewed and data was compared between inborn and outborn infants. Results: 2,400 premature infants were screened for ROP during 2004-2010, of those, 68 (2.8%) required PPV. Data was analyzed from 49 (72%) of these infants. Most patients were born outside UPH (88%). Infants had a GA of 26 weeks (±2), BW of 980 grams (±323) and maternal age of 26 years (±6). Patients were first screened at 35 weeks PMA (±6), referred at 40 weeks PMA (±6) and operated at 48 weeks PMA (±13). VA outcome was evaluated in 28 (57%) patients. 83% of infants required governmental funding to cover expenses. Outborn infants underwent surgery at a later age ($p<0.005$). Infants referred for surgery at a later age ($p<0.005$) and operated at a later age ($p<0.001$) had worse visual outcomes. Conclusion: Barriers for prompt screening and surgical intervention result in poor visual outcomes for these patients. It is the state's job to overcome organizational structures that forfeit the preferential access to financial resources that low BW infants are entitled to. Efforts to screen at an earlier age will allow prompt intervention and better visual outcomes.

28 p-Rifle Score As A Tool To Determine Acute Kidney Injury In Neonates And Children Undergoing Cardiovascular Surgery: A Prospective Study. *Manuel J. Iglesias-García, Marta Suárez-Rivera, Anabel Puig-Ramos, Ricardo L. García*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Acute Kidney Injury (AKI) has a negative clinical impact on pediatric patients undergoing cardiovascular surgery, associated to prolonged Pediatric Cardiac Intensive Care Unit (PCICU) and hospital length of stay (LOS). p-RIFLE score has emerged as an effective and reliable alternative to diagnose AKI. Our hypothesis is that pRIFLE score predicts AKI in pediatric patients undergoing cardiovascular surgery, with AKI associated to increased morbidity and mortality. We conducted a prospective, observational cohort study of pediatric patients (0-21 years old) whom underwent cardiovascular surgery admitted to the PCICU at the Centro Cardiovascular de Puerto Rico y del Caribe from November 2011-June 2012. Demographic and clinical data was collected from the first 14 consecutive days after admission. 79 patients met the inclusion criteria, with 58% males and a mean age of 35 months; neonates accounted for 25%. Cardiopulmonary Bypass (CPB) was used in 66% patients. Overall LOS was 14 days with a mean of 2.8 MV days; mortality rate was 11.4%. p-RIFLE Estimated Glomerular Filtration Rate (eGFR) criteria diagnosed AKI in 7.6% of patients; none by urine output criteria. AKI was associated with younger age, prolonged ICU LOS and MV days, and increased mortality when compared to No-AKI. CPB time (>90minutes) was associated with an increased risk of developing AKI. AKI development (by e-GFR criteria) was associated with prolonged

PCICU LOS and MV days. Our findings indicate that pRIFLE (by e-GFR) is an effective and reliable tool to diagnose AKI, especially in patients requiring CPB during surgery.

29 **Implementation of an innovative research training program for Internal Medicine residents**. *Elsie I. Cruz-Cuevas, Wilfredo E. De Jesús-Monge, Gladys Colón-Rivera, Vanessa Caraballo-Picornell, Humberto M. Guiot*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Rationale: The Accreditation Council for Graduate Medical Education and the American Board of Internal Medicine support research education. Therefore, the Department of Medicine at the University of PR has provided research experience to its residents since its foundation in 1961. However, a more structured and dynamic research education and training program was necessary. Objective: To implement an innovative and structured research education and training program for Internal Medicine residents. Methodology: Interested departmental leaders, faculty, and residents established the Internal Medicine Research Committee. With internal and external advice, this Committee: designed a step-by-step didactic curriculum, facilitated peer-review and conduct support to the residents' research projects, and sponsored a clinical research symposium for senior residents to present their findings. Outcomes: Since the Committee's establishment in 2006, all residents have engaged in original research projects, their participation in scholarly activities has increased, and a research guide in digital format was created. From 2008-2012, most of the senior projects were in the Gastrointestinal and Cardiovascular disease areas and non-cancer-related. Future Directions: The program will be optimized and scholarly activities will be documented. Additionally, the implementation and outcomes of this innovative research education and training program for Internal Medicine residents will be published in a peer-reviewed journal. Funding: Johnson & Johnson, Merck, Pfizer, and Schering-Plough have financially sponsored the clinical research symposium.

30 **Las parejas del mismo sexo que cohabitan en Puerto Rico: estudio exploratorio sobre sus atributos sociodemográficos**. *Yesarel Y. Pesante-Sánchez, Luz León, Carmen M. Vélez, Carlos Rodríguez*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

Las parejas del mismo sexo que cohabitan han sido poco estudiadas en P.R. desde una perspectiva demográfica. El objetivo de la presente investigación fue realizar un estudio exploratorio acerca de las características sociodemográficas de las parejas del mismo sexo. La fuente de información utilizada fue la Encuesta de la Comunidad de P.R., 2005-2009. La población bajo estudio estuvo compuesta por aquellos individuos que residían en un hogar en el cual cohabitaban con una pareja del mismo sexo, un total de 3,764 hogares. El 52% correspondió a hogares de mujeres y 47% pareja compuesta por hombres. El análisis se basó en las características de la persona que se identificó como jefe del hogar. Estos poseen una estructura de edad vieja, con una mediana de edad de 51.5 años. Mostraron un alto nivel de educación, donde el 46.2% completó estudios superiores, y niveles altos de ingreso,con una mediana de $29,000. El 47.2 % de los jefes de hogar está en la fuerza laboral, esto puede estar asociado al hecho de que muchos de estos individuos podrían estar retirados, particularmente por su vieja estructura de edad. Los datos correspondientes a esta población los distingue de los tipos de familias tradicionalmente estudiados en la demografía. La estructura familiar en P.R. presenta una diversidad que por particularidad propia estimula una investigación científica de mayor inclusión y despunta hacia una nueva normativa de análisis que abone al desarrollo de políticas públicas que vayan de acorde con la realidad de todas las familias puertorriqueñas.

31 **Adult literacy and its relation with health status: Puerto Rico 2010**. *Orville M. Disdier-Flores, Francisco J. Pesante*. Puerto Rico Institute of Statistics, San Juan, Puerto Rico

Literacy can be define as the ability of an individual to read, write and speak in the mother language, perform mathematical operations, and solve problems with the proficiency to adequately perform in society. In the year 2010 the Puerto Rico Institute of Statistics conducted the Literacy Survey of Puerto Rico (LEA2010) resulting in an estimated adult literacy rate of 92.0% and an illiteracy rate of 8.0%. LEA2010 was conducted as a supplement to the Puerto Rico Behavioral Risk Factor Surveillance System 2010 (PR-BRFSS), which is a telephone survey conducted annually in Puerto Rico in adults. The main objective of this study was to examine the relationship between the literacy and health status of residents in Puerto Rico. Results showed that literate adults were 3.8 (95% CI: 3.8 - 3.9) times more likely to enjoy a good, very good or excellent health status, in comparison with illiterate adults (64.7% vs. 32.3%, respectively, $p < 0.001$). On the other hand, literate adults have 58.3% (95% CI: 57.9% - 58.8%) less probability to be living with diabetes, compared with illiterates (13.3% vs. 27.0%, respectively, $p < 0.001$). In terms of physical activity, literate adults were 2.2 (95% CI: 2.2 - 2.3) times more likely to do physical activity or exercise other than their regular job, in the past 30 days, in contrast to those not literate adults (54.7% vs. 35.1%, respectively, $p < 0.001$). The results of this study demonstrate that literate adults possess a better general health condition, a lower prevalence of diabetes, and do more physical activity than those illiterate adults.

32 **Utilización de Servicios por Niños con Necesidades Especiales de Salud y sus Familias en Puerto Rico**. *Madeline Martí-Morales, Naydamar Pérez*. Departamento de Salud de Puerto Rico, San Juan, Puerto Rico

Un 16.6% de los niños menores de 18 años en PR tienen necesidades especiales de salud (NNES) según el primer estudio realizado por el Departamento de Salud en el 2009. Se entrevistaron 850 familias de NNES por teléfono de forma aleatoria a nivel Isla. Los NNES se caracterizan por utilizar servicios en mayor frecuencia y variedad que los niños típicos. Los servicios de mayor necesidad fueron los medicamentos recetados (83%), cuidado dental preventivo (82%), servicios médicos preventivos o de rutina (76%), especialistas (66%), terapias física/ocupacional/habla (52%), y salud mental (43%). Las familias reportaron no haber recibido los siguientes servicios que necesitaban: aparatos o artefactos de ayuda para la comunicación (52.6%), tratamientos/consejerías para el abuso de sustancias (35.1%), terapias física, ocupacional o del habla (23%), servicios de audiología/audífonos (20.4%), servicios de salud mental (16.9%), y pruebas genéticas/metabólicas de diagnóstico (14.2%). Las razones más frecuentes para no recibir los servicios fueron la falta de plan médico, falta de referidos o lentitud del proceso de referido, costos, la falta de recursos en la escuela, no conseguir cita y servicios no cubiertos por el plan. Se preguntó a las familias sobre servicios de apoyo. Un 8% necesitaron servicios de respiro, de los cuales un 48.8% no los recibió. Un 11.2% y 14.8% necesitaron servicios de genética y salud mental respectivamente, de los cuales un 16.7% y un 15.9% no los recibieron. Estos datos ayudan a identificar servicios que esta población necesita para mejorar la salud y calidad de vida de los NNES y sus familias.

33 **Orofacial Malformations in Puerto Rican Children: Genetic Risk Factors**. *Carmen J. Buxó-Martínez, Natalio Debs, Lourdes García, Gabriela A. Gata, María A. Angulo, Mairim Soto, Lydia M. López*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

There is an increased trend in the birth prevalence of oral clefts in Puerto Ricans during the last decade. Limited knowledge exists about the genetic risk factors for oral clefts in Puerto Ricans. The objective of this study is to evaluate genetic factors for oral clefts risk in Puerto Rican children. This is a case-control study (n=212) of 49 case-mother dyads of children with oral clefts and 57 control-mother dyads. Children, ages 0-5 years, with non-syndromic cleft lip with/without palate were recruited as cases. Controls were selected without oral clefts/family history of clefts. A blood sample from child and mother was collected. DNA samples were analyzed using Real-Time PCR Taqman for candidate genes/regions previously associated with clefting in other populations (MTHFR, IRF6, 8q24, MAFB, ABCA4, VAX1, PAX7, and FOXE1). We tested differences in the frequency of allele and genotype variants using Fisher's test and estimated Odds Ratios at a significance level of 5%. A statistical difference was found with protective effect for the use of folic acid before pregnancy (p=0.02). Children with MTHFR A1298C variant allele had lower risk of oral clefts (OR=0.42, 95%CI: 0.22-0.82). Increased risk of oral clefts was found among children whose mothers had PAX7 rs742071 variant allele (OR=2.0, 95% CI: 1.15-3.49). Analysis by cleft type was significant for lip and palate: MTHFR (p=0.01) and PAX7 (p=0.04) among children and PAX7 (p=0.002) among mothers. Findings may support the role for MTHFR and PAX7 variants in oral clefts, providing specific variant allele frequencies and impact in Puerto Rican population.

34 **Sensation seeking as a risk factor for drinking and driving among adolescents in Puerto Rico**. *Juan C. Reyes-Pulliza*, Margarita R. Moscoso†, Linnette Rodríguez*, Héctor M. Colón*, Hesmy Sánchez**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Rio Piedras, Puerto Rico

Drinking and driving is a major public health problem in the U.S. and Puerto Rico. In 2011, a total of 10,839 people died in crashes in U.S. which at least one driver had a blood alcohol concentration (BAC) of 0.08 grams per deciliter (g/dL), the legal limit for drivers in the U.S. The purpose of this study is to estimate the prevalence of self-reported drinking and driving and to explore its association with sensation seeking. The Consulta Juvenil has been designed as a monitoring program of the prevalence of substance use. The survey was conducted during the 2010-12 academic years and the sample (N=10,134) was selected using a multistage-stratified cluster sampling design (response rate=76%). The study utilizes a self-administered questionnaire. An index was calculated from four questions asked regarding sensation seeking behaviors answered on a 3-point scale. Half of the sample (50.3%) were males between seventh and ninth grades with a median age of 15 years. The majority of the sample was recruited from the public system (80.3%). From a total of 10,134 students, 26.1% were classified as sensation seekers. The overall prevalence of drinking and driving was 6.5%. Multiple logistic regression analysis revealed that males (OR=2.44, 95%CI: 1.99-2.99), and those who reported higher levels of sensation seeking (OR=4.65, 95%CI: 3.78-5.72) were significantly more likely to report drinking and driving. All analyses were performed on weighted data. Findings of this study suggest that adolescents who report higher levels of sensation seeking seem to be at higher risk for drinking and driving.

35 **Estudio SYNAR: Evaluación del acceso a tabaco en jóvenes menores de 18 años en Puerto Rico**. *Sharon M. Alvalle-Vélez*, Nicole M. Ortiz-Vega*, Mirza Rivera-Lugo*, Evelyn López-Carrión†, Juan Rivera†, Héctor Colón*, Gladys J. Ayala**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Administración de Servicios de Salud Mental y Contra la Adicción (ASSMCA), Bayamón, Puerto Rico

El consumo de tabaco es una de las primeras causas de muerte prematura en los Estados Unidos y Puerto Rico. Uno de cada 10 estudiantes del nivel secundario en Puerto Rico informó haber usado productos de tabaco durante el último año (Consulta Juvenil, 2007). Anualmente, Puerto Rico realiza el estudio Synar con el propósito de evaluar el acceso a cigarrillos en menores de edad a través de establecimientos comerciales y se estima la tasa de violación entre los comerciantes del país. El estudio utilizó una muestra representativa de los comercios en Puerto Rico, escogida de manera aleatoria y sistemática. La Administración de Servicios de Salud Mental y Contra la Adicción (ASSMCA) empleó 16 jóvenes de 18 años de edad con apariencia física más joven para llevar a cabo la inspección no-anunciada a los 189 establecimientos de la muestra. Los jóvenes fueron adiestrados con relación al método de recolección de datos y como documentar los intentos de compras utilizando un formulario. Entre los comerciantes 9.1% accedió a vender tabaco sin solicitar comprobante de edad; esto implica que Puerto Rico está en cumplimiento con los estándares requeridos por el gobierno Federal. En comparaciones con otras regiones, la mayor cantidad de violaciones (28.6%, n=4) fueron informadas en el área sur. Es importante mantener la tasa de violación en menos del 20.0%; por lo que se recomienda: incrementar la orientación e inspección en el área sur y a su vez continuar orientando a aquellos comercios que estuvieron en cumplimiento.

36 **Índice socioeconómico para medir desigualdades en salud en adultos mayores: San Juan y La Habana**. *Esther María León-Díaz*, Ana Luisa Dávila†, Alberto García†, María Larriuz†*. *Organización Panamericana de la Salud, Washington DC, United States of America; †Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

La proporción de adultos que sobrepasa los 60 años en América Latina y el Caribe se espera crezca rápidamente. Puerto Rico y Cuba son buenos ejemplos, en el 2010 ese grupo poblacional representó el 20,4% y el 17,8% respectivamente, y en sus capitales se encontraban un 22,8 % en San Juan y un 19,9% en La Habana. El objetivo de este trabajo es estudiar desigualdades en salud en esas dos ciudades. Esta investigación está basada en los datos de dos proyectos de investigación Condiciones de Salud de los Adultos de Edad Mayor en Puerto Rico ", PREHCO por sus siglas en inglés (Puerto Rican Elderly: Health Conditions) y "Salud , Bienestar y Envejecimiento en América Latina y el Caribe" , SABE. Un índice socioeconómico fue calculado para Puerto Rico basado en seis dimensiones; activos, equipamiento del hogar, vivienda, ingreso percápita, deudas y seguros de salud; el índice para Cuba fue basado en cinco dimensiones: ingreso percápita, infraestructura del hogar, equipamiento del hogar, educación y medio ambiente. Usando el analisi de Cluster K-medias la población adulta mayor fue agrupada en tres categorías de estatus socioeconómico: bajo, medio y alto. Diferencias por sexo, edad y ciertas condiciones de salud fueron encontradas entre los adultos mayores en San Juan y La Habana. En cuanto al nivel socioeconómico en ambas ciudades fueron mayores los porcentajes de mujeres en niveles bajos y medios, mientras que los hombres presentan ventajas en el nivel alto y discretos aumentos porcentuales en los más viejos tanto en los niveles bajos como altos del Índice. PREHCO financiado por NIA/NIH, la Gobernación y SABE por OPS.

37 **Analysis of Significant Caries Index in 12 year old school-attending children in Puerto Rico, 2010-2011**. *Carlos M. Cruz-Chu, Augusto R. Elías-Boneta, Omar García-Rodríguez, Sona Rivas-Tumanyan*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Decayed, Missing, Filled Tooth (DMFT) Index is an arithmetic mean to express the caries prevalence of an individual or a group. This index limits the study of different subgroups . The Significant Caries Index (SiC Index) brings attention to those children with the highest caries scores. Objectives: 1) estimate the SiC Index in 12 year old-school-attending children in Puerto Rico 2) analyze SiC Index by gender and school type . Methods: The DMFT was assessed using a probabilistic sample of 132 schools. Calibrated examiners used modified NIDCR diagnostic criteria to perform the visual/tactile oral examination. The SiC Index was calculated sorting individuals according to their DMFT values; those with the highest one third were selected. Results: 1555 participants were evaluated in 132 schools in Puerto Rico; 31 in private and 101 in public schools; 47% of children were males and 53% were females. The overall SiC value was 5.59. The SiC 50th percentile in males was 5 and in females 4, and the SiC 50th percentile in private schools was 4 and in public schools was 5. Using the Mann-Whitney test, there was significant difference between males and females students (z= -3.903) and between private and public schools (z= -7.657). Conclusion: the SIC index was useful to identify disparities by gender and school type with the highest caries scores.

38 **Discapacidades de los puertorriqueños y cubanos en Florida y su acceso a seguro médico, 2010**. *Manuel Pérez-Muñiz, Ana Luisa Dávila-Román*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

La ley Americans with Disabilities Act of 1990 (ADA) define la discapacidad como un impedimento físico o mental que limita sustancialmente una actividad importante de la vida. La cobertura de seguro médico entre los discapacitados es un indicador de bienestar. La emigración puertorriqueña hacia EEUU mantiene un volumen intenso y un flujo continuo. Florida es el foco de crecimiento de la población puertorriqueña y es el asentamiento más importante de la diáspora cubana. El estudio fue restringido a la población

puertorriqueña y cubana que se encontraba residiendo en Florida. La investigación diferenció a las poblaciones de interés por lugar de nacimiento, los que nacieron en su país de origen y los que nacieron en EEUU. El objetivo del estudio fue comparar las discapacidades de la población puertorriqueña y la cubana de acuerdo a su lugar de nacimiento, así como su acceso a cobertura médica. El estudio utilizó los datos de la Encuesta de la Comunidad Americana-2010. Los resultados mostraron que un 38.9% de los cubanos nacidos en Cuba no tiene seguro médico, mientras que en los nacidos en EEUU se notó un 18.3%. No hubo diferencias importantes en la cobertura médica entre los puertorriqueños indistintamente del lugar de nacimiento. Las proporciones de discapacitados nacidos en su país fueron mayores que la de los que nacieron en EEUU. Los cubanos nacidos en EEUU aventajaron a los emigrantes cubanos en lo que respecta a la tenencia de seguro médico. Los puertorriqueños están en peor situación no importa el lugar donde nazcan. El porcentaje de discapacitados puertorriqueños sin cobertura médica sigue siendo un reto importante.

39 Plan para la implantación de un programa de Salud Reproductiva a mujeres usuarias de drogas inyectables con VIH o a riesgo de VIH. *Michelle Reyes-Robles, Ana M. Parrilla-Rodríguez*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

La cantidad de mujeres que necesitan servicios de salud para reducir los riesgos asociados al uso de drogas inyectables continúa creciendo. En Puerto Rico el contagio de VIH por el uso de drogas inyectables representó la segunda causa de muerte más importante de la epidemia en la población femenina. La situación socioeconómica de la mujer puertorriqueña añade factores de riesgo como la pobreza, el acceso inadecuado a los servicios de salud, y las disparidades de género.Este trabajo presenta un plan para ofrecer un nuevo servicio de salud reproductiva para mujeres usuarias de drogas inyectables a riesgo de VIH dentro de una organización existente. Se utilizaron los resultados de una revisión de literatura para proponer un plan de acción y evaluar la viabilidad del mismo. La organización mostró interés en el plan. Según la entrevista el personal profesional del programa y la agencia poseen las destrezas para adaptarse al plan. El programa cuenta con apoyo para el desarrollo de nuevas estrategias basadas en evidencia científica para atender problemas de salud pública de madres y niños. Es preciso el desarrollo de estrategia basadas en el género para atacar este problema. El plan propuesto para la implantación de un programa de servicios de salud reproductiva a mujeres UDI a riesgo de VIH tiene como propósito promover las actividades de aprendizaje de autocuidado para las participantes de Compromiso de Vida I. El producto de adiestrar al personal será el diseño de estrategias para ayudar a las participantes del programa a rebasar barreras de acceso y utilización de servicios de salud reproductiva y empoderarse de su salud.

• Poster Presentations •

40 Antimicrobial Screening of Plants Traditionally Used in Puerto Rican Folkloric Medicine. *Rafael Maldonado-Hernández, Ileana Rodríguez-Vélez, PhD*. University of Puerto Rico, Humacao, Puerto Rico

Infectious pathogens responsible for the development of common bacterial infections and life-threatening diseases are quickly developing resistance against the existing arsenal of medicinal weapons. These facts coupled to the diminished rate of discovery of new antimicrobial drugs, and the millions of people affected worldwide constitute a serious threat to global public health. In this study we are using in vitro microbial inoculation techniques for the detection of antimicrobial activity in crude extracts from plants traditionally used for medicinal purposes. The overall purpose of this research is to detect activity in the extracts to ultimately follow a bioassay guided isolation and identification of new molecules with antimicrobial activity. Some of the selected plants were Averrhoa carambola, Senecio aizoides, Bixa orellana and Borreria laevis. Extraction procedures with polar solvents (ethanol, H2O) were carried out to obtain polar crude extracts which were screened using the corresponding agar diffusion assays. Our results indicate that three out of the seven plants analyzed so far may contain secondary metabolites that inhibit the growth of Serratia marcescens and Bacillus subtilis.

41 Conocimiento y actitudes del personal de enfermería ante el manejo del dolor en pacientes politraumatizados. *Viviana Torres-Reyes, Carmen L. Madera*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

El dolor es una experiencia compleja, presente en todos los contextos clínicos y en diversos grupos de pacientes. Enfermería desempeñan un papel central en su valoración y manejo (Lewis, Heitkemper & Dirksen 2004). Los pacientes en unidades de intensivo experimentan dolor de moderado a severo. Sin embargo, no se maneja adecuadamente. Para estudiar esta situación se realizó un estudio descriptivo correlacional y transversal. Se determinó el nivel de conocimiento del personal de enfermería, la actitud hacia el manejo del dolor y se correlacionaron ambas variables. La muestra no aleatoria por disponibilidad estuvo integrada por el 80% de la población accesible de enfermeras y enfermeros profesionales que trabajan en una institución hospitalaria de la región norte de Puerto Rico. Se utilizó el instrumento "Knowledge and Attitudes Regarding Pain" por Betty R. Ferrell, RN, PhD, FAAN y Margo McCaffery, RN, MS, FAAN (1987) y revisado en el 2008 y traducido al español por el método "backtraslation" como "Encuesta sobre el conocimiento y actitudes con relación al dolor". Posee un coeficiente alfa de .70. Luego de la aprobación del IRB, 76 profesionales de enfermería de una institución hospitalaria del área norte de Puerto Rico participaron en el estudio. El 18.4% tuvo conocimiento

adecuado y el 81.6% no adecuado. Sólo el 13.2% obtuvo actitud adecuada y el 86.8% no adecuada. La correlación fue de .149, p = .198, por lo que no hubo evidencia para rechazar la hipótesis nula. Es necesario continuar haciendo más investigación.

42 **Community Organizations and Homelessness During a Disaster in Puerto Rico**. *Nilsa D. Padilla-Elías, Marisol Peña-Orellana, Ralph Rivera-Gutiérrez, Heriberto A. Marín-Centeno, Lourdes A. Miguel-Vázquez, Julieanne Miranda-Bermúdez*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Background: In case of a major disaster, people experiencing homelessness will experience a worse impact due to their limited access to information and the consequences associated with homelessness. Objectives: To assess the level of emergency and disaster planning in community organizations that serve the homeless population in Puerto Rico, and to examine the emergency preparedness and response capability needs of these institutions. Methods: A non-probabilistic sampling process was undertaken to select the sample of 40 community organizations. Semi-structured, face-to-face computerized interviews were conducted with key informants from the community organizations (n=40) to identify issues related to disaster and emergency preparedness and response capability. Results: More than a third of the community organizations reported not having a written emergency plan, or has a written plan that has not been implemented. Furthermore, only a half of the community organizations reported having conducted an emergency drill with both internal and external staff. The organizations indicated that the health conditions that occur more frequently among the homeless population served were HIV/AIDS and medical conditions such as hypertension and diabetes. Conclusion: Community organizations must identify their vulnerabilities to be able to address these. They should develop formal agreements with hospitals to be able to serve persons experiencing homelessness during a disaster, and should integrate their emergency plans with the Office of Emergency Management.

43 **Hospital Challenges to Addressing the Needs of the Homeless During a Disaster in Puerto Rico**. *Marisol Peña-Orellana, Ralph Rivera-Gutiérrez, Heriberto A. Marín-Centeno, Julieanne Miranda-Bermúdez, Lourdes A. Miguel-Vázquez, Nilsa D. Padilla-Elías*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Background: Providing medical services to people experiencing homelessness during a disaster is complicated due to several factors. Data suggests that this population experiences high levels of alcoholism, drug abuse, mental illness and multiple chronic health conditions. In addition, the lack of resources and limited capacity to engage in activities that require self-care represent a great challenge for hospitals to offer continuity of services to this group. Objectives: This study examines hospital challenges to provide health services to people experiencing homelessness during a disaster. Methods: A non-probabilistic method was undertaken to select a sample of eleven hospitals located throughout the seven Puerto Rico Department of Health regions. Semi-structured, face-to-face computerized interviews were conducted with hospital key informants to identify issues related to emergency preparedness and response capability during a disaster. Results: Six of the eleven interviewed hospitals informed that there emergency plans do not include a specific protocol to serve the homeless population, and they do not have written agreements with community organizations to serve this group. All hospitals indicated that for a homeless person to receive mental health services, he/she needed to be accompanied by another adult. Conclusion: Hospitals should develop written agreements with community organizations to offer continual health services to this population during a disaster. Every hospital's emergency plan should include protocols to serve this vulnerable population, which has different medical needs from the general population.

44 **Perceptions of stigma related to imprisonment in a sample of inmates in Puerto Rico**. *Irene Lafarga-Previdi, Nelson Varas-Díaz*. University of Puerto Rico, Rio Piedras, Puerto Rico

The incarcerated population is a target of social stigma in modern society, and fosters difficult situations for an already vulnerable section of the population. Stigma related to imprisonment can lower quality of life, and impact physical and mental health. Our study aimed to examine whether there were major differences in concerns over stigmatization in a sample of Puerto Rican inmates in relation to their custody levels and demographic variables. The sample was composed by 202 participants located in a prison in Puerto Rico from three custody levels. The study consisted of three steps: 1) requesting permission from the Department of Corrections and Rehabilitation of Puerto Rico to access institutions, 2) recruitment with informed consent and 3) administration of a questionnaire via ACASI technology. A comparative cross-sectional design was used and Chi Square tests were carried out. Results show that a lower education level and young age (21-30 years) are significantly related to a low perception of stigma. Implications of these findings will be discussed. This project was funded by NIH 5R24-DAO24868-OJA2.

45 **Violence And Mental Illness: Profile Of Psychiatric Inpatients Who Reported Violent Behaviors**. *Luz N. Colón-de Martí, Lelis L. Nazario, Vanessa L. Padilla, Maritere Hernández, Carlos Morales*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Background: Over the last years, media has published news about violent acts perpetrated by individuals with mental illnesses. Such incidents may mislead people to associate mental illness with violent behavior. People with mental illness already bear a burden of social stigma and being perceived as violent can add to this burden. Aims: Describe the profile of inpatients consecutively admitted to the Psychiatric Ward at UPR-Hospital from December 2010-July 2011, their reported violent behaviors, and the presence of psychiatric diagnoses including substance use. Method: IRB approval was obtained. Participation was voluntary. An Informative sheet was developed to obtain socio-demographical information. A 37-item questionnaire, developed for this study ,was completed. Data was analyzed. Results: Sample was 146 subjects.56.8% were ages 31-50; 54.8% were females,and 67.1% reported been aggressive or violent in the past. The most reported physical violent behaviors were property destruction, aggression toward others, and involvement in fights. Patients who reported past aggression toward others, been involved in fights or been violent under alcohol influence were more characteristic of having a single psychiatric diagnosis. Those who reported been violent under drug influence were more likely to have co-morbid psychiatric diagnoses. Conclusions: The link between violence and psychiatric diagnoses is complex.Further research is needed to evaluate clinical associations among psychiatric diagnoses and violent behaviors.

46 **Factores que Causan Estrés al Profesional de Enfermería en Unidades de Cuidado Intensivo Adulto**. *Katherine C. Camargo-Hernández, Carmen L. Madera*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

El estrés es una enfermedad que está ocasionando grandes impactos a nivel mundial, en todas las áreas de trabajo. Se ha demostrado que el personal que más se expone a factores estresantes, son las/los enfermeras/os. En este estudio, se identificó los factores que causan estrés, percibidos por el profesional de enfermería en unidades de cuidado intensivo adulto y se comparó las características socio-demográficas, con los factores que generan estrés percibidos por el profesional de enfermería de dos hospitales (público y privado) del área metropolitana de P.R. El diseño fue descriptivo comparativo de corte transversal. La muestra fue de 34 profesionales de enfermería laborando en unidades de intensivo. Se recogieron datos socio-demográficos y un cuestionario auto-administrado sobre Escala de Estresores de Enfermería, (López, 2002). Algunos estresores percibidos fueron: observar el sufrimiento de un/a paciente (50%), la muerte de un/a paciente y tomar una decisión con respecto a un paciente cuando el médico no está disponible (47.1%). Se encontró asociación significativa entre algunos estresores con el género, jefatura de familia, estado marital, número de hijos y educación. Estos hallazgos, sirven para formular estrategias encaminadas a fortalecer el manejo y afrontamiento de situaciones estresantes en estos profesionales. Es recomendable continuar con investigaciones acerca del tema y tener en cuenta otros datos socio-demográficos como salario, tipos de turno, preguntas acerca de condición de salud, absentismo. El estudio se limitó a dos hospitales del área metropolitana de P.R. y la muestra fue no probabilística.

47 **Controlled release spheres and tablets using thermal treatment**. *Zoriely Amador-Ríos*, Evone S. Ghaly†*. *University of Puerto Rico, Rio Piedras, Puerto Rico; †University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Introduction: Multiparticulate systems are used in the development of controlled release systems, incorporating a waxy material to control drug release when thermally treated. Objectives: The objectives of this study were to determine the effect of the wax level, the type of excipient and the exposure of the tablets to thermal treatment on drug release. Hypothesis: We hypothesized that if the tablet contained the wax and was thermally treated, the drug release will change because the wax will melt, covering the drug and helping it to control the drug release. Also, that if the type of diluent changed, the drug release will change because the interactions between the drug and diluent are different. Methodology: Spheres with different wax levels and excipients were created for the drug Lisinopril and compressed them into tablets; these tablets were analyzed to determine the drug release. All tablets contained constant level of Lisinopril, (10% w/w) and Compritol (10%, 30% and 50% w/w). Also, as a diluent, all of them contained 30% w/w Avicel and 30% w/w Dibasic Calcium Phosphate or Lactose. Results: Tablets prepared from spheres were uniform in weight and drug percent. Tablets compacted from spheres prepared by extruder/marumarizer and using 30% w/w lipid, Lactose and Avicel as diluent, released 69% of drug at three hours while tablets of the same composition, but prepared using Dibasic Calcium Phosphate instead of Lactose, released 65%. As the present of lipid increased in the formulation, the drug release decreased. Conclusion: Compaction of tablets prepared from spheres has potential for controlling the drug release.

48 **Residents' Perceptions About The Impact Of Night-float System**. *Ángeles Martínez-Vélez, Luz N. Colón-de Martí, Yolanda Gómez, Irma Rivera-Colón*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Background: Residents'well-being can be impacted by stressors inherent in fulfilling demands of their training. Night- float system(NFS)has been suggested as a way to address concerns about resident's work hours, stress, medical errors, and for fulfilling ACGME requirements. It's important to evaluate the impact of this system. Objective: To assess and compare the perceptions of Surgical and Non-surgical residents at UPR School of Medicine (UPR- SOM)about the impact of NFS. Methods: IRB approval was obtained. Participation was voluntary. Surgi-

cal and Non-surgical residents of the UPR-SOM completed a 72-item questionnaire which assess perceptions about the impact of NFS. Data was analyzed. Results: Response Rate was 61.8% %. Non-surgical Programs 63.4%, 51% were females, and 58.4% single. 73.0% had participated in NFS. 62.0% disagreed participation in NFS has improved their general sense of well-being. 75.9% agreed their participation improved continuity of care for Emergency Room patients. 81.0% of Non-surgical agreed their peers support has been impacted negatively during their participation. A higher percent of the Non-surgical agreed that during their participation in NFS their relationship with spouse/ significant others/children, work-rest balance, sleep pattern and sleep hours; had been impacted negatively compared to the Surgical group. Conclusions: This study included a limited sample in a particular setting, thus findings can't be generalized. We should continue to study the impact NFS which has the potential to impact patient care as well as residents' education, quality of life, and well-being.

49 Concurrent Validity between 2D and 3D Motion Systems for the Evaluation of Dynamic Knee Valgus. *Alejandro Rodríguez-Lafontaine*, Carla N. Figueroa*, Alexie H. Seda*, Alexis Ortiz*†, Martín G. Rosario**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Texas Woman's University, Texas, United States of America

Drop jump tasks are commonly used as an assessment for risk factors predisposing to lower extremity injuries. 3D motion analyses techniques have been the method of choice for the majority of the studies investigating dynamic knee valgus and its relationship to injury. Nevertheless, this technique has some disadvantages such as, high costs, lack of portability, and time-consuming analyses. Alternatively, 2D motion analysis systems could be a solution for these disadvantages. For this 2D system to be considered useful as a physical performance tool its reliability and validity need to be establish first. Therefore, the purpose of this study was to correlate femoral projection angles acquire with a 3D system with 2D measures during a two-legged drop jump landing from a 40-cm box. We hypothesized that 1) the trial-to-trial reliability (ICC) would be > 0.80 for both systems and 2) the correlation between joint angles would be moderate to high ($r \geq 0.70$). The 3D system used in this investigation was Vicon Nexus and Polygon using 6 cameras at 120 Hz. The 2D system comprised of a 30-Hz commercial camcorder and Dartfish Pro Suite™ Software. Both systems were used to measure femoral projection joint angles of both knees during 5 bilateral drop jump landing tasks. ICC were 0.74 and 0.68 for the average of five trials for Vicon and Dartfish, respectively. Correlation coefficient was $r = 0.72$. We, therefore conclude that Dartfish™ was fairly comparable to Vicon data for measurement of femoral projection angle and could be used within the clinical setting for the assessments of femoral projection angles as a valid and reliable method.

50 Matrices of Water-Soluble Drug Using Swellable Starch and Direct Compression Method. *Jomir Rivera-Rivera*, Evone S. Ghaly†*. *University of Puerto Rico, Rio Piedras, Puerto Rico; †University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Introduction: A controlled-release drug delivery system optimizes the bioavailability of a drug for longer periods of time. Theophylline is a drug used to treat respiratory conditions. Objectives: The objective of this study was to investigate the effects of different components of a formulation in order to find the best combinations of ingredients for a sustained release tablet for Theophylline. Hypothesis: Using different level of adhesive polymer may release the drug over a long period of time. Methods: All formulations contained constant level of Theophylline (25% w/w). Three formulations were prepared containing 50% w/w Swellable Starch as a controlling agent, 25% w/w Starch and 25% w/w HPMC; 25% w/w starch and 25% w/w ethyl cellulose, respectively. All formulations contained 1% w/w Magnesium Stearate as a lubricant. The diluent used was Lactose added to complete up to 100% w/w. All formulations were compacted into tablet with a target weight of 400mg±5% and target hardness of 7-9kp. The tablets were tested for physical and chemical properties such as thickness, weight, hardness and disintegration. Also, they were tested for drug release. Results: Using Swellable Starch alone, slow the drug release dramatically. While using a combination of 25% w/w Swellable Starch and 25% w/w HPMC released approximately 30% of drug at 4 hours of testing dissolution. As the level of the polymer increase in the formulation, the drug release decrease. Conclusion: The combination of starch and a water-soluble polymer have potential to modulate the drug release and to be used as a controlled release delivery system.

51 Self-Assembly of Triazole based Nanostructures and evaluation of antibacterial activity. *Jennifer M. Varela-Moreno*, Yoshira Ayala*, Jonathan Sánchez*, Bryan Ríos*, Ipsita Banerjee†, Carmen Hernández**. *University of Puerto Rico, Humacao, Puerto Rico; †Fordham University, New York, United States of America

Increasing antibiotic resistance by microorganisms has led to the development of new methods that are potentially more efficacious against microbes yet are biocompatible. Here in we examined the formation of specific triazole based nanoassemblies and their affinity with gold nanoparticles and quantum dots. The nanoassemblies are efficiently formed due to hydrogen bonding as well as stacking interactions. Further they were shown to have high affinity to metal nanoparticles and quantum dots due to the presence of the lone pair of nitrogens on the triazole moieties. We also developed triazole conjugates with various diamines and examined their assembly processes. It was found that the compounds bound well to

the gold nanoparticles as well as the quantum dots. This was confirmed by absorbance, fluorescence and infra-red spectroscopy. In some cases, interactions with gold ions led to the formation of gold nanoparticles without the use of external reducing agents by green synthetic methods. The morphologies were confirmed by electron microscopy. To examine inflammatory effects on mammalian cells, macrophage cell studies were conducted. The results showed that the nanocomposites were biocompatible. Further, the nanomaterials were found to demonstrate bacteriostatic effects against E-Coli.

52 **Efectividad de un programa para disminuir riesgo a caídas y aumentar participación del adulto mayor**. *Luz A. Muñiz-Santiago, Ayeisha Gandía, Ana Graniela, Mariela Ortiz, Karen Torres*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

Las caídas en adultos mayores son un problema de salud pública. Las complicaciones relacionadas a caídas incrementan el nivel de discapacidad e impedimento funcional del adulto mayor. Traen consigo consecuencias como la deprivación social y la restricción de participación en las actividades diarias en esta población. Este estudio desarrolló e implantó un programa piloto de intervención multifactorial de 7 semanas de duración, enfocado en promover conductas de prevención de caídas, diminuir conductas de riesgo a caídas y promover la participación en las Actividades Instrumentales de la Vida Diaria (AIVD). Con este propósito se desarrolló un manual de intervención, con 29 actividades específicas con sus objetivos, procedimientos y materiales. El estudio se llevó a cabo en una égida en el área metropolitana de PR, con una muestra no probabilística de 15 adultos mayores de ambos sexos, de 65 a 85 años. Se utilizó un diseño casi-experimental de un solo grupo con pre y post prueba, utilizando los sujetos como su propio control. Para cualificar los participantes y obtener datos sociodemográficos se administraron 4 pruebas: Cuestionario de Perfil de Caídas, la Falls Efficacy Scale – International (FES-I), versión de PR, la Cabán Minimental y un cernimiento visual. Para establecer efectividad de la intervención se usaron 4 pruebas adicionales: Functional Reach Test, PR-ACS, la Fall Behavioral Scale (FaB), versión de PR y la Home Falls and Accidents Screening Tool, versión de PR como pre y pos prueba para observar los cambios en las variables de interés, luego de la exposición de los participantes al programa piloto de intervención.

53 **Early exposure to AAS decreases social play and accelerates the transition toward sexual behaviors**. *Andrea Silva-Gotay*, Keyla M. Ramos-Pratts†, Jennifer L. Barreto-Estrada†*. *University of Puerto Rico, Rio Piedras, Puerto Rico; †University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Juvenile rough-and-tumble play is one of the earliest forms of non-mother directed social behavior in rodents, and depends upon differential exposure to testosterone during the perinatal period; thus this behavior is more common in males than females. Rough-and-tumble play peaks at postnatal day 35 (PN-35), and reaching adulthood, it starts to decline and replaced by motivational and consummatory components of the sexual behavior. Most studies show androgen depriving effects on social play behavior, but there is little research on how supra-physiological doses of synthetic androgens affect this behavior. This study assessed the effects of the anabolic androgenic steroid (AAS), 17α-methyltestosterone (17α-meT) in the development of rough-and-tumble play and sexual behavior. Male rats at postnatal day (PN)-28, received daily injections of 17α-meT (7.5 mg/kg) for one week, and play behavior was observed at two different time points: the last day of the treatment (PN-35) and after 10-days of AAS withdrawal (PN-45). Behavioral parameters scored were pouncing, pinning, boxing, wrestling, and mountings. Our data confirmed that in the absence of AAS, a peak for social play behavior occurs at PN-35. Similarly, a tendency to increase mounts when paired with a female was observed. Behaviors associated with body contact and socio-sexual encounters such as pouncing, wrestling and mounts increased significatively at PN-45. Injections of AAS significantly decreased on top position and wrestling play behaviors at PN-35. In addition, a tendency to increase the frequency of mounts was observed. On the contrary, there was no effect on play behavior at PN-45, 10 days after AAS withdrawal. Our results suggest that early AAS exposure accelerates the transition of social play behavior towards the early stages of sexual behavior.

54 **Dinámicas demográficas y uso de terrenos en Rincón, 1980-2010**. *Brenda I. Castro-Voltaggio, Hernando Mattei, José A. Norat-Ramírez, Luz E. León-López*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Puerto Rico ha sufrido transformaciones socio-económicas y en el uso de terrenos durante el siglo 20, siendo esta marcada luego de 1950 debido a la industrialización, al abandono de los terrenos agrícolas y a la reforestación natural de muchas áreas. El objetivo principal del estudio fue examinar los cambios socio-demográficos ocurridos entre 1980 y 2010, su relación con el uso del terreno en el municipio de Rincón. Se utilizó la herramienta de ArcGIS 10 para analizar el uso del terreno para 1977 y 2006. Los indicadores demográficos se obtuvieron del Negociado del Censo de 1980 y 2010. Rincón en las últimas décadas ha tenido un aumento en el desarrollo de viviendas. Debido al cambio de uso de terreno y de las tierras agrícolas estos espacios fueron utilizados para el desarrollo y otros se reforestaron. En 1977, el área urbana constaba de un 13% aumentando a 16% en 2006. El 14% del terreno en 1977 correspondía a zonas verdes, aumentando a 70% para el 2006. En la década del 80 Rincón mostró un significativo aumento en población. En la actualidad y a pesar de que la población de la Isla va en

descenso, éste presenta un crecimiento de 3%. Para 1980 solo un 8% de la población se consideraba vieja, aumentando esta cifra en el 2010 a 17%. La zona mostró, un descenso marcado en la proporción de jóvenes. Los cambios en la estructura de edad han afectado las actividades socio-económicas en Rincón provocando una baja proporción en terrenos urbanos. Es imprescindible considerar los atributos demográficos de la población en Rincón ya que los mismos afectarán tanto el nivel de desarrollo como el uso de terrenos del área.

55 Validity between Two Dimensional and Three Dimensional Systems for the Evaluation of Walking Tasks. *Martin G. Rosario-Canales*, Alexie Ceda*, Carla Figueroa*, Alejandro Rodríguez*, Donald Dunbar*, Alexis Ortiz*†*. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Texas Woman's University, Texas, United States of America

Walking parameters are commonly used for assessing risk factors that are predisposed to lower extremity injuries, or as outcome measures for evaluating the impact of disease and the effectiveness of therapeutic interventions. Unfortunately, the high cost for the current motion analysis technology used to evaluate gait in three dimensional (3D) space is not widely available in the clinical setting. But, if sufficiently accurate two dimensional (2D) motion data can be provided by a more affordable than a 3D system can be avoided, enabling a much greater portion of the clinical and research community to benefit from this type of gait assessment. Purpose: Compare and correlate step and stride length between a 3D system (Vicon™) and a 2D system (Dartfish Pro Suite ™) during a timed-up-go test (TUG). We hypothesized that both the trial-to-trial reliability would be high ($r \geq 0.80$) for both systems and the step and stride lengths would be highly correlated ($r \geq 0.80$) between systems. Methods: Twenty young adults performed five trials (3.05 meters) of the TUG task. The Intraclass Correlation Coefficient (ICC) for the average of five trials was used to establish trial-to-trial reliability for both systems. Pearson correlation coefficient analysis was used to establish the concurrent validity between the systems. Results: The ICCs were $r \geq 0.85$ for all variables and for both motion systems. The ICC for both gait parameters was $r = 0.94$. Conclusion: For stride and step length measurements during a TUG task, the accuracy of data collected in 2D (Dartfish™) was comparable to that collected in 3D (Vicon™).

56 Personas que viajan diariamente a trabajar en Puerto Rico: características demográficas del evento. *Emmanuel Rodríguez-Ortiz, Melissa N. Martínez, Luz E. León*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

El desarrollo social y económico ocurrido en Puerto Rico a partir de la década del 50 provocó diversidad de cambios en los asentamientos geográficos humanos. Entre 1950 y 1970 los factores económicos afectaron considerablemente su distribución. A partir de 1990 la búsqueda de mayor calidad de vida y bienestar provocaron una redistribución de población, ésto en unión a una transportación masiva poco planificada y efectiva produjo un aumento en el número de personas que viajan diariamente a trabajar en su vehículo. El estudio tuvo como objetivo analizar las características de la población que viaja diariamente a su trabajo en P.R. La fuente de información utilizada fue la Encuesta de la Comunidad de P.R. de 2006-2010. El análisis fue uno de tipo descriptivo. La Isla cuenta con 1.1 millones de trabajadores de 16 años o más. El 88% viaja a su lugar de trabajo en automóvil camión o van, un 79.6% viaja solo. Solo el 3% indicó utilizar transportación pública. El 3.9% señaló caminar a su trabajo y un .2% viaja en bicicleta. Se observó una proporción más alta en las mujeres de utilizar "carpool" para llegar al trabajo. Un poco más de la mitad de los trabajadores laboran fuera de su municipio de residencia. A éstos le toma 30 minutos en promedio llegar a su trabajo, a un 13.4% le toma más de una hora. Cerca de una cuarta parte de estos sale de su hogar de 6 a 7 a.m. Un 7% señaló no tener vehículo en el hogar. En P.R. urge la necesidad de desarrollar un sistema de transportación masiva efectivo disponible para el trabajador. El mismo abonará a la salud y seguridad colectiva de nuestros trabajadores y de nuestro pueblo.

57 La primera década del S. XXI en Puerto Rico: una mirada al estado y dinámica demográfica de la mujer. *Emma E. Bruno-Quiroz, Luz E. León, Arnaldo Torres*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

La mujer en Puerto Rico presenta atributos demográficos que la colocan en una posición diferente a la de su contraparte masculina. Este estudio tuvo como objetivo examinar los cambios ocurridos en las características sociodemográficas de las mujeres durante la primera década del S. XXI. Las fuentes de información fueron el Censo de Población y Vivienda de 2010 y las Estadísticas Vitales del Departamento de Salud, 2008. Se utilizó un análisis descriptivo que incluye indicadores demográficos. La proporción de población femenina continúa en aumento. A partir de 1960 se ha observa un mayor por ciento de población fémina que de población masculina al igual que una mayor tasa de crecimiento. Las mujeres muestran una estructura de edad vieja desde los 90's. Estas muestran una mediana de edad mayor por 4 años que el hombre. El por ciento de población sobre los 65 años es más alto entre las féminas. Estas muestran un nivel educativo más alto y poseen una mayor proporción de viudas y divorciadas. La fecundidad de la mujer en la Isla ha presentado una continua disminución desde 1960, y un descenso considerable durante la primera década del S. XXI. Las mujeres menores de 20 años muestran una tasa de fecundidad similar a las de 30-34. La mortalidad por causas crónicas y degenerativas prevalece entre éstas. Las féminas poseen una expectativa de vida más alta que los varones con una brecha aproximada de 8 años. El análisis del esta-

do y dinámica demográfica de la mujer permite poder aspirar a una mejor planificación de servicios y al desarrollo de una política pública acertada encaminada al logro su bienestar y calidad de vida.

58 Violence Profile of Dominican Republic People Aging 50+ Years Old: An Analysis of Mass Media Communication and its Role of Violence Prevention among EldersPrevention among Elders. *Gabriel Vilella-Rivera, Víctor E. Reyes-Ortiz, Darleen González-Cortés, Jessenia Zayas-Ríos*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Elder violence is underestimated; however, violent events are related to higher mortality and morbidity rates in older people that could be prevented using mass media as a tool for violence prevention. Thus, this research intends to describe the documented events of violent perpetrated against those aging 50+ in online press as well as the relationship with the victimizers and type of violence. The study used the CDC "Public Health Approach to Violence Prevention Model" and STATA 11.0 to analyze the data. Results showed that from 937 cases of violence documented only 20 were documented for older people. In addition, many of the cases did not document the who, where, when, why and how of the event; indeed only 11 documented the sex of the victimizer (9 males/2 females) or their age (14 – 64 years). Also only 14 documented the sex (9 males/5 females) of the victims and their age (50 – 100 years). Regarding the relation among victims and victimizers 60% of the cases were family or an acquaintance. Last types of violence documented were: 90% suffered physical violence, 30% emotional and domestic violence, and 5% suffered emotional and sexual violence. In 14 of the cases the victim died, and only in one case the violent event was related to alcohol or other psychoactive substance. In conclusion, during the 6 months of review in online press, violent events among older people are barely visible. What is more, documented events rarely complain with its informative role, much less followed the CDC approach to prevent violence.

59 3d-Reconstruction of the Isolated Zebrafish Cardiac Muscle Thick Filament. *Maryví González-Solá*, Al-Khayat Hind†, Martine Behra*, Robert Kensler**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Imperial College London, London, United Kingdom

The zebrafish is an important model for studying the development of the cardiovascular system and the effect of mutations in various cardiovascular genes. Because of the relative ease of genetic screening, the zebrafish provides a unique model system for the study of the location and functional role of the proteins in adult macromolecular structures such as the cardiac thick filament. As a step towards this goal, we successfully developed a technique for the isolation of zebrafish cardiac thick filaments and examined them by negative staining with uranyl acetate and electron microscopy (EM). The isolated filaments appear well ordered with the characteristic 43 nm quasi-helical repeat of the myosin heads. We have also performed single particle image analysis on the collected EM images of the C-zone region of these filaments and obtained a 3D-reconstruction at 35Å resolution. This 3D-reconstruction shows many similarities, but also some differences from previous reconstructions of mammalian cardiac thick filaments. Our goal is to further refine the current image map of the zebrafish cardiac thick filament and use it as a model for comparison with the structure of isolated thick filaments with mutations or modifications in the thick filament associated proteins.

60 Expression of Basal-like Biomarkers in Triple Negative Invasive Breast Carcinoma in Puerto Rico. *Emmanuel Agosto-Arroyo, Consuelo Climent, Román-Vélez, Cruz M. Nazario, Mary V. Díaz-Santana*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Context: Routine hormone receptor protein and human epidermal growth factor receptor 2 (HER-2) analysis on invasive breast carcinomas provide therapeutic and prognostic values, revealing significant subgroups. Objective: The aim of this study was to determine the expression of basal cytokeratins and Epidermal Growth Factor Receptor (EGFR) in triple negative invasive breast carcinomas in Puerto Rico. Design: All invasive breast carcinoma cases consulted from 2008 to 2010 were included. Assessment of tumoral expression of Estrogen Receptor, Progesterone Receptor and HER-2 was performed. The cases were divided into cohorts based on their molecular categories and analyzed according to the histological tumor grade and age. Triple negative tumors were further analyzed according to their expression of EGFR and cytokeratins 5/6 and 14. Results: From 717 cases reviewed, 487 cases were included. The molecular categories were 65%, 10%, 9% and 15% for the luminal A, luminal B, Her-2 and triple negative groups, respectively. Assessment of basal cytokeratins and EGFR expression was performed on 41 triple negative tumors, 71% expressed at least one basal cytokeratin or EGFR and 29% were negative to all markers. Statistical significant difference ($p < 0.001$) was found between the molecular categories and tumor histological grade. Triple negative tumors were related to a higher grade. Conclusion: Prevalence and relation between tumor grade, molecular categories, and the expression of basal cytokeratins in triple negative tumors in our population is comparable to other ethnic groups.

61 The role of the eNOS/p53/mitochondria pathway in the anti-hypertrophic effect of AMPK in cultured cardiomyocytes. *Jessica M. Soto-Hernández, Sabzali Javadov*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Activation of AMP-kinase (AMPK) reduces cardiac hypertrophy although molecular mechanisms underlying this effect remain unclear. We examined the role of the AMPK/eNOS/p53 pathway in the antihypertrophic action of metformin (Met) in cell hypertrophy induced by angiotensin II (AngII). H9c2 cardioblasts were treated with AngII for 24h in the presence of the AMPK agonist, Met, the AngII type 1 receptor (AT1R) blocker, losartan, the pan-NOS inhibitor, Nω-nitro-L-arginine methyl ester (L-NAME) or the SIRT1 inhibitor, splitomicin. AngII increased AT1R expression and AMPK phosphorylation by 38% ($P<0.05$) and 20% ($P>0.05$), respectively, compared to control. Upregulation of AT1R was prevented by losartan that was associated with further phosphorylation of AMPK by 54% ($P<0.05$). Likewise, Met increased AMPK phosphorylation by 99% ($P<0.01$) and reduced AT1R levels by 30% ($P<0.03$) in the presence of AngII. Met also enhanced p-eNOS levels by 3.3 folds ($P<0.01$) and prevented AngII-induced upregulation of p53. Both L-NAME and splitomicin decreased AT1R expression in AngII-treated cells. Beneficial effects of Met converged on mitochondria that exhibited high membrane potential ($\Delta\psi m$). We concluded that antihypertrophic effects of Met were associated with the AT1R downregulation preventing mitochondrial dysfunction through the eNOS/SIRT1/p53 pathway. Supported by the grant SC1HL118669 from NHLBI NIH.

62 **Inactivation of the ventral hippocampus, but not basolateral amygdala, decreases bursting in infralimbic prefrontal cortex**. *Kelvin Quiñones-Laracuente, Francisco Sotres-Bayón, Gregory J. Quirk*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Neurons in the infralimbic (IL) prefrontal cortex (PFC) exhibit bursting that is correlated with the strength of extinction memory (BurgosRobles et al, 2008; Chang et al, 2010). IL bursting likely reflects activation of inputs necessary for successful extinction. Here we evaluated the contribution of two IL inputs previously implicated in extinction: the ventral hippocampus (vHPC) and the basolateral amygdala (BLA). The BLA communicates conditioned stimulus information to PFC (Laviolette et al, 2005), and vHPCPFC connections mediate brain derived neurotrophic factor (BDNF)facilitation of extinction memory (Peters et al, 2010). Following auditory fear conditioning, we recorded spontaneous activity of IL neurons before and after unilateral vHPC or BLA inactivation with GABAA agonist muscimol in rats. Inactivation of vHPC significantly decreased the incidence of short inter spike intervals (ISIs; 2080 ms; $ps<0.05$) without affecting firing rate ($p=0.33$). This suggests that activity in vHPC is necessary for IL bursting. In contrast, inactivation of BLA did not affect ISIs, but significantly decreased firing rate ($p=0.01$). These findings were specific to IL, as inactivation of vHPC had no effect on ISIs in prelimbic PFC. We suggest that, during extinction, bursting inputs from vHPC releases BDNF in IL, which potentiates auditory inputs that drive IL inhibition of fear in extinction.

63 **Reduced antioxidant capacity results in growth delay in P. berghei with impaired glutathione synthesis**. *Vivian Padín-Irizarry*, María del R. Castro*, Stefan M. Kanzok†, Sylvette Ayala-Peña*, Adelfa E. Serrano**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Loyola University, Chicago, United States of America

The Plasmodium parasite is exposed to endogenous and exogenous oxidative stress environments during its life cycle. To minimize oxidative damage, the parasite uses the glutathione (GSH) redox pathway as one of the primary antioxidant systems. Deletion of enzymes in the glutathione pathway γ-glutamylcysteine synthetase (pbggcs), the rate-limiting enzyme in GSH biosynthesis, and glutathione reductase (pbgr), reduces GSSG to GSH, resulted in the interruption of parasite development in the mosquito. In contrast, neither gene is essential for blood stage development; however, pbggc- parasites contained significantly lower GSH levels and exhibited a slower growth rate when compared to wild type (WT). The aim of this study is to identify potential mechanisms that cause the growth delay. Our working hypothesis is that the reduced antioxidant capacity affects parasite development. We analyzed the growth rate of pbggcs- parasites at two hour intervals. Simultaneously, we assessed oxidative stress by determining protein modifications, DNA damage as well as reactive oxygen species (ROS) levels. Also, we evaluated transcript abundance and protein expression of antioxidant enzymes using RT-qPCR and IFA, respectively. Here we show that the development of pbggcs- parasites is delayed when compared to WT. An inverse relationship between increased oxidative stress and GSH levels was observed suggesting that the reduced antioxidant capacity, negatively affects parasite development. Our studies provide new insights into the contribution of the GSH system to parasite development, which could translate in novel control strategies.

64 **Central administration of the NPYY2 antagonist BIIE0246 modulates sexual behavior in the male rat**. *Keyla M. Ramos-Pratts, Jennifer L. Barreto-Estrada*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Neuropeptide Y (NPY) is the most abundant neuropeptide in the brain and its neurons abundantly innervate the hypothalamus. It suppresses the gonadotropic axis and is implicated in the inhibition of the sexual response in males. The NPYY2 receptor (Y2R) is the predominant subtype in the brain and is highly expressed in the hypothalamus, however its role on sexual behavior has not been determined. Due to the inhibitory role of NPY in sexual responses, we aimed to determine the pharmacological effect of NPYY2R blockage using BIIE0246, a selective Y2R antagonist. This Y2R antagonist has been shown to participate in the control of the gonadotropic axis depending on gonadal status. In this study, BIIE0246 (1.5 mM, 5 mM, 10 mM) was infused in the third ventricle (2μg/μl for 5 minutes) at the level of the ventromedial nu-

cleus of the hypothalamus (VMN). Male rats infused with BIIE0246 showed a dose response effect in sexual behavior. The frequency of mounts and ejaculations were increased, as well as a decrease in the latency to the first mount and first ejaculation was observed. These behavioral changes occur without body weight or food intake modulation, which are mostly regulated by Y1 and Y5 receptors. These results suggest a key role of the NPYY2R in the hypothalamic NPYergic circuitry and in the regulatory mechanisms of the male sexual response.

65 **Changes in fibroblast growth factor-2 and FGF receptors in the frog visual system during optic nerve regeneration**. *Mildred V. Duprey-Díaz, Jonathan M. Blagburn, Rosa E. Blanco*. Institute of Neurobiology, University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

We have previously shown that application of fibroblast growth factor-2 (FGF-2) to cut optic nerve axons enhances retinal ganglion cell (RGC) survival in the adult frog visual system. These actions are mediated via activation of its high affinity receptor FGFR1, and by promoting MAPK and PKA signaling pathways. Nevertheless, the role of endogenous FGF-2 in this system is less well understood. We have hypothesized that the expression of endogenous FGF-2, and its receptors, is important for the regenerative process in the visual system after optic nerve lesion. We determined the distribution and protein expression levels of FGF-2 and its receptors in normal animals and in animals at different times after optic nerve cut. Immunohistochemistry and Western blot analysis were conducted using specific antibodies against FGF-2 and its receptors in control retinas and optic tecta, and after one, three, and six weeks post nerve injury. FGF-2 was transiently increased in the retina while it was reduced in the optic tectum just one week after optic nerve transection. Axotomy induced a prolonged upregulation of FGFR1 and FGFR3 in both retina and tectum. FGFR4 levels decreased in the retina shortly after axotomy, whereas a significant increase was detected in the optic tectum. FGFR2 distribution was not affected by the optic nerve lesion. Changes in the presence of these proteins after axotomy suggest a potential role during regeneration. Supported by grants NIH-GM 093869 and RCMI-G12RR03051, and by MBRS-RISE program and their support through the award R25GM061838 from the National Institute of General Medical Sciences.

66 **Detection of early-onset CRC tumor methylation biomarkers in plasma**. *Natalia Blanco-Cintrón*, Paulina Carcache*, Maria González-Pons†, Mercedes Lacourt†, Raul Bernabe†, Marcia Cruz-Correa†*. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico

Colorectal cancer (CRC) is the 2nd leading cause of cancer-related deaths in the US and Puerto Rico. Recently, a dramatic increase in early-onset CRC (EO CRC;<50 years) among Hispanics (45%) compared to other ethnic groups was reported, despite a decrease in late-onset CRC (LO CRC;>50 years). This highlights the need for a diagnostic tool for individuals <50 years who fall outside current screening guidelines in order to reduce this age-ethnic cancer health disparity. Aberrant methylation patterns, known as the CpG island methylator phenotype (CIMP), are associated with CRC. The aim of this study was to compare the methylation profile between EO and LO CRC patients to determine if EO CRC-specific methylation markers identified in the tumor were detectable in plasma. The methylation status of 5 CIMP-specific gene promoters (CACNAG1, NEUROG1, RUNX3, SOCS1 and MLH1) were evaluated in 25 CRC tissues (6 EO CRC;19 LO CRC) by methylation-specific PCR (MSP). CACNAG1 methylation status was evaluated in 20 plasma samples from LO CRC patients via MSP. Results show that CACNAG1 was predominantly methylated in EO CRC tumors (50%) whereas it was only methylated in 26.6% (3/19) of LO CRC. NEUROG1, RUNX3 and MLH1 were only methylated in LO CRC. In LO CRC, CACNAG1 was unmethylated in 100% of the plasma samples detected (18/18). Preliminary analyses suggest that Hispanic EOCRC tumors have a distinct methylation profile; CACNAG1 was more methylated in EO CRC than in LO CRC tumors. Similar to what was detected in LO CRC tissue, CACNAG1 was unmethylated in all of the plasma samples detected supporting its potential as a screening biomarker.

67 **Behavioral effects of brain Oxytocin in cocaine seeking behavior and cocaine conditioning**. *Amarilys Morales-Rivera*, Mayte M. Hernández*, Carmen S. Maldonado-Vlaar†*. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Rio Piedras, Puerto Rico

Addiction is defined as the loss of controlover drug use despite the negative consequences.Studies have revealed that the maintenance of cocaine addiction requires three key contributors:the reinforcing effects of cocaine, the environmental cues, and stress.Oxytocin (OT) is a neuropeptide that has been related to reward, learning, memory and stress, events associated with cocaine addiction.Data from our laboratory demonstrated an increase in mRNA OT levels within the NAc by cocaine exposure.The hypothesis for these studies is that centrally administered OT, or an agonist, will be modulating the stress/anxiety response elicited by environmentally elicited cocaine seeking behavior(CSB).We investigated the effects of OT in the extinction and reinstatement of self administration paradigm(SA) and in the cocaine conditioning paradigm(CC), while micro-injecting OT agonist (T-got) and OT into the Ventricular system (ICV).Animals were randomly divided into experimental and control group and

received ICV microinjections (10µmol/µl, 10µmol/10µl) during extinction, reinstatement of the SA paradigm and expression day of CC paradigm, and elevated plus maze(EPM) testing.Results showed that during extinction no significant differences between drug treatments were found.The reinstatement data that showed that OT and Tgot treatment diminished cocaine seeking behavior.For the CC paradigm an increase of time in the open arms for the OT treated group compared with vehicle attenuated the anxiety triggers by the cocaine-paired environment. Thus,these results, suggest OT as a potential pharmocotherapeutical candidate in treating cocaine addiction.

68 **Evidence of Human papillomavirus E6 and E7 active expression in colorectal cancer**. *Wesley Villavicencio-Torres*, Sharon C. Fonseca†, Mercedes Y. Lacourt†, Raul D. Bernabe-Dones‡, Marcia R. Cruz-Correa†*. *University of Puerto Rico, Rio Piedras, Puerto Rico; †University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico; ‡University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Purpose: The role of human papillomavirus (HPV) has been well established in the pathogenesis of cervical and anogenital cancers. However, the role of HPV in colorectal cancer (CRC) is still undetermined. Our objectives were: to evaluate the presence of HPV infection in patients with CRC and to determine the mRNA expression of the viral oncogenes HPV-16 E6 and E7. Methods: An age-and-gender matched case-control study using tumor and tumor-adjacent colorectal tissues from patients with CRC (cases) and without CRC (controls). Presence of HPV- DNA was performed by nested PCR. We detected the expression of E6 and E7 mRNA in the HPV-16 (+) cases by real-time PCR. Hypothesis testing was performed using Pearson Chi-square analysis of proportions and conditional logistic regression using SPSS 17. Results: A total of 54 (ß-actin+) CRC patients (mean age 61 ±11 years, 27 males) and 36 controls (mean age was 60 ± 9 years, 18 males) were evaluated. HPV DNA was identified in 25 of 54 (46.3%) patients with CRC and in 1 of 36 (2.8%) controls (OR = 25.58; 95% CI 3.22 to 203.49, $p < 0.001$). HPV-16 was identified in 18 of 25 (72.0%) HPV-positive CRC. All 18 HPV-16 CRC cases showed expressed E6 mRNA. Six of 18 (33.3%) HPV-16 positive cases expressed E7 mRNA. Conclusion: These results support that colorectal HPV infection is common among patients with CRC. Moreover, our finding of highly frequent active expression of E6 and E7 viral oncogenes in the host strongly suggest that HPV oncoproteins play a role in the pathogenesis of CRC. U54 RR026139 & 8U54MD 007587-0

69 **Analysis of the Estrogen receptor alpha after spinal cord injury and its possible role in neuroprotection**. *Jennifer M. Colón-Mercado*, Laurivette Mosquera*, José M. Santiago†, Aranza Torrado*, José Rodríguez-Orengo*, Annabell C. Segarra*, Jorge D. Miranda**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Carolina, Puerto Rico

Estradiol (E2) mediates cellular responses after binding to intracellular and membrane receptors. Its neuroprotective role has been suggested from experiments performed mostly in neurodegenerative diseases and brain trauma. However, the role and mechanism of E2 as a neuroprotective hormone in spinal cord injury (SCI) is unknown. We hypothesized that SCI may trigger changes in estrogen receptor levels and that continuous E2 administration will promote recovery for injured rats at the behavioral, cellular and molecular level. We examined the expression of the Estrogen Receptor alpha (aER) on injured Sprague Dawley rats, using the NYU device compression model to the thoracic vertebra (T10) area. Western blot analysis demonstrated a significant 5-fold increase in aER after SCI. Rats with E2 implants showed significant improved locomotor behavior in open field and grid walking tests, and this effect was blocked with the aER antagonist, MPP-dihydrochloride. In addition, animals treated with E2 reduced the lesion cavity and the levels of reactive oxygen species (ROS) significantly. Tamoxifen (TAM) treatment was also evaluated to reduce possible detrimental effects from E2 administration. Rats treated with TAM had reduced ROS levels and recovered some locomotor activity at 28 days post injury. Results suggest that E2 mediates neuroprotection in SCI by improving locomotor function, reducing the extent of the lesion and ROS while TAM administration suggest a safer, alternative treatment for SCI. Approved by IACUC #2450113, October, 25, 2012. Sponsored by the RCMI(G12RR03051), MBRS/RISE(R25GM061838) and SCORE(2S066M8224) programs.

70 **Assess contaminants in water and sediment samples from urban rivers of Puerto Rico**. *Ana I. Ortiz-Colón*, Jonathan L. Crooke*, Luis R. Colón*, Liz Díaz†, Alonso Ramírez†, María A. Sosa**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Rio Piedras, Puerto Rico

Environmental and sociological global changes affect ecosystems. Activities, such as urbanization, manufacture, agriculture, and transportation often lead to contamination of natural water resources through runoff from sewer systems or illegal dumping. We wish to determine if urbanization near Puerto Rico rivers results in increased levels of organic and metal contaminants, and how these contaminants may affect behavior and the nervous system of aquatic fauna. The Rio Piedras (RP) and La Plata (LP) rivers have been chosen as urban rivers with differing hydrological flow characteristics, with Rio Mameyes (RM) serving as a control. Water and sediment samples were collected at three points of each river and analyzed using Gas Chromatography-Mass Spectrometry and Atomic Absorption

Spectrometry. Initial results for organic compounds from RP indicate that water contains at least 34 organic contaminants and sediments at least 14, including various phthalates, esters, petroleum-based products, and remnants of pharmaceuticals. Levels of metals, such as copper (Cu), were also determined in the surface water of RP and LP. In RP Cu was detected at levels of 0.008, 0.014 and 0.029 mg/L in the upper, middle and lower reaches of the river, respectively. In LP, Cu remained constant at 0.004 mg/L throughout its full length. Experiments are in progress to determine concentrations of organic contaminants and other metals, and to continue the sampling of the LP and RM. Once this information is available, effects of the contaminants will be assessed on freshwater prawns. Supported by: NSF HRD-1137725 CREST, NIH MBRS-RISE 2R25-GM061838-13

71 MiR-27b and their targets genes promote cisplatin resistance of epithelial ovarian cancer cells. *Ileabett M. Echevarría-Vargas*, Fatma Valiyeva†, Pablo Vivas-Mejía**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico

MicroRNAs (miRNAs) are small non-coding RNAs (21-23 nucleotides) involved in gene regulation by sequence specific binding to the 3'-untranslated regions (3'-UTR) of messenger RNAs (mRNAs). Accumulated data has established the central role of various miRNAs in tumor initiation, progression and drug resistance. In ovarian carcinoma, it has been shown that several miRNAs contribute to the development of drug resistance. However, the role of these miRNAs in cisplatin resistance in ovarian cancer is unclear. In a microarray study, we found that pre-miR-27b was upregulated in A2780CP20 cisplatin-resistant epithelial ovarian cancer cells compared with its parental A2780PAR cells, which are sensitive to cisplatin treatment. Quantitative Real-time PCR studies confirmed these findings. We used miRNA target prediction software (Miranda, TargetScan and MIRDB) to predict the potential genes targeted by miR-27b. Interestingly, some of these miR-27b-target genes were identified as downregulated in our microarray study. These results were corroborated by RT-PCR analysis. A miR-27b inhibitor induced cell growth arrest in A2780CP20 cells, as observed by cell growth and clonogenic assays. Furthermore, a single injection of a liposomal miR-27b inhibitor into nude mice bearing human ovarian tumors increased the expression of two miR-27b-target genes, ZNF516 and HOXC11. These results indicate that deregulation of miR-27b and their target genes contribute to the cisplatin resistance of epithelial ovarian cancer cells. Supported by Institutional seed funds from the UPR Comprehensive Cancer Center and NHI, MBRS-RISE (R25-GM061838).

72 Role of cystatin B/STAT-1 interaction in IFN-β induced antiviral response and HIV replication. *Linda E. Rivera-Rivera, Krystal Colón, Loyda M. Meléndez*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Cystatin B, a cysteine protease inhibitor, is correlated with increased HIV replication in monocyte-derived macrophages (MDM) and its interaction with signal transducer and activator of transcription-1 (STAT-1). Whereas STAT-1 activates HIV-1 replication, high levels of tyrosine phosphorylated STAT-1 (STAT-1PY) has been associated with HIV-1 inhibitory activity. However, in MDM, high levels of cystatin B correlate with a reduction of STAT-1PY suggesting a mechanism of HIV induction. Furthermore, our study in Vero cells determined that cystatin B inhibited the IFN-β response by preventing STAT-1 translocation to the nucleus and decreasing levels of STAT-1PY. The aim of this study is to define the relationship between cystatin B, and STAT-1 phosphorylation in order to elucidate the role of cystatin B in promoting viral replication in macrophage reservoirs. Proximity-Ligation-Assay (PLA) in MDM revealed that cystatinB/STAT-1 interaction increase after HIV infection but not the STAT-1 tyrosine phosphorylation. Furthermore, siRNA-mediated gene silencing of cystatin B increased the STAT-1PY levels in HIV infected MDM. Current studies are directed to determine if this reduction of STAT-1PY inhibits the expression of IFN-dependent antiviral genes resulting in increased HIV replication in macrophage reservoirs. Supported by NIH grants F32MH094210-01A1, R01-MH08316-01, RCMI-NCRR-G12RR03051, SNRP-NINDS-1-U54NS431.

73 Nramp in S. schenckii: role in the uptake of cations and its regulation under different Mn concentrations. *Lizaida Pérez-Sánchez, Nuri Rodríguez-del Valle*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Living organisms require divalent cations as cofactors for a big array of enzymes. The acquisition of cations is tightly regulated; high levels of these cations can damage the cell and low levels can compromise the proper functioning of cells. Systems for the acquisition of metals are described as important virulence factors. The long-term goals of this research are to study the role of the Sporothrix schenckii Nramp (Natural resistance associated macrophage protein) homolog in metal acquisition and virulence in this fungus. In this work we have studied the expression of the ssnramp transcript in S. schenckii yeast cells growing at different concentrations of added manganese (Mn) using Quantitative Real-Time PCR (qRT-PCR). We observed that when WT yeast cells were grown under different Mn conditions there was a significant up-regulation in the ssnramp transcript level in cells grown in 0 mM of Mn when compared to 0.1 mM and 1 mM Mn. RNAi interference was used to silence the expression of the ssnramp gene in S. schenckii. Transformation of S. schenckii yeast cells with plasmid pSD2G containing an insert of the 5' end of the ssnramp gene showed a down-regulation of the expression of ssnramp

of 24% when compared to the controls using qRT-PCR. These cells when grown in media without metals Mn or Fe and in media containing a metal chelating agent (EGTA) showed decreased growth. This is characteristic of Nramp mutants in other fungi. These results led us to conclude that not only SsNramp is involved in the uptake of Mn but that this cation regulates the expression of the Nramp transcript. Support by MBRS-RISE (R25GM061838).

74 **Expression of the base excision repair enzyme APE1 in striatum of a Huntington's disease mouse model**. *Dennisse A. Rubio-Colón*, Sulay Rivera-Sánchez†, Karina Acevedo-Torres†, Sylvette Ayala-Peña†*. *University of Puerto Rico, Rio Piedras, Puerto Rico; †University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Huntington's disease (HD) is a fatal, neurodegenerative disease caused by a mutation in the huntingtin gene and is characterized by symptoms including motor dysfunction, cognitive and behavioral problems. The mechanisms leading to HD remain unclear, however, studies support the role of oxidative stress and mitochondrial dysfunction in HD. The base excision repair (BER) pathway plays an important role in the repair of oxidative mitochondrial DNA (mtDNA) lesions. Mice deficient in APE1, the main endonuclease in BER, show elevated levels of oxidative markers, increased mutagenesis and accumulation of striatal mtDNA damage. We have recently shown that silencing of APE1 leads to mitochondrial dysfunction and to impaired localization of APE1 into the mitochondria of mutant huntingtin-expressing mouse cells after an oxidative insult as compared to WT cells. However, whether protein expression levels of APE1 are associated to the accumulation of oxidative mtDNA lesions and mitochondrial dysfunction in HD is unknown. We hypothesize that APE1 may be differentially expressed in striatum of HD mice versus wild type mice. In this study, we evaluated the expression of APE1 in striatum of a knock-in mouse model of HD (HD150KI) using Western blot. Preliminary data show that APE1 levels appear to be reduced (22% reduction) in striatum of HD mice compared to WT mice after normalization with alpha–tubulin expression. These results correlate with increased levels of striatal mtDNA damage and suggest that APE1 and thus, BER may be associated with HD pathogenesis. Supported by U54-NS039408, R25-GM061838, 2G12-RR003051 and 8G12-MD007600.

75 **Plan para la implantación de una estrategia dirigida a comerciantes vendedores de bebidas alcohólicas del municipio de Vega Baja, en la prevención de venta de alcohol a menores de 18 años**. *Santos Villarán-Gutierrez, Ana M. Parrilla, Michelle Reyes*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

En el 2009, la Administración de Servicios de Salud Mental y Contra la Adicción reportó que entre la población puertorriqueña de 15 y 74 años al menos 3/4 partes había consumido alcohol alguna vez en la vida. En la Isla, el consumo de alcohol ha sido clasificado como un problema de salud pública. Entre los problemas asociados se encuentran los accidentes de tránsito, ahogamientos, lesiones, homicidios, asaltos y la violencia doméstica. Objetivo: Presentar un plan para ofrecer un nuevo servicio de salud basado en el modelo "Responsible Beverage Service o Training Server" dirigido a capacitar a comerciantes y empleados en la prevención de venta de alcohol a menores de 18 años y el cumplimiento de políticas de alcohol. Método: Se utilizaron resultados del Estudio "Encuesta Juvenil 2007" de ASSMCA y de una revisión sistemática de la literatura. Se diseño un plan de trabajo para la implantación de un servicio de salud en una organización comunitaria y se evaluó su viabilidad. Resultados: La organización mostró interés en integrar el nuevo servicio y cuenta con el presupuesto necesario para la implantación del mismo. El personal profesional de la organización posee las competencias para adaptarse a los requerimientos del nuevo servicio. Conclusión: Hay que desarrollar estrategias basadas en evidencia científica que aborden el problema de acceso de alcohol en menores de 18 años. Es necesario identificar a todos los protagonistas de este problema de salud pública entre ellos al adolescente, al comerciante, la comunidad y el estado para la creación implementación, fiscalización y evaluación de políticas relacionadas al alcohol.

76 **The effect of temperature on synaptic growth and physiology is dependent on RNA editing**. *Daniel A. Alicea-Delgado*, Bruno Marie†*. *University of Puerto Rico, Rio Piedras, Puerto Rico; †Institute of Neurobiology, University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

With climate change impacting the planet and urbanization affecting Puerto Rico, it is important to ask how these changes affect an organism's nervous system. We believe that Drosophila could be a model of choice to assess the consequences of the environment on neurons. Here, we attempt to determine the physiological and anatomical consequences of temperature change on the neuromuscular junction (NMJ). To do that, we used immunohistochemistry and electrophysiology techniques to characterize the synaptic growth and physiology at different temperatures. We found an increase in both synaptic growth and release at higher temperatures. Moreover, because RNA editing has recently been linked to temperature adaptation as well as the structure and function of the Drosophila NMJ, we decided to characterize its role in regulating temperature-dependent processes at the NMJ. We hypothesized that RNA editing is essential to the acclimation to temperature. To test this hypothesis, we obtained mutants of the enzyme responsible for RNA editing, Adenosine Deaminase Acting on RNA (Adar), and characterized the synaptic growth and physiology

at different temperatures. We found that the increase in synaptic growth and release observed in control larvae at higher temperatures was strongly reduced in the Adar mutants. Hence, we conclude that RNA editing is necessary for temperature-dependent synaptic growth and release. This work was supported by grants from NSF HRD-1137725.

77 Screening of potential inhibitors against Glutathione S-transferase of the malarial parasites. *Emilee E. Colón-Lorenzo, Cornelis P. Vlaar, Ricardo González-Méndez, Adelfa E. Serrano*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Glutathione S-transferase (GST) is a detoxification enzyme that catalyzes the conjugation of glutathione to toxic compounds. It has been associated with drug resistance and proposed as a potential drug target against Plasmodium. Our hypothesis is that GST has a crucial role for parasite development and can represent a potential target for the development of novel drugs. The P. berghei GST (pbgst) gene was sequenced, consisting of an 808bp ORF containing one intron. The predicted protein sequence of the pbgst gene comprises 205 amino acids encoding a 50 kDa native protein. Using a reverse genetic approach we assessed the role of pbgst in the erythrocytic stages, suggesting that GST is essential for blood stage proliferation. To confirm the essential role of the pbgst gene, we are performing integration experiments to fuse a tag at the 3' end of the pbgst gene to show that the pbgst locus is amendable to genetic manipulation. A structural model of the tertiary structure of the P. berghei GST monomer was generated using the Phyre server. A virtual screening to select potential inhibitors against PbGST is currently underway using the AutoDock Vina software. The binding modes of the compounds with the best binding energies were analyzed, and the most promising drug-like molecules will further be tested for inhibition of the GST enzymatic activity in vitro. This work should enhance our understanding on the role of Plasmodium GST and will be important for the discovery of new antimalarial drugs. Funding: NIGMS/MBRS award GM08224, RCMI award 2G12-RR003051 and 8G12-MD007600, ASM Watkins Fellowship and MBRS-RISE award R25-GM061838.

78 Mitochondrial DNA Damage and Mitochondrial Function During Acute Oxidative Stress induced by H2O2 in Saccharomyces cereviseae. *Yaria Arroyo-Torres, Sylvette Ayala-Peña, Carlos A. Torres-Ramos*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Understanding how cells repair mitochondrial DNA (mtDNA) damage is of great relevance to human health because mtDNA damage and mutations have been associated with diseases such as cancer, neurodegenerative disorders and aging. MtDNA is particularly susceptible to reactive oxygen species (ROS)-induced damage because of its close proximity to the electron transport chain, the lack of protective histones, and the limited repertoire of DNA repair mechanisms in the mitochondria. Base excision repair (BER) is the main repair mechanism responsible for the removal of ROS-induced DNA damage. We seek to understand the relationship between mtDNA damage and maintenance mitochondrial function. To test this hypothesis we determined mtDNA damage and mitochondrial membrane potential in Saccharomyces cerevisiae after acute oxidative stress induced by H2O2. We observed that mtDNA damage increases in a dose response manner with H2O2 treatment. Moreover, we observed a synergistic interaction between the BER genes, OGG1 and APN1 in the repair of mtDNA damage after acute oxidative stress. H2O2 treatment also disrupted mitochondrial membrane potential but this effect was not increased in any of the BER mutant yeast strains. These results suggest that lost of mitochondrial function during acute oxidative stress may be independent of mtDNA damage. We are currently examining the possibility that the effects of mtDNA damage and its repair in mitochondrial function may be more chronic than acute. Sponsored by 5SC3GM08475902 and G12RR03051.

79 Age-dependent Accumulation of DNA Damage and Mutations in APEX1+/- Mice. *Ceidy Torres-Ortiz*, Karina Acevedo-Torres*, Christi A. Walter†, Sylvette Ayala-Peña*, Carlos A. Torres-Ramos**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †The University of Texas Health Science Center at San Antonio, Texas, United States of America

Repair of DNA lesions induced by Reactive Oxygen Species (ROS) is important to human health since DNA damage has been linked to aging and carcinogenesis. Apurinic/apyrimidinic endonuclease 1 or Apex1, is a key enzyme in the process of Base Excision Repair (BER), a process responsible for repairing the majority of the DNA lesions induced by ROS. Studies using APEX1 haploinsufficient mice (APEX1+/-) show increased oxidative stress. We hypothesize that APEX1 haploinsufficiency leads to age-dependent increases in DNA damage and mutations caused by increased levels of ROS. We tested this hypothesis by determining the amount of DNA damage and antioxidants gene expression from liver tissue in three different age groups (6-,16- and 28-months-old) using wild type (WT) and APEX1+/- mice. To detect DNA damage we performed a gene specific assay based on PCR that can detect a variety of DNA lesions. Our results show age-dependent increases in mtDNA and nDNA damage in both WT and Apex1+/- mice. Analysis of spontaneous mutant frequencies using the lacI transgene system (Big Blue Mouse) show age-dependent increases in mutation frequency in liver tissue from old mice in both Apex1+/+lacI+/+ and Apex1+/-lacI+/+ mice. Finally, analysis of gene expression using RT-PCR shows increase levels of the mitochondrial superoxide dismutase (SOD2) gene in the 28-month-old Apex1+/- mice. We conclude that APEX1 haploinsuffiency leads to age-de-

pendent accumulation of ROS, DNA damage, and mutations in liver. These results underscore the role of BER in maintaining genome stability in liver during aging.

80 Mechanism of action of Ehop-016, a small molecular inhibitor of the interaction of Rac with its exchange factor Vav. *Tessa W. Humphries-Bickley, Suranganie Dharmawardhane*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

The Rho GTPase Rac is an important regulator of cellular processes required for metastatic progression. Rac is activated when GDP is exchanged for GTP by guanine nucleotide exchange factors. We have previously shown that in metastatic breast cancer cells, the small molecule inhibitor Ehop-016 inhibits Rac activity by preventing the interaction of Rac with the GEF Vav2, in-vivo (Montalvo-Ortiz, et al., 2012). Vav2 is an important oncogene and has been implicated in multiple cancers including breast, lung, and melanoma. The purpose of this study is to characterize the mechanism by which EHop-016 inhibits the Vav/Rac interaction in-vitro, using bacterially expressed Vav and Rac proteins. We designed primers and optimized a gel end-point PCR to produce a constitutively active Vav2 mutant containing only the active domains without the N-terminal autoinhibitory domain. ΔN-Vav2 was cloned into a pET200 vector using TOPO cloning for expression as a His-tagged fusion protein. The ΔN-Vav2, an 81kDa protein, was purified by affinity chromatography using His-Select followed by Sephadex 200 size exclusion chromatography. The purified ΔN-Vav2 and bacterially expressed GST-Rac will be subjected to in-vitro complex formation assays to characterize the kinetics and affinity of Ehop-016 inhibition of the Vav2 and Rac interaction. These experiments will validate the use of Ehop-016 to specifically inhibit Vav/Rac mediated cell functions that contribute to cancer cell and immune cell migration and invasion in the tumor microenvironment. Supported by grants 5U54CA096297 (THB) and RISE-R25GM061838 (THB), and DoD/BCRP W81XWH-07-1-0330 (SD).

81 Structural optimization of the Rac GTPase inhibitor EHop-016. *Ericka Vélez-Bonet, Cornelis Vlaar, Eliud Hernández*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

The Rho GTPase Rac family are intracellular signaling proteins that control gene expression and various cellular functions including invasion and metastasis. Furthermore, they have been reported to be implicated in cancer initiation and progression. Rac1 is a member of the Rho family GTPases associated with lamellipodia or invadopodia causing invading cells to migrate, and is activated via association with Guanine Exchange Factors (GEFs), among which Vav2. Increase Rac1 activation has been associated with increased breast and brain cancer cell proliferation and invasion. Therefore, one main goal is to focus on the design of novel Rac inhibitors for the development of anticancer drugs. Previously, our laboratory synthesized EHop-016, being the first known inhibitor of Vav2-Rac1 interaction in MDA-MB-435 metastatic cancer cells at low micromolar concentrations. In order to reduce the toxicity and increase the potency, we utilized molecular docking to design novel EHop-016 derivatives. The carbazole group of EHop-016 appeared to be required for inhibitory activity, and thus was maintained as a core fragment in further design. From the docking experiments, replacement of the central pyrimidine ring with other building blocks that orient the potential inhibitors into a U-shaped conformation, provided the best docking results. Novel molecules, that according to docking results bind much better to Rac1 than EHop-016 will be presented, and the specific interactions leading to increased binding will be discussed. These proposed improved inhibitors of Rac activity could lead to novel antimetastatic cancer therapies.

82 Age-dependent effects of the anabolic steroid nandrolone in conditioned place preference and anxiety. *Freddyson J. Martínez-Rivera*, Eduardo Natal†, Namyr A. Martínez*, Roberto A. Orozco‡, Oscar A. Muñiz†, Jennifer L. Barreto**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Rio Piedras, Puerto Rico; ‡University of Puerto Rico, Cayey, Puerto Rico

The misuse of anabolic-androgenic steroids (AAS) is widespread among adults and adolescents, representing a considerable public-health problem. It has been suggested that most AAS users initiate misuse for the anabolic effects, but many develop neuropsychological dependence. Previously, we have shown that nandrolone (ND) induced conditioned place preference (CPP) in a dose response manner in the adult male mice without affecting locomotion and anxiety-like behaviors (ALB). However, the rewarding effects of ND during adolescence remain unidentified. In this study we measured CPP, locomotor activity and ALB after exposure to ND (7.5, 0.75, 0.075mg/kg) in adolescent male mice. Elevated plus maze (EPM) was also used to analyze ALB, locomotion, stereotype, and risk assessment (RABs) behaviors. Results showed that ND: i) shifted place preference in adults, but not in adolescents, ii) failed to cause changes in ALB in the adults, whereas it elicited anxiolytic-like behavior in adolescents, iii) did not affect RABs in adults nor in adolescents, iv) increased grooming (stereotype behavior) in adult mice but not in adolescents, v) did not altered body and gonadal weights. Western blots analysis of the nucleus accumbens, a key structure in the reward mesolimbic circuit, showed a decrease in the type 1-dopamine receptor (D1DR) expression only in ND-treated adults. Results suggest that differences in the dopaminergic mesolimbic system might account for the CPP sensitivity throughout development.

83 Assessment of effects of Puerto Rico's urban river contaminants on interactive behavior of M rosenbergii. *Jonathan L. Crooke-Rosado*, Laura*

C. Vicente†, Erick X. Pérez†, Francelly Martínez, Nilsa M. Rivera*, María A. Sosa**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Cayey, Puerto Rico

As global population grows, so does the drive for urbanization, and within urban areas people tend to cluster near water resources. The resulting anthropogenic activities have an impact on the quality of these water resources. Aquatic fauna in these ecosystems are thus facing anthropogenic environmental changes that may affect their chances for survival. Puerto Rico has a population density that is among the highest worldwide, and the impact of contaminants resulting from urbanization on its natural ecosystems has not been thoroughly studied yet. We focused on monitoring the effects of heavy metals and organic contaminants present in urban rivers of Puerto Rico on the behavior of the freshwater prawn, Macrobrachium rosenbergii. Prawns were first exposed to water brought from urban rivers of interest, such as the Río Piedras River. The prawns were then exposed to lab water with added known concentrations of individual chemicals, simulating those found in the urban rivers. Behavioral observation studies were performed and recorded to quantify specific aspects of the animal´s interactions. Three different pairs of M. rosenbergii were each exposed to 0.050 mg/L dibutyl phtalate, 0.050 mg/L phthalic acid, and 0.029 mg/L copper, concentrations similar to those found in the Río Piedras river and estuary. Preliminary data show that water from the Rio Piedras river increased the dominance index of dominant prawns. Dibutyl phtalate reduced the dominance index of the submissive prawns and copper reduced self-behaviors in both prawns within a pair. Supported by: NSF HRD-1137725 CREST

84 **In vitro and in vivo Characterization of Orf6, a Putative Thioesterase**. *María M. Rodríguez-Guilbe*, Hidetoshi Okuyama†, Abel Baerga-Ortiz**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Hokkaido University, Japan

Polyunsaturated fatty acids are made in deep-sea organisms by the activity of a polyketide synthase multienzyme. The final step in the biosynthesis of polyketides and fatty acids is catalyzed by the activity of the thioesterase (TE) domain, which cleaves the final product off of the carrier protein. However, no TE domain has been identified in any of the known PUFA synthase clusters. We propose that orf6 gene is a candidate TE, since it is conserved among PUFA-producing bacteria and it is adjacent to the PUFA gene cluster in Photobacterium profundum. In order to test our hypothesis we have cloned, expressed and purified Orf6 protein with the aim of characterizing the protein structurally and functionally. Our results show that Orf6 has thioesterase activity and a substrate preference towards palmitoyl-CoA and eicosapentanoyl-CoA (0.016 and 0.014 μmol TNB/min*mg of protein, respectively). Orf6, however, was unable to enhance PUFA production or to complement a TE-deficient strain of E coli harboring the PUFA synthase genes. Structural and mechanistic knowledge of this enzyme will be important for the development of the PUFA synthases as a platform for the production of fatty acids. This work was funded by grant CHE0953254 from the NSF and MBRS-RISE Program (R25GM061838) of the UPR-MSC.

85 **Comparing the effect of Sensory Feedback strategies on Locomotor activity using a Mammalian Spinal Cord Limbs-attached preparation**. *JeanMarie Acevedo-Rosario, Manuel Díaz-Ríos*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

The basic motor patterns driving the rhythmic movements of our lower limbs during walking are generated by groups of neurons called central pattern generators (CPGs) which are located within the spinal cord. Sensory information generates signals to the spinal CPG allowing it to adapt to the environment. After a spinal cord injury descending fibers become severed or nonfunctional which leaves the spinal CPG locomotor network without its neurochemical drive. We are interested in assessing the role of sensory feedback to the mammalian locomotor CPG network by using an early postnatal mouse spinal cord-legs attached preparation were the loss of descending brain and brainstem inputs has been lost. Removing sensory feedback coming from the hindlimbs by way of a lower lumbar transection or by ventral root dennervation revealed subtle and, in some cases, drastic changes in motorneuron burst amplitude, phasing activity and even cessation of the locomotor rhythm itself. There was a positive correlation of age with sensory input deprivation through lumbar transection and ventral root cut. The variability in the motor responses as a function of age recorded after the loss of sensory feedback could be correlated with the developmental maturity of the locomotor CPG network and a use-dependent relationship with sensory information. Understanding which sensory-motor pathways and their pharmacological and physiological properties could provide a more specific roadmap for designing effective interventions to regain motor function following a spinal cord injury.

86 **Total Body Irradiation of Male BALB/C Mice with Cobalt-60**. *Luis R. Sepúlveda-García, Ernesto P. Esteban*. University of Puerto Rico, Humacao, Puerto Rico

Total body irradiation is one of the most known radiotherapy procedures to fight cancer. Radioactive sources and accelerators provide X rays or gamma radiation to kill cancer tumors. To test new protocols, and the acute or chronic responses to ionizing radiation, a laboratory mouse is widely utilized. The purpose of this research is to merge the radiation studies of Jones et al (Radiation Research 128, 258-266, 1991), and recent experimental work carry out by Zhang et al. with male BALB/C mice irradiated with Cobalt-60 (J.

Radiat. Res., 52, 828-833, 2011). Without neglecting sublethal repair or cell repopulation, and for a given total dose, Jones' three-model compartment was used to obtain mice's surviving and killed cell populations. These results were compared with the experimental data obtained by Zhang et al. As a consequence, for total doses of 6 Gy, 6.5 Gy, and 10 Gy, we obtain the surviving fraction cell population values associated with the percent of surviving irradiated mice. In this way, we showed how to link a cellular model with the radiation-induced animal mortality data. NIH-RISE and the University of Puerto Rico-Humacao supported this research.

87 Oxidative stress response in the bioluminescent marine bacterium Vibrio fischeri. *Zomary Flores-Cruz*, Eric V. Stabb†*. *University of Puerto Rico, Rio Piedras, Puerto Rico; †University of Georgia, Georgia, United States of America

The bacterium Vibrio fischeri forms a natural symbiosis with the Hawaiian Bobtail squid, Euprymna scolopes. The squid produces reactive oxygen species (ROS) in response to V. fischeri colonization, therefore V. fischeri must be able to overcome oxidative stress in order to persist in its host. Methionine sulfoxide reductases (Msr's) repair oxidized methionine residues in proteins, which could otherwise lead to protein inactivation. Based on sequence analysis and homology to other systems, V. fischeri possesses four distinct msr genes. We have constructed V. fischeri mutant strains lacking msr genes in all combinations. All strains grow and luminesce in culture as well as the parental strain. Results indicate that msrB is solely responsible for superoxide tolerance in culture. An msr null strain does not have a light organ colonization defect, suggesting that the oxidative stress perceived by V. fischeri during light organ colonization is not sufficient to limit growth and survival through protein damage or that other oxidative stress response genes prevent protein oxidation in V. fischeri. Sensitivity to hydrogen peroxide in culture is observed in a msr null strain also lacking catalase. Moreover, the msr null strain is deficient in competitive colonization of squid light-organs when co-inoculated with the catalase mutant strain. Taken together, results suggest that catalase activity protects V. fischeri proteins from oxidative damage and that in the absence of catalase msr genes are necessary for hydrogen peroxide stress response.

88 CCL4 Alters Prostate Cancer Cell Migration and Stimulates the Expression of Smooth Muscle Actin. *Krizia Rohena-Rivera, María M. Sánchez, Joseph A. Casillas, Nemesis Merly, Mariela Pérez, Magaly Martínez*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Prostate cancer is the most common diagnosed and the second leading cause of cancer deaths in men in the United States. Inflammation has been linked to the initiation and metastatic progression of prostate cancer. The chemokines CCL4, CX3CL1 and IL-15 were reported as differentially expressed in patients that had prostate cancer recurrence. Prostate cancer cell lines PC3 (androgen independent) and 22RV1 (androgen dependant) were treated in vitro with CCL4 (0.001 and 0.1 ng/mL), CX3CL1 (0.0029 and 0.1 ng/mL) and IL15 (0.0013 and 0.1 ng/mL) and subjected to adhesion and invasion assays. SCID mice prostates were injected orthotopically with PC3 or 22RV1 cells combined with each chemokine. Mice were injected biweekly with CCL4, CX3CL1 and IL15. Tissues were collected after eight weeks (PC3) and four weeks (22RV1) of treatment. Tumor volumes were calculated and tissues were processed and embedded for immunohistochemistry analysis. In vitro studies indicated that PC3 cells treated with CCL4 had significantly increased migration when compared to control ($P<0.05$). In vivo studies showed that mice injected with 22RV1 cells and treated with CCL4 had significantly bigger tumors when compared to control mice after 4 weeks of tumor development. Immunohistochemical analysis revealed that CCL4 treatment increased the expression levels of phospho-histone 3 and alpha smooth muscle actin in 22RV1 tumors when compared to control tumors. This study showed that CCL4 altered migration and adhesion of PC3 cells and 22RV1 cells in vitro. Moreover, CCL4 induced tumor growth of 22RV1 cells in vivo using a SCID mouse orthotopic model.

89 Computer-based virtual screening to identify lead inhibitors of DOCK9. *Kasandra Rodríguez-Hernández, Lilliana Ortiz-Acevedo, Denisse M. Marcano-Fernández, Eliud Hernández-Ofarrill*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

DOCK9 is a guanine nucleotide exchange factor that have been implicated in the activation of Cdc42 in cell migration, morphogenesis and as important component in tumor cell movement and invasion. We hypothesized that compounds that interact with amino acids Ser1814, Gln1812, Thr1390, and Asn1389 of DOCK9 can be identify as potential inhibitors. Our objective is to identify small-molecule inhibitors of DOCK9 using a structure-based virtual screening approach. For molecular docking, PyRx Autodock Vina v0.8 Program was used. All ligands used for docking were selected from the Asinex ZINC database collection. Autodock Tools v1.5.4 was used to prepare the receptor, and to create a grid of 25Å x 25Å x 25Å centered on Ser1814-Gln1812 with a grid spacing of 0.375Å. A total of 100,000 ligands were docked into the identified surface of DOCK9 and ranked by binding affinity (ranging from -7.4 to -8.7). The 100 ligands with the highest score were assessed for drug likeness based on molecular properties and bioactivity scores as established by the Lipinski's Rule of five, and visual inspection. The resulting top ranked 35 ligands that showed the best structural properties to act as DOCK9 inhibitors were classified according to their structural class, ligand-receptor binding affinity, and the ability to interact with key amino acids of DOCK9. Therefore,

we conclude that a small number of compounds were identified using high throughput computational methods which represent the first series of compounds with potential to inhibit DOCK9 and to be developed as anti-metastatic agents. Supported by RCMI Grant # 8G12MD007600/G12 RR 03051.

90 c-MYC is a Potential Therapeutic Target for Cisplatin-Resistant Ovarian Cancer. *Jeyshka M. Reyes-González*, Ileabett M. Echevarría*, Fatma Valiyeva†, Pablo E. Vivas-Mejía**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico

Ovarian cancer accounts for approximately 3% of all cancers in women. However, it is the deadliest cancer of the female reproductive system. Due to its non-specific symptoms, ovarian cancer is diagnosed at advanced stages of the disease. Platinum-based drugs, such as cisplatin, are the most common standard treatment for advanced ovarian cancer. Unfortunately, over 70% of women relapse due to chemoresistance. Several mechanisms of cisplatin resistance have been described. Nevertheless, the exact mechanism is not known. Evidence indicates that activation of the transcription factor c-MYC and its regulated genes could be involved in such resistance. Furthermore, it has been found that there is a significant association between increasing c-MYC expression and poor survival. Our previous findings showed that c-MYC messenger (mRNA) levels were similar in a panel of resistant and sensitive ovarian cancer cells. However, cisplatin-resistant cells expressed higher levels of c-MYC protein when compared to their sensitive counterparts. Targeting of c-MYC with small interference RNA (siRNA) in the cisplatin-resistant ovarian cancer cell line A2780CP20 induced a significant cell growth arrest and inhibition of cell proliferation. In addition, we found that specific microRNAs (miRNAs) could be involved in the post-transcriptional regulation of c-MYC in cisplatin-resistant ovarian cancer cells. These data suggests c-MYC as a potential therapeutic target for overcoming cisplatin resistance in ovarian cancer. Supported by: NIH-NCI 1K22CA166226-01A1 (PEVM), and the UPR-MDACC Partnership in Cancer Research Training Program.

91 Detection of levels of mitochondrial DNA abundance in blood mononuclear cells from rhesus monkeys. *Naomi R. Rebollo-Rodríguez*, María del R. Castro†, Sylvette Ayala-Peña†*. *University of Puerto, Rio Piedras, Puerto Rico; †University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Several cellular processes have been suggested to contribute to the process of aging. However, the mechanisms underlying the biology of aging are still uncertain. Compelling evidence suggests that oxidative stress and mitochondrial dysfunction increase with age. Using rhesus monkeys as our model of aging, we showed an age-dependent increase in the levels of oxidative stress in both peripheral blood mononuclear cells (PBMCs) and in liver. It is our goal to test the hypothesis that age-associated changes in the abundance of mtDNA molecules may contribute to mitochondrial dysfunction in aging of rhesus monkeys. In this study we optimized the conditions to measure mtDNA abundance by first, isolating DNA from PBMCs obtained from male rhesus monkeys of 1, 3, 6, 8-10, 12, 15, 16, 19, 21 and 26-31 years of age. Second, using quantitative PCR, we determined the optimal conditions to assess mtDNA abundance in rhesus PBMCs. We performed template and cycle tests and found that amplification of 7.5ng of DNA using 29 cycles and a melting temperature of 60oC amplified a 100 base pair mtDNA fragment within the linear range of the PCR reaction. Current experiments are being conducted to determine levels of mtDNA abundance, frequency of mtDNA lesions and measurements of telomere length in the same individuals. This study may contribute to better understand the relationship between mitochondrial dysfunction, mitochondrial oxidative damage and telomere shortening during aging of rhesus monkeys. Supported by U54RR026139-01A1, R25-GM061838, 2G12-RR003051 and 8G12-MD007600.

92 Signaling Behavior of an RGD to RGE Mutant of the P2Y2 Nucleotide Receptor. *Magdiel Martínez-Alicea*, Namyr Antonio Martínez*, Mónica Quiñones†, Walter Iván Silva**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Interamerican University, Metropolitan Campus, San Juan, Puerto Rico

CNS cells' can release of nucleotides together with neurotransmitters to the extracellular space in response to a trauma. ATP and UTP can activate P2Y2 nucleotide receptors and elicit astrocytic proliferation in response to brain injury. P2Y2Rs have an arginine-glycine-aspartate (RGD) motif in the first extracellular loop that promotes its binding to alphav-beta3 integrin that can directly modulate MAPK cascades and regulate transcriptional events and cell proliferation. Sequence analysis of the P2Y2R reveals the presence of several putative caveolin-binding motifs that may facilitate its localization in caveolae and/or its interaction with other signaling proteins. P2Y2-RGE mutants show decreased agonist potency in eliciting PLC-dependent calcium mobilization and also show decreased ERK activation. Density fractionation of 1321N1 cell homogenates revealed co-fractionation of P2Y2Rs with cav-1 in membrane-raft fractions. Additionally, blocking cav-1 expression in P2Y2-coding 1321N1 cells elicited abnormal intracellular calcium mobilization responses when stimulated with nucleotide agonists, as determined by microfluorometric calcium imaging analyses. Our findings suggest that P2Y2Rs reside in membrane caveolae of naive, non-stimulated 1321N1 cells. Thus, we have hypothesized that signaling cascades of the P2Y2Rs are intimately linked to their expression in cav-1 (+) micro-domains. Our results suggest that an RGD to RGE change in the receptor first extracellular loop will exclude the P2Y2R from caveolae and it will

impair its ability to translocate to this microdomains and thus impair its downstream signaling machinery.

93 Analysis of novel interactors of Wsc1p and Mid2p, two sensor proteins of the PKC1sinaling pathway. *Ednalise Santiago-Cartagena*, Camille De Jesús†, Alexander Borrero‡, Natalia M. Caballero§, Orlando J. Díaz**, Igor Stagljar††, José R. Rodríguez-Medina**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Rio Piedras, Puerto Rico; ‡San Juan Bautista School of Medicine, Caguas, Puerto Rico; §Ederly College of Science, Penn State University, Pennsylvania, United States of America; **University of Puerto Rico, Mayagüez, Puerto Rico; ††Donelly Centre for Cellular and Biomolecular Research, University of Toronto, Canada

Wsc1 and Mid2 are protein sensors of cell wall stress that activate the PKC1-Cell Wall Integrity Pathway (CWIP) in the event of an environmental stress. The cytoplasmic tail of Wsc1p was shown by others to interact with Rom2p, a Rho1-GEF. We hypothesized that Wsc1p and Mid2p attract additional interacting protein partners (interactors) that can be directly associated with PKC1 activation. To identify novel interactors, the integrated Membrane Yeast Two-Hybrid (iMYTH) technique was applied. A cDNA plasmid library of prey proteins was expressed in bait strains containing iMYTH reporter modules of Wsc1p and Mid2p. The interacting prey plasmid clones were recovered and sequenced. To assess their functionality in PKC1 activation, we performed Western blot analysis of Slt2p phosphorylation in null mutants of the interactors. Under normal culture conditions at 30°C, 14 novel interactors were confirmed for Wsc1p and 29 for Mid2p. In a second iMYTH screen performed under heat stress conditions at 37°C, 4 novel interactors for Mid2p and 1 for Wsc1p were identified. At 37°C, YHR193C was the dominant interactor for Wsc1p and Mid2p. Null mutants of the interactors YOL109W, YHR135C, YPL199C exhibited normal PKC1 activation status at 30°C and 37°C while the YHR193C null mutant failed to activate PKC1 at 37°C. In conclusion, YHR193C is a protein interactor of Wsc1p and Mid2p required for activation of the PKC1 pathway. This work was supported by the Associate Dean of Biomedical Sciences-UPR School of Medicine, NCRR-RCMI (G12RR03051), MBRS-RISE (R25GM061838) & University of Toronto.

94 Detection of APE1 protein expression from skeletal muscle in a Huntington's disease mouse model. *Xiomara Cintrón-García*, María R. Castro-Achi†, Sylvette Ayala-Peña†*. *University of Puerto Rico, Rio Piedras, Puerto Rico; †University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Huntington's disease (HD) is a progressive and fatal neurodegenerative disorder caused by an unstable expansion of CAG repeats in the huntingtin (htt) gene resulting in cognitive, neurological and motor insufficiency in HD patients. Convincing evidence suggests that oxidative damage to the mitochondrial DNA (mtDNA) leads to HD neuropathology, however, whether the htt mutation also affects peripheral tissues such as the skeletal muscle (SKM) remains to be addressed. We have previously observed that mtDNA damage increases in SKM of two different HD genetic models and that deficient base excision repair (BER) leads to mitochondrial dysfunction in HD. We sought to test the hypothesis that the expression of APE1, the major AP endonuclease in BER, may be altered in SKM from HD mice. In this study, we optimized the conditions to detect APE1 protein expression by Western blot in SKM of a HD knock-in mouse model (HD150KI). First, we established in HD150KI and wild type mice the optimal conditions for detecting the expression of the housekeeping gene actin to correct for differences in protein loading. Second, we determined the conditions for the detection of APE1 expression. The optimal protein concentration for APE1 detection was 20 μg and the antibody dilutions were 1:1000 for the primary antibodies and 1:5000 for the secondary antibodies. Current experiments are being conducted to assess age-dependent changes in APE1 expression in wild type and the HD150KI mice. This study may contribute to understand the role of BER in the SKM pathology seen in HD. Supported by U54-NS039408, R25-GM061838, 2G12-RR003051 and 8G12-MD007600.

95 Chemical analysis and biological properties of the Puerto Rican plant Simarouba tulae. *Reynaldo Morales-Rodríguez, Elsa Luciano, Claudia A. Ospina*. University of Puerto Rico, Cayey, Puerto Rico

Information regarding the chemical constituents and biological properties of endemic plants is usually limited. The Simaroubaceae family has been studied because of its anti-malarial, anti-inflammatory, anti-leukemic, anti-feedant and anti-viral activities, and its major chemical constituents are diterpenes known as quassinoids which are considered chemotaxonomic markers of these plant species. However, to date the Simarouba tulae specie has not been studied in depth. Our objective is to evaluate the antimicrobial, cytotoxic and anticancer activity of extracts and pure compounds from Simarouba tulae plant. Because this plant belongs to the Simaroubaceae family, we hypothesize that extracts and chemical constituents from Simarouba tulae will show biological properties against bacterial growth and cancer cells. The leaves were extracted with a mixture of CH_2Cl_2-MeOH (1:1). The resulting crude extract was suspended in water and extracted with organic solvents. The crude extracts showed antibacterial activity against S. aureus (MIC = 31.3 μg/mL), S. saprophyticus (MIC = 125 μg/mL) and K. pneumoniae (MIC = 500 μg/mL) as well as the crude and chloroform extracts exhibited anticancer activity (GI >80%) against MCF-7

and T47D cell lines. A quassinoid derivative was isolated (11 mg), purified and characterized from the chloroform extract. We conclude that this plant species is an important natural source that can provide new therapeutic leads to be developed as antimicrobial and anticancer agents. Supported by the Institute of Interdisciplinary Research and Dean of Academic Affairs of University of Puerto Rico at Cayey.

96 Azoxymethane Reduces Mitochondrial DNA Abundance and Induces Carcinogenesis in APEX1 Deficient Mice. *Joan Ballista-Hernández*, Ceidy Torres*, Magaly Martínez†, Carlos Torres*, Sylvette Ayala-Peña**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico

Changes in mitochondrial DNA (mtDNA) due to oxidative lesions is considered to be an important hallmark in cancer. However, whether mtDNA repair mechanisms play a role in colorectal carcinogenesis is unknown. It has been demonstrated that mitochondria possess efficient base excision repair (BER) capacity that protects cells from oxidative DNA damage. We hypothesize that diminished mtDNA repair capacity leads to increased mtDNA lesions and increased frequency of tumor formation. To test this hypothesis we measured mtDNA abundance in mice haploinsufficient for the BER gene APEX1 after a single azoxymethane (AOM) dose (10mg/kg). AOM induces mutagenic lesions by alkylating DNA primarily at the O6 position of guanine and it is widely used to induce colorectal cancer. By quantitative PCR, mtDNA damage was assessed in colonic crypts isolated at different time points after AOM treatment. APEX1 deficient mice exhibted a significant 22% decrease in the abundance of mtDNA molecules 72hrs after treatment, whereas WT mice did not show changes in mtDNA abundance. To study the ability of AOM to induce tumor formation, WT and APEX1 deficient mice were treated with AOM, once a week during four weeks. Six months after treatment we observed that tumor penetrance was higher in APEX1-deficient mice (64.7%) compared to WT (55%) mice. No differences in tumor number per animal and tumor size were observed. Our results suggest an important role of BER in preventing the loss of mtDNA abundance and a protection against the development of AOM-induced colorectal tumors.

97 Rhesus macaque Developed a Guillain Barré-like Syndrome after Infection with Dengue Virus. *Yesseinia I. Anglero-Rodríguez*, Melween I. Martínez*, Idia V Rodríguez*, Kristina Abel†, Edmundo N. Kraiselburd*, Carlos A. Sariol**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of North Carolina at Chapel Hill, North Carolina, United States of America

Dengue virus (DENV) is an emerging mosquito-borne pathogen that exists as four major serotypes (DENV1-4). Symptomatic infection by DENV can range from dengue with or without warning signs or severe cases that can results in shock or death. Rhesus macaques (RM) are an important non-human primate model used for DENV infection with the interesting characteristic that they do not developed any of the severe manifestations. This is a case report of a RM that showed an atypical paraplegia of the lower limbs, days after DENV infection and an innate immunity stimulant administration. Cellular and serologic analysis showed that this animal compared with others of the same group had low levels of DENV-infected activated dendritic cells (DC) and high levels of activated non-infected DC. In terms of serum markers of disseminated intravascular coagulation it had an increase of fibrin degradation products and the same for the liver enzyme alanine transaminase. The histopathological evaluation of the lymph nodes showed brown intracytoplasmic pigment that resembles hemosiderin. Findings suggest that this RM showed signs of hemorrhage after infection and the clinical manifestation in coherence with the necropsy report suggest a neuropathology that resembles a Guillain Barré-like syndrome. This remarks the importance of investigate this atypical neurological manifestations of DENV infection. Support by R25GM061838, A157158, U42 RR16021 and U24 RR18108.

98 Behavioral and neural structure parameters associated with agonistic behaviors of local prawn species. *Francelly Martínez-Sosa*, Frances E. Ostolaza†, Valeria M. Salgado†, Laura C. Vicente‡, Erick X. Pérez‡, Nilsa M. Rivera*, María A. Sosa**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Rio Piedras, Puerto Rico; ‡University of Puerto Rico, Cayey, Puerto Rico

Population growth has led to increased levels of urbanization in Puerto Rico, a trend that affects the environment. We wish to determine how urbanization near rivers has impacted the behavior and nervous system of aquatic fauna. Macrobrachium faustinum is one of the most common species of prawns found in the rivers of Puerto Rico. To assess the effects of urban river contaminants on the prawn´s behavior and neuroanatomy we must first characterize these parameters under control conditions in a laboratory. Adult prawns were collected from Rio Salinas and placed in glass aquaria in the lab. The behavior of pairs of prawns was tracked using video cameras, and ethograms were developed to record and quantitate various aspects of their interactions. Dominance of M faustinum was lower than that of M carcinus, a related species also found in Puerto Rico rivers, and similar to that of M rosenbergii, a cultured prawn species. For each pair, the animal with larger sized claws was always more dominant. We observed that dominance may be determined by the lack of submissive behaviors rather than by higher instances of dominant behaviors. We also used immunohistochemistry to characterize the distribution of neurotransmitters and peptides, such as 5-HT, FMRFamide and proctolin, in the central

nervous system of M faustinum and found that maps of neurons containing these substances are similar, although not identical, to those of related crustacea. We have thus established a set of behavioral and structural parameters that can now be used to assess effects of contaminants in Puerto Rico´s urban rivers. Supported by NSF HRD-1137725 CREST.

99 Activation of Group I Metabotropic Glutamate Receptors within the Basolateral Amygdala Produces Paradoxical Effect According to Sex. *Stephanie M. González-García*, Maria I. De Jesús-Burgos†, Yanira Cruz-Santana‡, Beatriz González-Bouza*, Lucila Portela-Díaz*, Luis Ortiz-Soto*, Nivia L. Pérez-Acevedo†*. *University of Puerto Rico, Rio Piedras, Puerto Rico; †University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; ‡University of Puerto Rico, Cayey, Puerto Rico

Modulation of glutamatergic transmission by group I metabotropic glutamate receptors (mGluRs) has been implicated in anxiety. We studied the role of group I mGluRs in anxiety using the Vogel conflict test (VCT). We used ovariectomized female rats with low (OVX) and high (OVX+EB) estradiol levels, to evaluate the role of estradiol, if any, and male rats to evaluate sex differences. (S)-3, 5-Dihydroxyphenylglycine (DHPG), a group I mGluR agonist, was infused into the basolateral amygdala (BLA), a region implicated in anxiety-responses. We hypothesized that intra-BLA infusion of DHPG produces anti- and pro-conflict effects according to sex and estradiol levels in the female rats. DHPG at 0.1 but not 1.0μM statistically increased the number of shocks in OVX but not OVX+EB. In male rats, DHPG at 1.0 but not 0.1μM statistically decreased the number of shocks. DHPG (0.1 μM) statistically increased the number of recoveries in OVX but not OVX+EB or male rats. Sex differences were detected for the number of shocks, recoveries and punished licks, where female displayed more conflict than male rats. In female rats, these differences were statistically enhanced by estradiol treatment. Taken together, DHPG produced paradoxical effects that are sex dependent producing anxiolytic-like effects in female, while anxiogenic-like effects in male rats. These results highlight the importance of using female models to underpin the neural circuitry of anxiety according to sex and in the screening of novel anxiolytic compounds.

100 Enfoques y estrategias dominantes en los servicios que se ofrecen en los centros dirigidos a personas que han cometido algún acto de violencia doméstica hacia su pareja. *Marla D. Quintana-González, María T. Borges, Lydia E. Santiago*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

Los centros de servicios de salud para agresores están dirigidos a facilitar la reinserción de los participantes a la sociedad. También persiguen la disminución de eventos de violencia doméstica. Objetivo general del estudio: Documentar y analizar las estrategias utilizadas en los lugares que ofrecen servicios a agresores que han cometido algún acto de violencia doméstica hacia su pareja. Objetivos específicos: Describir el contexto de los centros que ofrecen servicios a personas que han cometido algún acto de violencia doméstica hacia su pareja. Identificar que servicios ofrece el centro para la reeducación de los participantes. Señalar estrategias utilizadas en los centros de servicios identificados. Explorar características de las personas que reciben el servicio. Ofrecer recomendaciones dirigido a los servicios disponibles para personas que han cometido algún acto de violencia doméstica hacia su pareja. La investigación tuvo un enfoque cualitativo. Los participantes fueron los directores de programas de desvío dirigidos a agresores de violencia doméstica en Puerto Rico. El método utilizado para recoger los datos fue la entrevista semiestructurada. Ésta se tituló "Descripción de los servicios ofrecidos en los centros dirigidos a agresores que han cometido algún acto de violencia domestica hacia su pareja". Hallazgos: necesidad de enfoques de educación y prevención a la comunidad; servicios coordinados por equipo multidisciplinario, combinación de tratamientos y mayor integración de la familia y las agencias. Reto: Reclamo para que se le brinde al agresor la misma oportunidad de rehabilitación que a la víctima.

101 Development of a Vaccine against Smallpox. *Eric Miranda*‡, Tomás J. Sánchez†, Carlos A. Rivera†, Luis M. Vázquez†, Mayte Ramírez*, Eddy O. Ríos-Olivares†, Miguel A. Otero**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Rio Piedras, Puerto Rico; ‡Universidad Central del Caribe, Bayamón, Puerto Rico

There is a critical need for the development of a safe vaccine against smallpox in case of a bioterror attack. We hypothesize that the adjuvant effect of Imiquimod or Resiquimod, will enhance the immune response of a DNA vaccine coding for vaccinia antigens A27L, L3L and E6R to produce an effective immune response against smallpox. IFN-gamma, IgG, TH1 and TH2 cytokine profiles were measured after mice immunization to describe cell- and humoral-mediated immune responses by ELISPOT and ELISA analysis. Our ELISPOT data shows an increase in IFN-gamma in mice vaccinated with A27L plus adjuvant compared to antigen alone. Also, L3L-immunized mice show an increase in IFN-gamma versus non-vaccinated mice. Sera obtained after the second immunization with E6R plus adjuvant showed an enhancement in IFN-gamma and IL-2 response versus mice immunized with antigen alone, and a higher increase in IFN-gamma was observed after the third immunization. Serum obtained after the third immunization with L3L plus adjuvant showed a dramatic increase in the production of IL-12 and IFN-gamma versus animals immunized with antigen alone. Mice immunized with A27L plus adjuvants showed an increase in total IgG titer, compared to the non-adjuvanted groups. Mo-

reover, mice immunized with A27L plus Imiquimod showed a higher IgG2a/IgG1 ratios as compared to animals immunized with antigen alone. We conclude that the proposed vaccination cocktail is inducing the expected antigen-specific TH1 immune response in a vaccinia virus-free DNA vaccination platform. Supported by grants from PRAABRE: 8P20GM103475, and RCMI: 8G12MD007583-27 at UCC, and 8G12MD007600 / G12 RR 03051 at UPR-MSC.

102 Modulation of the Nicotinic Acetylcholine Receptor Function By Cholesterol. *Génesis Serrano-Rodríguez, Carlos Báez, Orestes Quesada, Jose Lasalde*. University of Puerto Rico, Rio Piedras, Puerto Rico

The nicotinic acetylcholine receptor (nAChR) is a member of the superfamily of ligand-gated ion channels that mediate fast intracellular communication in response to endogenous neurotransmitters. nAChRs have been identified as crucial elements in central nervous system functions. The mechanisms by which cholesterol-nAChR interactions translate into the observed changes in the receptor's ligand binding affinity or ion channel properties are still not fully understood. The effects of cholesterol on ion channel function of the muscle type and Torpedo acetylcholine receptors have been studied. Our hypothesis is that cholesterol levels in the plasma membrane modulate the reallocation of the nAChR via lateral diffusion into a cholesterol-rich raft microdomains positive for caveolin 1 (cav-1). We were thus interested to probe the changes in the functionality of different nAChRs when expressed in cell membranes with modified cholesterol to phospholipid ratios (C/P). In this study, we examined the effect of increasing the C/P of Xenopus laevis oocytes expressing the neuronal α-7, muscle-type or Torpedo californica nAChRs in the functioning of the nAChR. Using two-electrodes voltage clamp technique it was found that the neuronal α-7 and Torpedo nAChRs are significantly more sensitive to small increases in C/P than the muscle-type nAChR. This study clearly illustrates that a physiologically relevant increase in membrane cholesterol concentration renders a significant fraction of the neuronal α-7 and Torpedo nAChRs "inactivated" whereas the muscle-type nAChR tends to resist this functional inhibition.

103 Genetic Silencing of Mannosylphospho Dolichol Synthase Enhances Tunicamycin Sensitivity. *Jesús Santiago*, Coral Candelario†, Omar Acevedo*, Zhenbo Zhang*, Aditi Banerjee*, Krishna Baksi†, Dipak K. Banerjee**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Universidad Central del Caribe, Bayamón, Puerto Rico

Mannosylphospho Dolichol Synthase (DPMS), a regulator of N-acetylglucosaminyl 1-phosphate transferase (GPT) in the dolichol cycle of asparagine-linked (N-linked) protein glycosylation and is required for angiogenesis. Tunicamycin, a competitive inhibitor of GPT inhibits angiogenesis quantitatively and breast tumor progression in nude mice; DPMS catalytic activity is also lost. We, hypothesized, that DPMS deficiency would enhance the sensitivity to tunicamycin. Our objective is to test it in cells after silencing the DPMS gene. To isolate the clones, we transfected capillary endothelial cells with DPMS shRNA plasmid in pSilencer 4.1-CMV-neo vector (siRNA) and vector alone (Psi). The impact of genetic manipulation was followed by, DPMS catalytic activity, its expression by qRT-PCR, western blotting, immunofluorescence microscopy, and cellular proliferation and migration. Our results indicate reduced cellular proliferation and migration in DPMS shRNA clone compared to vector control, and corroborate with reduced expression of N-linked glycoproteins. Reduced expression of Bcl-2, Bax and Caspase-3 in siRNA clone supports slower cell cycle and no induction of apoptosis. Furthermore, the DPMS knockdown cells exhibit 0% survival when treated with tunicamycin (1 μg/ml) for 48 hours. We, therefore, conclude that shRNA silencing of DPMS makes cells less angiogenic and more sensitive to tunicamycin. The research was supported in part by grants from U54-CA096297 (JS), Komen for the Cure BCTR06582 (DKB), NIH/NIMHD 8G12MD007583 (KB).

104 Carbamate Induced Pancreatitis a New Perspective. *Merari Cruz-Colón*. Universidad Central del Caribe, Bayamón, Puerto Rico

The association between anticholinergic intoxication and pancreatitis has been reported. In this case the findings of concomitant pancreatic ascites with bilateral pleural effusions are a rare but detrimental condition that needs to be recognize early in order to improve prognosis. This is a case of a 25 year-old man with no medical illness and negative HIV serology brought to ER with excessive salivation, disorientation and respiratory failure due to bronchorrhea and hypoxia after ingesting a rodenticide (Tres Pasitos) in a suicidal attempt. Bilateral patchy infiltrates and right lower lobe infiltrate were present on x-rays. EKG showed sinus tachycardia with leukocytosis and hypokalemia. Patient was entubated at ER with high PEEP and low tidal volume. Gastric lavage and 2mg of IV atropine was given and admitted to ICU. Atropine drip and pralidoxime 1gm IV every 6 hours were added. Low levels of serum cholinesterase were reported confirming the diagnosis of anticholinergic intoxication. Patient presented with elevated amylase and lipase levels at fourth day of admission with increased abdominal girth at second week. Abdominopelvic CT scan showed evidence of pancreatitis with large amount of ascitic fluid. Paracentesis confirmed the diagnosis of acute pancreatitis and patient started on intermittent suctioning and NPO. After four attempts to extubate patient were unsuccessful, his respiratory status continues to deteriorate. Chest CT scan showed bilateral pleural effusions and atelectatic changes. He subsequently grew Cryptococcus Humicolus in sputum culture and shortly after succumbed from cardiac arrest.

105 Diagnostic Enigma: Tumefactive Multiple Sclerosis an atypical presentation of demyelinating disease. *Javier Chapa-Dávila, Rayza García, Alexandra Deya, Noel J. Vargas, Valerie Wojna*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Tumefactive Multiple Sclerosis (TMS) is a rare inflammatory demyelinating disease of the CNS characterized as a large solitary lesion with imaging characteristics mimicking a neoplasm. While in Multiple Sclerosis (MS) neuroimaging plaques appear as multiple, well demarcated, homogenous, and ovoid periventricular lesions. TMS presents a solitary large lesion (>2 cm), associated with mass effect, edema, and ring enhancement. We described a case of a 59 y/o woman that on 7/2011 started with weight loss and abulia. She progressively worsened with weight and memory loss and incoherent speech. Brain MRI (6/2012) revealed an enormous left frontal enhancing lesion. Magnetic Resonance Spectroscopy was performed to rule out a brain tumor, but correlated with a demyelinating lesion supported by a positive MS panel. In view of this, a diagnosis of TMS was performed (7/2012). Follow up Brain MRI showed multiple lesions in contrast to the single one observed initially suggesting the evolution of TMS to definitive MS which occurs in 70% of cases. A course of IV steroids was given however, her condition worsened with incontinence, gait impairment, frontal release signs, aphasia, apraxia, agnosia, and dementia. TMS occur in 1-2/1,000 cases of MS. In Puerto Rico, this translates to no more than 4-5 TMS patients since MS prevalence is 2,000-2,500. The significance of our report is that moreover of its rarity, our case of TMS presented a paradoxical response to the gold standard treatment of MS (steroids) suggesting that TMS may be more than an atypical demyelinating disease or possibly a different entity aside from the spectrum of MS.

106 Limb Girdle Muscular Dystrophy Type 2A Resulting From Heterozygous C479G Transversion Mutation in the Calpain-3 Gene. *John D. Vélez- Rodríguez, Edwardo Ramos*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Patient: An 8 year-old boy with progressive weakness in upper and lower extremities. Case Description: The patient presented to neuromuscular diseases clinic with frequent falls and occasionally walking in tip-toes. Medical history was relevant for developmental delay and autism diagnosed at age three that was being followed by a specialized school program. Physical exam was remarkable for bilateral calf hypertrophy and positive Gower's maneuver, for which, a diagnosis of Duchenne muscular dystrophy (DMD) was suspected. Laboratory work–up was significant for elevated creatine kinase at 10,070 IU/L. Electromyography study and muscle biopsy presented myopathic changes. Genetic testing of muscle biopsy specimen was performed to differentiate between limb-girdle muscular dystrophy (LGMD) and DMD. Mutations were identified in the Calpain-3 (CAPN3) gene with the presence of a heterozygous C479G transversion resulting in an amino acid change from alanine 160 glycine substitution in the CAPN3 gene. Mutations in CAPN3 are associated to LGMD, type 2A (LGMD2A). However, the above mutation has not been previously described as pathogenic. Results: The patient was started in steroids and followed as outpatient. Improvements were noted in frequency of falls. Discussion: Genetic testing has been proven useful in several myopathies in diagnosis. Some literature has supported the use of steroids in LGMD, as well as in DMD. A caveat relies in the multitude of etiologies and variants on LGMD. Conclusion: This case is unique as it demonstrates a patient with a mutation in CAPN3 gene not previously been described as pathogenic.

107 Atypical Presentation Of Migraine. *Elvin Muñiz-Ramírez, Damaris Torres*. Universidad Central del Caribe, Bayamón, Puerto Rico

31 y/o man with history of classic migraine and no known systemic illness started noticing dizziness, visual colored flashing lights at rest followed in 15 minutes by a pulsatile occipital headache that immediately changes its quality to a sharp pain, 9 of 10 in intensity, radiated to temporal area bilaterally. Associated period of visual loss, imbalance and slurred speech was also reported, lasting only approximately 4 minutes. Patient use 1000mg of acetaminophen. Patient headache and photophobia persisted after one hour of medication therefore he decided to visit emergency room. Denied fever, nausea, vomiting, palpitations, memory deficit, toxic habits and previous similar episodes. Physical was within normal limits.Brain MRI reported an acute ischemic stroke in the right superior cerebellar artery territory. Brain angiography was normal.No arrhythmia or ischemia at EKG. No cardiac vegetation or significant valvulopathy at echocardiogram.No carotid stenosis or obstruction on angiography. Serum and urine workup ruled out etiologies such as electrolyte imbalance, vasculitis, autoimmune disease, coagulopathy, infection, thyroid disease, drug intoxication. Urine analysis toxicology was also within normal limits. This Patient suffered a migraine induce cerebellar stroke in the right superior cerebellar artery territory.During and after migraine attacks, sluggish low cerebral flow below an ischemic threshold has been described.

108 Atypical presentation of congenital cytomegalovirus (CMV) infection in a neonate admitted in the neonatal intensive care unit. *Giselle M. Marrero-Clemente, Neichma Fargas, Inés García, Lourdes García, Marta Valcarcel*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Cytomegalovirus (CMV) is one of the most common causes of congenital infection in the developed countries affecting approximately 1% of all live births. Symptomatic CMV infection during the newborn period occurs in less than 10% of affected infants. Symptoms include intrauterine growth restriction (IUGR), microcephaly, seizures, chorioretinitis, he-

patitis, thrombocytopenia, and pneumonitis, among others. Preconceptional immunity to CMV provides incomplete protection, and congenital infection may occur in infants following both primary and recurrent infection in the mother. Currently, antiviral treatment options are limited. We report a neonate born at 37 weeks of gestation with a birth weight of 2,255grams; after an uneventful pregnancy, who was born by cesarean section due to non reassuring fetal heart rate. Generalized petechias were present at birth. He required resuscitation at the delivery room due to poor respiratory effort. Among the complications developed by the patient were severe persistent pulmonary hypertension (PPH), bleeding manifestations, IUGR, atrial septal defect and hydronephrosis. Despite intensive treatment, the patient died at approximately 10 hours after birth. CMV infection was confirmed with urine cultures and microscopic findings on autopsy. Awareness should be raised as to adequately recognize in a critically ill neonate the symptoms that might be related to CMV infection. Pertinent diagnostic testing should be considered, when feasible; since the severity of the clinical condition and progressive end-organ disease outweigh the potential toxicity of this treatment.

109 **Non Familial Stiff Baby Syndrome cases in the North Central Area of Puerto Rico**. *Neichma S. Fargas-Berrios*, Jocelyn Montalvo-Ortiz†, Inés García†, Lourdes García-Fragoso†, Marisel Vázquez†, Marta Valcárcel†*. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University Pediatric Hospital, Rio Piedras, Puerto Rico

Neonates may present nonepileptic involuntary movements, which must be differentiated from seizures. Electroencephalogram (EEG) differentiates between both entities because nonepileptic movements do not present seizure activity. Hyperekplexia (Startle Disease) or Stiff Baby Syndrome is a nonepileptic disorder. Neonates present exaggerated startle response to sudden sensory stimuli and a temporary generalized muscular rigidity. This disorder is uncommon. It has an autosomal dominant inheritance, associated to GLRA1 gene (glycine receptor) mutations in 5q33 locus. We report two neonates who presented hyperekplexia in a 6 month period without family history and from the north central area of Puerto Rico. Both neonates were transferred from another hospitals, where they presented involuntary movements, hypertonia and apneas during the first days of life, treated with anticonvulsants without improvement. Upon admission to the neonatal intensive care unit of University Pediatric Hospital they were diagnosed with hyperekplexia due to clinical findings and evolution. EEG and neuroimaging studies were normal. Electromyography presented persistent muscular activity with brief periods of rest, confirming the diagnosis. They were treated with clonazepam with control of involuntary movements and improvement of hypertonia. In this report, we emphasized prompt recognition of hyperekplexia to prevent seizures misdiagnosis and for proper treatment. Parental training and care involvement in these high risk neonates must be made prior to discharge due to the possibility of complications as sudden death secondary to stiffness and apneas.

110 **Transient chemical phlebitis after a propofol induction dose: a case report**. *Pamela Fernández-Carbia, José Ortiz-Cardona, Héctor Torres*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Propofol induced transient phlebitis (TP) is a rare complication in anesthesia, with an incidence of 0.6%. Several factors have been associated with its development, including size, type and site of catheter placement, osmolarity, drug's pH, and infusion rate. Propofol solution is prepared in an isotonic emulsion with pH of 7-8.5 and is often mixed with lidocaine to reduce injection pain. It is known that acidic or basic drugs can damage vein's tunica intima predisposing development of TP. We report a case of a 34 y/o female, with no systemic illness or allergies, who developed TP produced by intravenous (IV) propofol bolus during general anesthesia induction for an abdominoplasty. Preoperatively, a 20G IV catheter was inserted in the patient's right dorsal hand. Upon arrival to OR, routine monitors were placed, and anesthesia was induced with midazolam 2.5mg IV, lidocaine 2% 20mg IV, propofol 200mg IV, and cisatracurium 10mg IV to facilitate tracheal intubation. Thirty seconds after induction, redness and swelling was observed along the intermediate antebrachial vein and cephalic vein. Dexamethasone 8mg IV and diphenhydramine 25mg IV were given. The primary IV line was removed and an alternate IV line was placed on the patient's left hand. Vital signs remained stable throughout the procedure. After twenty minutes, the clinical signs of TP disappeared. No other complications were observed. Previous studies have demonstrated that the pH of 1% propofol decreases when lidocaine is added to the solution, and this decrease is greater for larger lidocaine doses. Knowledge of how to prevent and treat such an event is essential.

111 **Systemic Mastocytosis with Unusual Cell Morphology: A Case Report**. *Dana Delgado-Colón, Román Vélez, MD, Valmarie Ramos-Lamboy, MD, Adry Fernández, MD, Maria Bertoli, MD*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Systemic mastocytosis is a clonal neoplastic proliferation of mast cells that accumulate in one or more organ systems, almost always including the bone marrow. Morphologically, the bone marrow infiltration may be confused with a myriad of hematological aSystemic mastocytosis is a clonal neoplastic proliferation of mast cells that accumulate in one or more organ systems, almost always including the bone marrow. Morphologically, the bone marrow infiltration may be confused with a myriad of hematological and nonhematological diseases which can present a

diagnostic challenge, as in our case. We report the case of a 77 year old man who presented with shortness of breath on exertion, general malaise, early satiety and weight loss. Blood counts showed leukocytosis, anemia and, thrombocytopenia. A previous bone marrow biopsy performed at another institution was diagnosed as Acute Myelogenous Leukemia. After referral, a new bone marrow biopsy and aspiration performed at our institution revealed atypical cells with abundant eosinophilic cytoplasm of unknown origin. Flow cytometry analysis was not diagnostic. Immunohistochemistry evaluation of the bone marrow biopsy was diagnostic of neoplastic mastocytosis. Neoplastic cells were positive for c-kit as well as CD68. Giemsa and toluidine blue metachromatic stains highlighted the granules. The case was consulted with the National Institutes of Health (NIH) which performed additional immunostains and the noeplastic cells were positive for CD25, a classic marker of mast cell neoplasias which supported our diagnosis of systemic mastocytosis. This case represents a difficult diagnosis of systemic mastocytosis in which immunohistochemistry was essential for the diagnosis.

112 Synchronous multicentric osteosarcoma in Puerto Rico: A pediatric case report. *Eduardo Colóm-Beauchamp, Mariebernadine Hidalgo, Gloria Colón, Juan Bibiloni*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Introduction: Synchronous multicentric osteosarcoma is a rare condition which may be confused with metastatic osteosarcoma. Case Report: We report a case of a 12 year old female with synchronous multicentric osteosarcoma in Puerto Rico. Radiological imaging revealed multiple osteoblastic bone lesions in the distal femur at the first presentation. Few days later developed right upper lid ptosis and Orbital computerized tomography scan showed a lytic lesion involving the sphenoid bone. The patient was treated with chemotherapy for 42 weeks and remains without new secondary bone lesions after diagnosis. This case has been reported for its rarity. Discussion: This is the first case of synchronous multicentric osteosarcoma than has been reported in Puerto Rican population.

113 Renal Cysts and Renal Cancer in von Hippel-Lindau Disease: Report of Two Cases and Review of Literature. *Mara L. Fernández-Santiago, Román Vélez, Glorimar Rivera, Antonio Puras, Luis Báez*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

The von Hippel-Lindau (VHL) disease is an autosomal dominant syndrome caused by germline mutations of the VHL tumor suppressor gene located on chromosome 3p25-26. It is characterized by the development of capillary hemangioblastomas of the central nervous system and retina, clear cell renal cell carcinoma, pheochromocytoma, pancreatic and inner ear tumors. Most common manifestations are retinal and central nervous system hemangioblastomas but in many families there is also a high risk of renal cancers. VHL is also the most common type of hereditary renal cancer syndrome. The typical renal manifestations are renal cysts and clear cell renal cell carcinoma. These renal lesions are usually multifocal and bilateral. Recent studies have indicated that the von Hippel-Lindau gene product is necessary for the maintenance of primary cilia stability in renal epithelial cells and that disruption of the cilia structure by von Hippel-Lindau gene inactivation induces renal cyst formation. In vivo results of one study support a model in which renal cysts represent precursor lesions for clear cell renal cell carcinoma and arise from single renal tubular epithelial cells owing to von Hippel-Lindau gene deletion. We present the case of a 24 year old female with history of multilocular cystic renal cell carcinoma presenting now with clear cell renal cell carcinoma and atypical renal cysts and a 20 year old male with history of cerebellar hemangioblastoma and clear cell renal cell carcinoma presenting now with recurrence of the renal cancer. Pathology specimens related to VHL syndrome are very rare in our institution.

114 Subependymoma of the Fourth Ventricle with an Unusual Presentation. *Anneliese Vélez-Pérez*, William González-Marqués MD*, Juan L. Pérez-Berenguer*†, Mario Polo*, Caleb Feliciano-Báez**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Hospital HIMA de Caguas, Caguas, Puerto Rico

We present a rare case of a 61 year old female patient with a left tonsillar cerebellar tumor that presented with migraine headaches, left facial numbness and dyesthesia. Brain Magnetic resonance imaging showed a small enhancing lesion in the inferior aspect of the fourth ventricle without hydrocephalus. After craniotomy and subtotal excision of the tumor, histological examination of the specimen showed clusters of tumor cells with isomorphic nuclei embedded in a dense fibrillary matrix with microcytic change and calcifications, most consistent with a subependymoma. These tumors are benign and correspond to WHO grade I with an overall good prognosis. They represent less than 1% of all intracranial tumors and are more common in males. We describe the histologic appearance and the radiologic findings in this case.

115 Angiocentric glioma presenting with seizures in an adolescent, a case report. *William A. González-Marqués, Juan L. Pérez-Berenguer, María S. Correa-Rivas, Román Vélez-Rosario, Juan Vigo-Prieto, Mayra Vizcarrondo-López*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Angiocentric glioma is a recently described, epilepsy associated, stable or slow growing cerebral tumor primarily affecting children and young adults. Very few cases have been published and little is known about this condition, its incidence and its relationship to other neoplasms exhibiting an ependymal differentiation, if any. We present a 13 old girl who developed

seizures de novo and was found to have an intraaxial heterogeneously enchancing well defined, round, well circumscribed mass with associated vasogenic edema on the right frontoparietal region. Pathologic examination of lesion resection revealed a small round cell tumor with an angiocentric growth pattern, features of ependymal differentiation, and a low proliferative index, which was diagnosed as an angiocentric glioma. We present this case due to the rarity of this recently described entity in an effort to contribute to the fund of knowledge about the condition.

116 Dental implant treatment of patient with Cornelia de Lange Syndrome: a case report. *Reinaldo E. Deliz-Guzmán, José Pedroza*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Cornelia de Lange Syndrome was first discovered in 1933 as a rare genetic syndrome, characterized by multiple congenital anomalies, mental retardation, developmental delay, hirsutism, limb abnormalities and cardiac problems. This syndrome affects between 1/10,000 and 1/60,000 neonates. The etiology of the syndrome is still unknown and the diagnosis is clinical. The dental problems most commonly seen include: micrognathia, ogival palate, dental malalignment, microdontic teeth, periodontal disease, enamel erosion produced by gastric reflux, and delayed teething. We reported a 17 year old female patient with medical history ASA II diagnosed with this syndrome. Patient is possibly the first documented case of a dental implant treatment with Cornelia De Lange Syndrome in Puerto Rico. Patient was referred from orthodontist after treatment for 3 years. Patient presented partial agenesis in maxilla. Procedure performed in dental implant institute clinic, patient was administered moderate to deep IV conscious sedation with a flapless surgery in area of tooth #6 and an endosseus dental implant was placed. After 6 months the abutment was placed with a provisional crown. 2 months later porcelain fused to metal crown was cemented. Patient recovered well without complications and kept under observation with follow up visits every 6 months. We report this case because a systemic literature review was done and due to the rarity of the syndrome no published articles have been found regarding dental implants being placed in a patient with this syndrome.

117 DIRA: New Genetic Autoinflammatory Disease as a Diagnostic Challenge for Pediatricians. *Andrea V. Rivera-Sepúlveda*, Gilberto Puig-Ramos†, Francisco Colón-Fontánez†, Maricarmen López†*. *Department of Pediatrics, San Juan City Hospital, San Juan, Puerto Rico; †San Jorge Children's Hospital, Santurce, Puerto Rico

A 5 month-old baby boy was hospitalized due to generalized erythematous pustular eruption with secondary impetigo, cellulitis, bronchiolitis, leukocytosis and elevated erythrocyte sedimentation rate (ESR). Despite multiple courses of intravenous (IV) antibiotic, systemic and topical steroid medications, the patient's skin findings continued to deteriorate. The patient was evaluated by dermatology and rheumatology services, and other subspecialities. Skin biopsy showed changes consistent with psoriasiform dermatitis, while bone scans showed multifocal osteomyelitis. The differential diagnosis included pustular psoriasis versus deficiency of interleukin-1 receptor antagonist (DIRA). Due to marked clinical deterioration, requiring admission to pediatric intensive care unit (PICU), the patient was started empirically on Anakinra with improvement at 72 hours upon administration. After 76 days of hospital stay, the patient was discharged home on daily Anakinra administration. A comprehensive literature review revealed that only 11 genetically confirmed patients, including our patient, have been reported with this genetic disease. Our case is the fourth Puerto Rican infant and the youngest described in the medical literature.

118 Role of High Dose Intravenous Steroids in Pulmonary Leptospirosis. *Nelson Pérez-Mateu*, Juan A. Ruiz-Ramos†, Sol Carrillo-Morales†*. *Universidad Central del Caribe, Bayamón, Puerto Rico; †Hospital Universitario Dr. Ramón Ruiz Arnau/Universidad Central del Caribe, Bayamón, Puerto Rico

Leptospirosis is a zoonosis of worldwide distribution produced by Leptospira interrogans. This biphasic disease´s ranges from mild illness to a fulminant disease. Weil's is characterized by fever, hemorrhagic diathesis, hepatitis, and neurologic, renal, cardiovascular and pulmonary involvement. Pulmonary Leptospirosis is commonly treated with antibiotics and intensive care support. Few publications in United States have coincided in steroid use for management of pulmonary leptospirosis. In countries with endemic leptospirosis such as Brazil, China and India, the early use of intravenous steroids has proven lifesaving. We present a case of a 23 year old man admitted after complaints of fever, chills, diaphoresis, myalgias, mucosal bleeding, and vomiting for two days. Labs revealed a platelet count of 35. On the 2nd day patient presented respiratory distress, desaturation, lungs crackles and bilateral patchy infiltrates as per x-ray, for which ventilator support was mandated. Signs progressed to jaundice and tachycardia. Patient was started on ceftriaxone and solumedrol 250 mg every six hours and transferred to intensive unit. Work-up revealed positive Leptospira titers. He continued with steroids,and on 15th day mechanical ventilation was withdrawn with subsequent discharge. This case of pulmonary leptospirosis exemplifies the role and value of adjunctive high dose steroids to the treatment of pulmonary leptospirosis, as practiced in foreign countries. Such experience should serve to alert health providers of importance of this disease and should encourage consideration of adjunctive steroids in similar settings.

119 A Case Of Pyoderma Gangrenosum After Reduction Mammoplasty. *Juan J. Mercado-Acosta, María I. Santé, Susana T. Ferra*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Pyoderma gangrenosum (PG) is an idiopathic, destructive cutaneous disease characterized by progressive painful rapidly evolving purulent ulceration. This lesion may arise at sites of surgical trauma and its ability to mimic superficial wound necrosis of infectious etiology could lead to a delay in diagnosis. We present a case of bilateral pyoderma gangrenosum, with review of the literature, in a 55 year old woman without associated systemic disease after reduction mammoplasty. Early recognition and appropiate management is overemphasized to avoid unnecessary treatment and to prevent or minimize residual scarring.

120 Madura Foot (Mycetoma). *Federico Salcedo-Irizarry, Román Vélez-Rosario, María J. Marcos-Martínez, William González-Marques, Juan J. Bibiloni-Rodríguez, Omar M. Pérez-Carrillo*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Madura foot (Mycetoma) is a chronic progressive granulomatous infection of the skin and underlying tissue caused by fungi (eumycetomas) or bacteria (actinomycetomas). Madurella mycetomatis is the most common cause. It was first recognized as a disease entity in Madura (India). The foot is the most common site of infection. A painless subcutaneous nodule may form, slowly increasing in size, and developing sinus tracts draining purulent material with grains. It can eventually extend to the bone. Because antimicrobial therapy is different for fungal or bacterial etiology, the diagnosis should not be delayed. We present the case of a 42-year-old fisherman from the Dominican Republic who presented a left foot mass, with eight years of evolution, which was treated with oral antibiotics with no success. Three years after he noticed the mass, he observed dark granules draining from the skin of the dorsum of the foot. The lesion began to expand rapidly and he was unable to walk. A biopsy revealed a granulomatous inflammation associated with abundant brown foreign-like material which led to a diagnosis of foreign body granulomatous reaction, but later, Grocott and PAS stains were found positive for fungi consistent with Madurella mycetomatis. Microbiological cultures confirmed the diagnosis of fungal Mycetoma. After debulking and debridement of the lesion, the patient was started on intravenous Itraconazole. One month later the mass decreased in size significantly and the patient was able to walk.

121 When the treatment could be the culprit: t-AML after breast cancer treatment: University District Hospital experience. *Eddiemar Ortiz-Cruz*, Adry C. Fernández†, Eileen Pacheco†, Maribel Tirado†*. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University District Hospital, San Juan, Puerto Rico

When the treatment could be the culprit: t-AML after breast cancer treatment: University District Hospital experience-Therapy Related Acute Myelogenous Leukemia (t-AML) has been recognized as one of the most serious complication after treatment with radiotherapy or chemotherapy. The purpose of this retrospective study is to characterize the clinical and molecular characteristics, the treatment and outcome of 9 breast cancer patients that developed t-AML, treated at our institution between January 2006 and December 2011. Mean age was 58.8 years. Therapies received prior to the diagnosis of AML were AC x 6 and radiotherapy in two patients; AC x 6 in two patients; CMF x 6 in two patients; CMF x 6 and radiotherapy in one patient and radiotherapy only in two patients.The mean time from the diagnosis of breast cancer to the development of t-AML was of 4.8 years .Cytogenetic data revealed two patients with low risk cytogenetics, 4 patients with intermediate risk cytogenetics and 2 patients with high risk cytogenetics. Induction therapies were given to eight patients: 5 patients received daunorubicin and Ara-C; 1 patient received idarubicin and Ara-c, 1 patient received mitoxantrone and Ara-C and 1 patient received Vidaza and Ara-C.At the time of this report only 2 patients are in complete remission, while 6 are dead. As reported in the literature, t-AML continues to have a very poor prognosis. The number of these cases must be expected to rise, given the increase in breast cancer survivors. Further research in the pathogenesis of the disease and development of new therapeutic regimens must be pursued.

122 Allodynia as initial presentation of pre-diabetes. *Karina Méndez-Vargas, David Blas-Boria*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Introduction: Peripheral neuropathy is the most common complication of diabetes worldwide. Small fiber sensory neuropathy (SFSN) is a type of peripheral neuropathy that can manifest as hyperalgesia and allodynia. This type of neuropathy can also be the presenting symptom of pre-diabetes. We present a case of suspected painful SFSN as onset of pre-diabetes. Case presentation: In this case, a 31-year-old man presented with progressive worsening sensory changes in the right leg that later involved the left leg as well. Patient described sensory changes as a burning sensation with pins and needles that progressed to the point that he was unable to tolerate bed sheets, touch or clothing. Patient had sought prior medical attention for pain control with minimal improvement . Physical exam was only remarkable for allodynia of the lower extremities. Complete work-up including nerve conduction studies, imaging, and laboratory studies was unremarkable except for an elevated plasma glucose and hemoglobin A1c of 6.1%. Pain was managed with gabapentin, carbamazepine and lidocaine ointment. Discussion: Painful SFSN can be secondary to multiple etiologies including diabetes, vitamin

deficiencies, HIV, heavy metal toxicity, among others. Given involvement of small, thinly myelinated and unmyelinated fibers, nerve conductions studies are normal. Patients can often be labeled as drug seeking or malingering. Pain management can be challenging given the emotional component of pain and the role of various pain mechanisms. A combination of pain modifying agents has been proven to be useful.

123 **Acute abducens nerve palsy as a diagnosis of exclusion**. *Ángel Viñuela-Cabezas de Herrera*, Karina Méndez-Vargas†, David Blas-Boria†*. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University District Hospital, San Juan, Puerto Rico

Introduction: Diabetes can be associated with focal peripheral neuropathies including cranial nerve neuropathies, the oculomotor nerve being the most common followed by the facial nerve and abducens nerve. Up to 1% of patients with diabetes develop a cranial neuropathy. We present a case of acute onset abducens palsy secondary to diabetes as a diagnosis of exclusion. Case description: In this case a 50-year-old man with medical history of type 2 diabetes mellitus, breast cancer, and morbid obesity presented to the ED due to worsening headache with associated photophobia, phonophobia, and double vision. Initial neurologic physical examination was unremarkable. During hospitalization, the patient developed complete abducens nerve palsy. An extensive work-up was performed including a brain and cervical MRI, brain MRA, CT venogram and serial lumbar punctures. Results were all unremarkable. Hemoglobin A1c was found at 11.5%, consistent with uncontrolled diabetes. Discussion: In this case we explore the differential diagnosis of an acute abducens palsy. In the setting of headache, isolated cranial nerve palsy and prior history of breast cancer, life-threatening conditions need to be ruled out including leptomeningeal carcinomatosis and sinus venus thrombosis among others. Given negative work-up, it was concluded that the patient's uncontrolled diabetes was the culprit of the acute abducens palsy.

124 **Colonic Collision Tumor, Encompassing Adenocarcinoma and Neuroendocrine Carcinoma: A Case Report**. *Alexandra Jiménez-González*, María J. Marcos-Martínez MD†, Román Vélez-Rosario* MD, Jorge Hernández-Sucarichi MD†, Gladys Pérez-Kraft MD**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Administración de Servicios Médicos de Puerto Rico, University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Collision tumor is an exceedingly rare tumor composed of two distinct malignant neoplasms coinciding at the same location. It must be distinguish from composite tumor. Collision tumor is believed to result from two independent adjacent neoplasms that eventually collide, whereas composite tumor is thought to arise through a multidirectional differentiation of a single neoplasm.We report the case of a colonic collision tumor in a 59-year-old man who presented with acute abdominal pain, anorexia and diarrhea for four days. A CT-scan of the abdomen revealed a mass in the ascending colon causing partial intestinal obstruction. A right hemicolectomy was performed. Grossly, there was a 5-cm exophytic mass. Histologically, the tumor was composed of adenocarcinoma and neuroendocrine carcinoma, side by side, with a distinct separation between the two components. A metastatic deposition of neuroendocrine carcinoma was identified in two lymph nodes. Immunohistochemistry studies supported that this was, in fact, a collision tumor, highlighting demarcation between the neuroendocrine and epithelial components.This tumor is rare and may thus constitute a diagnostic challenge. It is important for pathologists, surgeons, and oncologists to be aware of the possibility of a collision tumor and to exclude other rare tumors resulting from one cancer metastasizing to one another. Accurate identification and recognition of both components of collision tumor are important in guiding decisions regarding overall prognosis, adjuvant therapeutic options, and survival, which may be dependent on the biological aggressiveness of each component.

125 **Does Eco-Hotels' Direct Exposure to Green Spaces Provide Positive Benefits to the Visitors' Health?** *Rubén J. Hernández-García*, Eddie N. Sánchez†*. *University of Puerto Rico, Aguadilla, Puerto Rico; †University of Miami, Florida, United States of America

During the last decade the ecotourism business has boomed in Puerto Rico. There are significant increases in eco-related businesses around the Island. The majority of ecorelated businesses in Puerto Rico are tour guided adventures, canopy tours, surfing, biking, among others. All the activities mentioned above have the same purpose: physical activity and group interaction. These activities promote a healthier environment for the participants, which help increase their physical activity level and at the same time encourage the use of the green spaces. This study utilizes Dr. de Vries' five direct contact mechanisms to identify their presence and potential impact at the eco-hotels and urban hotels in Puerto Rico: 1) reduce of stress and attentional fatigue, 2) promotion of physical activity, 3) enhancing positive social contact with neighborhood members, 4) healthy development of children, and 5) personal growth of adults and enhancement of quality of life. These mechanisms are associated with exposure to the green spaces. Interaction with the green spaces will helps to promote a healthier living for the participants and give them an option to avoid a sedentary life style. The interaction with the green spaces and benefits of this interaction can promote an increase in knowledge and understanding of the importance of the natural environment. The significance of the study in Puerto Rico is that it can bring to light the overall benefits of eco-hotels to the visitors, hospitality industry and developers.

126 Sporadic Crutzfeld Jacob Disease: The importance of integrating neuroimaging and clinical presentation at the time of diagnosis. *Jeanne G. Guevara-Mastrangelo, Carlyn Rodríguez, Ángel Viñuela, Carmen Serrano, Maritza Arroyo, Eduardo Labat*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Crutzfeld Jacob Disease is a very rare and dismal disease, presenting as a rapidly progressive dementia and accompanied by other neurological deficits. Leading to delayed diagnosis or failure to treat other similar autoimmune/paraneoplastic dementias. Markers, like protein 14-3-3, tau and neuronal enolase aid in diagnosis; as more cases are reported to the National Prion Disease Pathology Surveillance Center, specificity and usefulness as lone diagnostic tools have been scrutinized, and neuroimaging findings are increasingly important. Our patient is a 64 y/o woman, who developed a rapidly progressive dementia, leading to severe cognitive decline and behavioral changes within 3 months. She also developed ataxia, apraxia, ocular movement abnormalities and myoclonus. Initial evaluation included routine laboratories, cerebrospinal fluid analysis, paraneoplastic markers and brain imaging, all of which where non conclusive. Upon arrival to Neurology ward, a second brain MRI with diffusion weighted images and gradient echo, CSF analysis and electroencephalogram were done. MRI showed multiple abnormalities typical of CJD, CSF was positive for protein 14-3-3 and elevated tau. Her cognitive function continued to worsen, and developed speech and swallow problems. Patient was discharged home with a diagnosis of probable CJD as 100% specificity is nowadays only obtainable by autopsy. This case highlights the importance of pursuing serial neuroimaging in the evaluation of patients with rapidly progressive dementia such as CJD specially since the diagnosis remains to be clinical until definite pathologic analysis is done.

127 Neonatal Glycine Encephalopathy with Cerebral Sinovenous Thrombosis: An unusual presentation. *Jocelyn Montalvo-Ortiz, Neichma Fargas-Berríos, Maricarmen González, María Dávila, Marisel Vázquez-Correa*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Glycine encephalopathy is a rare autosomal recessive metabolic disease characterized by glycine accumulation due to a defect in the glycine cleavage system. Of the various forms of glycine encephalopathy, the classic (neonatal) form develops within days after birth with acute neurologic deterioration, rapidly progressing to coma and often to death. We report a patient with glycine encephalopathy manifested by extreme hypotonia, lethargy, apnea, myoclonic seizures, and a burst suppression pattern in electroencephalography in early neonatal life. Interestingly, initial neuroimaging revealed thrombosis of sigmoid and transverse cerebral venous sinuses. The prothrombotic workup was remarkable for methyltetrahydrofolate reductase C677T (MTHFR) mutation, a risk factor for stroke. To our knowledge, this is the first report of thrombophilia in a neonate with glycine encephalopathy. A link between glycine cleavage system and MTHFR pathway is hypothesized.

128 Histomorphometric analysis of maxillary sinus bone augmentation using allogenic ICBM: Case Reports. *Viviana C. Brignoni-Nazario*, José Pedroza†*. *University of Puerto Rico, Rio Piedras, Puerto Rico; †University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

A number of different materials have been evaluated for bone formation clinically and histomorphometrically. Traditionally, autogenous bone has been acknowledged as the gold standard. Nevertheless, due to its limitations and complications, including increased operating time, limited availability and significant incidence of donor site morbidity and pain, allogenous bone has become a useful and predictable substitute for autogenous bone. We evaluated if a difference is present in bone remodeling when allogenous bone is used for sinus augmentation comparing to published cases with autogenous bone grafting. Five cases were reported, according to their need for bone augmentation in the sinus due to bone deficiency and desire for implant placement. All patients were either ASA I or ASA II non-smokers and presented complete or partial maxillary edentulism with no sinus pathology. Allogenous Irradiated Cancellous Bone and Marrow (ICBM) from Rocky Mountain Tissue Bank (RMTB) was used as bone graft. A pre- and post-operative panoramic film was taken for the sinus augmentation surgery. No post-operative complications were reported. At the time of implant placement (between 16 and 22 weeks post-operative-one sigma) a bone core biopsy was taken to evaluate the bone remodeling quantity and quality using histomorphometric analysis. Osteoid formation during the period under study ranged between 36.9% and 50.5%, comparable with non- vascularized autogenous bone. These results suggest ICBM may serve as a useful and predictable substitute for autogenous bone.

129 Unusual Presentation of a Giant-Cell Tumor of the Temporal Bone in a Newborn: A Case Report. *Lourdes M. Avilés-Ríos*, Leslie A. Soto-Vélez†*. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Hospital Pediátrico Universitario, San Juan, Puerto Rico

Giant cell tumor of the bone (GCTB) is a benign but locally aggressive neoplasm. It accounts for 3 to 9 percent of all primary bone tumors and 15 to 20 percent of all benign bone tumors. GCTB is most commonly identified in long bones with only 2 percent found in the head and neck. It occurs mostly after skeletal maturity, with a peak incidence in 20 to 45-year-old individuals and a slightly higher predominance in the female population. The occurrence of this tumor before the age of 20 is extremely rare. We report the case of a 3-weeks-old male that

presented with facial palsy and secretions from the left ear that upon evaluation a mass in the left ear canal was revealed. A brain MRI showed a mass centered at the left temporal bone with intracranial extension into the left middle cranial fossa, posterior fossa, infratemporal fossa and pre-auricular region. Although the first biopsy was inconclusive, a second open biopsy of the left temporal-mastoid lesion confirmed the diagnoses of a giant cell tumor of the bone. We recommend a thorough examination of newborns presenting with facial palsy to find unusual etiologies as the one presented in our patient.

130 Severe Neurologic Deficits Associated with West Nile Virus in Puerto Rico: Report of Two Cases. *Manuel F. Mas-Rodríguez, Fernando L. Sepúlveda, Myriam Crespo, Gerardo Miranda, Michelle González*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

The West Nile Virus (WNV) is found worldwide.Most human infections are asymptomatic, less than 1% of cases present a neuroinvasive disease, similar to encephalitis, poliomyelitis, flaccid paralysis, or a mixed pattern.Long term functional prognosis is not completely understood.We present the first two cases of WNV neuroinvasive disease in Puerto Rico. A 67 year-old male was admitted to an inpatient rehabilitation unit after presenting with generalized weakness, lower extremity areflexia, flaccid paralysis, and diffuse impaired sensation. WNV neuroinvasive infection, Guillain-Barré like syndrome, was made by CSF analysis and electrodiagnostic study.His functional status at discharge was limited by persistent neuromuscular deficits.An 85 year-old male was admitted to an inpatient rehabilitation unit with impaired cognition, ambulation and balance, after presenting with altered mental status and progressive weakness.WNV encephalitis was diagnosed by CSF analysis. He presented marked functional limitations that improved mostly due to partial, yet significant neurologic recovery allowing fair balance on ambulation with a rollator and activities of daily living performance with minimal assistance.These are the first two reported cases of human WNV infection in Puerto Rico. Although most symptomatic cases present with Dengue-like symptoms, these two cases presented with neuroinvasive disease leading to a more comprehensive work up and the correct diagnosis.Further research is required to determine the extent to which functional prognosis is affected by premorbid condition, severity of muscle weakness and neurologic deficits.

131 Synchronous Breast and Bilateral Ovarian Tumor an unusual presentation of Burkitt's Lymphoma. *Leslie A. Soto-Vélez, Nilka Barrios-Vázquez, María Correa-Rivas, Humberto Lugo-Vicente, Nicole Sifonte-Claudio, Mónica Martínez-Rubio, Gloria Colón-González*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Burkitt's lymphoma is one of the most common non Hodgkin lymphoma of childhood. Synchronous Burkitt's in breast and ovary in children is extremely rare. This is the case of a 14 year-old-female without previous history of systemic illness that presented initially with a breast mass followed by very painful and irregular menstrual periods as well as pelvic distention. The breast mass grew rapidly and further workup was done. Imaging discovered large bilateral ovarian masses. Laboratory workup patient had normal hemogram but presented with elevated LDH and uric acid. Patient went to surgery where the right breast tumor was excised and bilateral salpingoophorectomy performed in two stages. Final pathology reports were positive for Burkitt's lymphoma. This presentation of Burkitt's lymphoma is very unusual specially involving both ovaries and breast. Ovarian Burkitt's Lymphoma has been reported as the most common ovarian tumor in Nigeria in women younger than 20 years; but it is very rare in the United States and Puerto Rico. It accounts for about 0.5 to 1 % of all ovarian lymphomas. Breast Burkitt's Lymphoma has been reported mostly on pregnant woman. Synchronous breast and ovarian Burkitt's Lymphoma is a very rare entity mostly reported as metastasis on very extensive disease but not commonly as primary sites. It is very important to have a high index of suspicion of the unusual presentation of this lymphoma and evaluate promptly to avoid misdiagnosis with milder conditions that are more common at this age.

132 ETANER a very rare and aggressive type of CNS tumor in children: First case in Puerto Rico. *Verónica Sepúlveda-Ortiz, Leslie A. Soto-Vélez, María Correa-Rivas, María E. Echevarría, Nilka Barrios-Vázquez, Gloria Colón-González*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Brain tumors are the most common solid tumors of childhood. Embryonal tumor with abundant neuropil and true rosettes (ETANER) is a very rare but aggressive variant of PNET. This is the case of a 2 y/o boy who presented with left head tilt, early morning vomiting and headache. Imaging studies disclosed a large right-sided cerebellopontine angle mass with a supratentorial mass in the septum pellucidum. A biopsy of this supratentorial mass was attempted and was inconclusive.k A subsequent open biopsy of the cerebellar tumor showed malignant neoplasm consistent with an embryonal tumor. No metastatic disease found upon evaluation. Due to patient age and risk of high morbidity secondary to radiotherapy he was transferred to St Jude Children's Research Hospital for further management. Patient condition deteriorated and new evaluation studies performed showed a rapidly growing tumor and spinal metastasis. Pathology was reviewed and extensively analyzed for definitive diagnosis and the result was positive for ETANER/ETANTR. This is a very rare but aggressive variant of PNET that carries a characteristic 19q13.42 chromosomal amplification. It contains intermediate characteristics of Neuroblastoma and Ependymoblastoma. It has a high malignant potential and poor clinical

outcome despite aggressive treatment. The overall survival of patients treated with surgery and chemotherapy is about 25% at 9 months from diagnosis and the progression free survival is very poor, of less than 3%. It important to be aware of this tumor and to take it into account when having a child with a brain tumor due to its aggressiveness and poor prognosis.

133 Anesthesia considerations for a back thoracic stab wound: a case report. *Victor Rivero-Martinó, Carlos Vidal, Héctor Casiano, Héctor Torres*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

The human thorax protects vital organs. A thoracic stab wound can cause aortic laceration, cardiac tamponade, pneumothorax, and massive hemothorax that require emergent management and immediate surgical intervention. Clinical knowledge about the initial assessment and stabilization process strongly influences the final outcome of the traumatized patient. We report a case of a 43-year-old male with past medical history of generalized anxiety disorder with a knife handle protruding from his mid upper back. The CT scan showed a knife that had transected the right upper lung with a path toward the aortic arch. A right chest tube was placed to treat a right hemo-pneumothorax. Patient was received into the operation room (OR) alert, active and oriented. At the operation theater two OR beds where placed one next to the other in order to place the patient in the supine position without altered the knife location. Standard ASA monitors were placed and a rapid sequence induction was performed to prevent complications during the induction that could result in the migration of the knife. The airway was secured with a double lumen endotracheal tube (DLET). In this case an intentional right lung collapse facilitated the surgical procedure in the affected site while the patient was ventilated in the contralateral lung. It is important to take in consideration the use of DLET and its physiologic implications in the anesthesia practice.

134 Developing a Community-led Recycling Program. *Zuleika Cruz-Ramos, Félix I. Aponte*. University of Puerto Rico, Rio Piedras, Puerto Rico

Santa Rita is a sub-neighborhood in Rio Piedras, located in the Municipality of San Juan, Puerto Rico and is adjacent to the University of Puerto Rico Campus. In addition to a population of 1,876 people, Santa Rita has a large floating population comprised primarily of students and immigrants. In 1951, when Rio Piedras was annexed by the Municipality of San Juan, it began losing basic services, including it solid waste management and collection services. This issue, along with many others, has caused urban decay and has led to a disconnection between the urban center and the adjacent university community. The purpose of this study is to analyze strategies to improve solid waste management in Santa Rita, specifically comparing and contrasting a local government-run service versus a community-led recycling initiative. To perform this comparison, several structured interviews will be conducted. Interviewees will include municipal recycling program coordinators and individuals with experience coordinating community-led recycling programs. A total of 100 surveys will be conducted in the residential area of Santa Rita to understand the community's knowledge of their local solid waste management program and their current recycling practices and perceptions for potential future recycling programs. These the surveys will also be used to create a socio-economic profile of the community. Additionally, stakeholder workshops will be held with the Santa Rita community members to aid in developing a solution to their solid waste management crisis.

135 A Rare Case of a Baby with Two Neurocutaneous Disorders, Sturge Weber and Klippel Trenaunay Weber Syndrome: Case Report at the University Pediatric Hospital in Puerto Rico. *Jessica González-Montes, Marisel Vázquez-Correa*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Purpose: To describe the case of a 6 month old patient with concomitant findings of Sturge Weber (SWS) and Klippel Trenaunay Weber Syndrome (KTWS). Case Description: Patient is a 6 month old female born with bilateral glaucoma, left-sided hemihypertrophy, and a port-wine stain involving bilateral trigeminal nerve (V1-V3), left arm and leg distribution. Clinical Approach: Neuroimaging done at birth was normal, so patient was initially diagnosed with KTWS. Five months later patient developed preferential use of the left arm, and right partial seizures with secondary generalization, requiring treatment with levetiracetam and oxcarbazepine. New neuroimaging study showed atrophy and calcifications of left cerebral hemisphere. EEG revealed asymmetry and background attenuation of the left hemisphere. Clinical Findings: Initial presentation of left arm and leg port-wine stain, together with left hemihypertrophy were characteristic of KTWS. However, the development of partial seizures, progressive right hemiparesis, and new findings on neuroimaging studies, together with the history of glaucoma, and facial port-wine stain, were consistent with a concomitant diagnosis of SWS. Conclusion: Early diagnosis of KTWS requires close monitoring for the possibility of clinical and radiographic evolution of symptoms. Around 40 reports of patients with overlapping of KTWS and SWS have been published. As far as we know, this is the first case reported in Puerto Rico. There is no specific treatment for this combined disorder. This patient continues on antiepileptic medications and aspirin to prevent progressive vascular disease.

136 Hemophagocytic Syndrome in an infant: What to do without resources for Genetic testing. *Lymarie Rosado-Barrera, Leslie Soto, Leilanie Pérez*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

This is the case of a 9mo male with several episodes of sepsis at infancy. At 4 mo old he presented with fever, irritability, pancytopenia and respiratory distress. He required respiratory assistance and IV antibiotics were started. On laboratory workup he had elevated ferritin levels, liver enzymes and triglycerides. Hemophagocytic Syndrome (HLH) was suspected and a Bone Marrow aspiration and biopsy were done showing T lymphocytic and Histiocytic Hyperplasia with occasional Hemophagocytic Histiocytes. He was started on Etoposide and Decadron per HLH 94 protocol. Patient improved dramatically and abnormal laboratory results started to normalize. Due to early presentation Primary HLH was suspected but confirmatory genetic testing has not been performed because medical insurance does not cover it and family does not have the resources. HLH is a disorder of immune dysregulation that as a primary form is secondary to genetic mutations on Perforin gene. It's only cure is a Bone Marrow Transplant. Immediate recognition and early treatment with chemotherapy is necessary to control this pathologic immune activation, but is not the definite cure. HLH final diagnosis via genetic test is very important for further decisions on treatment plan. Our patient case was discussed at Cincinnati Children's HLH Symposium were by consensus despite not having genetic testing results Bone Marrow Transplant was recommended. In a system with so many limitations is a challenge to treat this kind of condition but early recognition and treatment is the clue to success.

137 Congenital ALL found incidentally in an infant with respiratory distress: The importance of having a high index of suspicion. *Michelle González-Salgado, Leslie Soto, Lymarie Rosado, Verónica Sepúlveda-Ortiz*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Congenital leukemia is a rare disorder that carries a high risk of complications and mortality rates. We present the case of a 6 week old female born at term with non-significant prenatal history who presented with respiratory distress and RSV positive bronchiolitis. Laboratory workup showed severe leukocytosis (>200,000) with mild anemia and normal platelets. Bone marrow aspiration showed B-cell Acute Lymphoblastic Leukemia with T(V;11Q23), MLL rearrangement. ALL is the most common leukemia in childhood but the presence of leukemia during the neonatal period is very rare and strongly suggestive of chrosomal abnormalities. Age and MLL rearrangement indicates a poor prognosis. It is important to take these factors into account when evaluating a patient with ALL during the neonatal period.

138 Contralateral Anterior Cruciate Ligament Injury in a Taekwondo Adolescent: A Case Report. *Alexandra Rivera-Vega, William Micheo, Anita Rivera-Brown*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Purpose: Describe an Anterior Cruciate Ligament (ACL) injury after tear of contralateral ACL in a Taekwondo adolescent Case Description: History: 16 years old male with right ACL reconstruction (4 months before) presenting with left knee trauma upon landing in valgus and twisting position of left knee during practice (performed without medical clearance). He developed medial knee pain and inability to continue practicing, with no acute swelling, give away or locking but discomfort at weight bearing and pain at posteromedial knee with full extension. Physical Examination: Minimal effusion, medial joint/retropatellar tenderness, full range of motion, pain at posterior knee upon extension. (+)Anterior drawer, Mc Murray and Lachman's/Valgus stress tests(at 30°of knee flexion) Clinical Findings: Test and Results: 1-Left knee MRI: a) ACL tear b) Medial collateral ligament (MCL) sprain c) Posterior horn of medial meniscus tear 2-Isokinetic testing done 4 months after the right ACL reconstruction: adequate strength in the quadriceps and hamstring muscles compared to contralateral leg and to reference values. Treatment:1-Rest from training 2-Hamstring autograft left ACL reconstruction 3-Supervised rehabilitation with correction of positional abnormalities 4-Slower progression of sport specific activities 5-Lower extremities strengthening 6-Further work: gene analysis for COL1A1, COL5A1, COL12A1, rs12722, rs970547 (predispose to laxity and ACL injury), Imaging for evaluation of anatomic risk factors. HYPOTHESIS ACL tear, MCL sprain and meniscal tear as result of neuromuscular deficits and anatomic predisposition to ACL injury. Funding: N/A

139 Sensitivity and specificity of the MMSE and CERAD subtest in the oldest Puerto Rican sample. *José R. Rodríguez-Gómez*, Rosa J. Rodríguez MPH PhD†, Karím García MS*, Lizzette Alcaraz SLPD**. *Carlos Albizu University, San Juan, Puerto Rico; †University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Purpose: The economic cost of Alzheimer Dementia (AD) to USA society is around 100 billion dollars annually and Puerto Rico had no the exemption. Recent studies and reviews have concluded that there is no single test to measure cognitive functions such as attention and memory, and is an important area of research in cognitive aging (Tractenberg el al., 2010). Our objective using elements of the CERAD neuropsychological battery and MMSE is to determine the sensitivity and specificity of MMSE and CERAD subtest in oldest Puerto Rican sample. Unfortunately, at this point Puerto Rico, have few AD screening instruments to perform valid and sensitive evaluation in our population. Design Methods: This study was directed to evaluated the MMSE and CERAD subtest as an screening instrument in Puerto Rican elderly mean age 80 years old (n = 50, 25 with AD and a control group of 25 without AD); in addition to calculate the sensitivity and specificity of these tests. Results: Sensitivity of the MMSE was 89% and 60% of specificity. CERAD subtest (10-Item Word List Learning Task, Verbal fluency and Word List Recall) was is sensitive in 95.7% and 49% of specificity. Conclusions: This demonstrated that MMSE and CE-

RAD subtest are sensitive to detect cognitive deficit and could be used as a screening instrument for the oldest elderly in Puerto Rico, but is necessary a sensitive neuropsychological battery to assess early stages of AD in our elderly population.

140 Phenotypic Analysis of Thymus Following TEC-specific Androgen Receptor Deletion. *Dorianmarie Vargas-Franco, John Chris Cooper, Nancy Manley*. *University of Puerto Rico, Cayey, Puerto Rico; †University of Georgia, Athens, Georgia, United States of America

The thymus is the main component of the immune system that develops and produces T-cells. The composition is divided into cortex and medulla, mainly of thymocytes, along with resident thymic epithelial cells and other resident cell types including mesenchymal and endothelial cells, which vascularize the thymus. The mouse thymus increases in size from birth until around puberty, when it begins to involute. Thymus involution is characterized by disorganization of its compartments and reduced thymocyte population, which negatively affect the immune system in older animals. Androgen signaling has previously been linked with thymus involution due to the timing of its onset during puberty, as well as rebound of thymus size following castration. We previously deleted androgen receptor in TECs, endothelium, or mesenchyme by crossing Ar-floxed mice with mice expressing Cre exclusively in TECs. TEC-specific Ar deleted mice exhibited increased thymus size at early age, demonstrating the importance of androgen signaling within these cells. To determine mechanisms that contribute to Ar-dependent thymus size changes, I compared compartmentalization of the thymus in wild type with TEC-specific Ar deleted mice using hematoxylin and eosin staining, along with immunofluorescence for markers of the cortex and medulla. In addition, I examined differences in TEC progenitor, endothelial, and mesenchymal populations. I found that TEC-selective Ar-deleted mice had a higher presence of endothelium and mesenchyme, which may influence thymus size by increased vascularization. This project was financially supported by NIH grant (R01-AG035302; JCC,NM).

141 Transport of Gamma-hydroxybutyric Acid and Butyric Acid in Rat Kidney KNRK Cells. *Sharlene Robles-Loperena*, Marilyn E. Morris†, Obinna Obianom†, Nisha Vijay†*. *University of Puerto Rico, Aguadilla, Puerto Rico; †University at Buffalo, State University of New York, New York, United States of America

Gamma-hydroxybutyric acid (GHB) is widely abused for its euphoric and sedative effects and its verdose can lead to respiratory depression, coma and death. The renal clearance of GHB, mediated by monocarboxylate transporters (MCTs), increases with dose and plays an important role in GHB elimination after overdoses. We hypothesize that MCTs (proton dependent transporters), present in high amounts in kidney proximal tubules, are important in the uptake of GHB and butyric acid, with SMCTs (sodium dependent transporters) playing a less significant role due to their low capacity. The objectives of this study were 1) to evaluate the expression of MCT1 and SMCT1 in KNRK cells, 2) to examine the effect of sodium, pH and concentration on the transport of GHB and butyrate in KNRK cells. Time dependent and concentration dependent studies were conducted at pH 6.5 and 7.4 with and without sodium in the uptake buffer. Uptake was normalized for protein content and the 3H-GHB and 14C-butyrate were determined by liquid scintillation counting. Our results demonstrated that MCT1 and SMCT1 were expressed in KNRK cells and that the Km and Vmax values for transport for butyrate and GHB were similar in the presence and absence of sodium. These results support our hypothesis that MCTs play a major role in the transport of butyrate and GHB at high concentrations (1-50 mM) at pH 6.5, the physiologically relevant pH in the urine. SMCTs are important at lower concentrations (< 1 mM) at pH 6.5. Inhibition of MCTs would be expected to increase the renal and total clearances of GHB following overdoses. Supported by NIH T36-GM08059 and T36-GM08637.

142 Clinicopathological Characterization and Nutritional Assessment of Hispanics with Sporadic Microsatellite Unstable Colorectal Cancers. *Sofía M. Díaz-López*†, Yaritza Díaz-Algorri†, María del Mar González-Pons†, Katerina Freyre†, Maritere Olascoaga†, Sylvia B. Saldaña-Villafañe†, Marcia R. Cruz-Correa†*. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico

Approximately 10% to 15% of all sporadic colorectal cancers have microsatellite instability (MSI). MSI has not been well studied in Hispanics, an ethnic minority at high risk for colorectal cancer (CRC). The aim of this study was to define the clinic-pathologic phenotype of Hispanics with sporadic MSI CRC and to evaluate the association of dietary factors and tumor MSI-status. The case-case study evaluated the MSI status of sporadic CRC diagnosed during the period January 1, 2002 to October 31, 2012. MSI analysis was performed using six markers (BAT26, BAT25, NR21, NR22, NR24 and NR27). Unconditional logistic regression was employed to estimate the odds ratio (OR) between exposures and MSI using STATA 10.0. A total of 85 participants (mean age 57.5 ± 12.5 yrs, 51.8% males) were examined. 80 patients had MSS tumors, while 5 (6%) tumors had MSI. The colorectal neoplasia specimens analyzed were mostly adenocarcinomas (96.5%) located in the distal colon (72.0%) with TNM stage III (34.4%). Tumors with MSI did not significantly differ from MSS tumors with regards to gender (p=0.36), age (p=0.66), education (p>0.99), family history of CRC (p=0.58) or obesity (p>0.99). Conclusions: We report a lower prevalence of MSI in Hispanics with sporadic CRC than other Western populations. There were no statistical significant

associations between sociodemographic, clinical and nutritional characteristics and MSI. Ongoing efforts to examine additional Hispanic patients are underway to determine if dietary patterns in Hispanics are associated with CRC MSI status.

143 Outcome of Acute Kidney Injury in Premature Neonates of Less than 1500 Grams of Weight: Pilot Study. *Zayhara Reyes-Bou, Paola Díaz, Stefany Monroy, Lourdes García- Fragoso, Inés García, Marta Suarez, Marta Valcárcel*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Introduction: Acute kidney injury (AKI) is defined as the rapid elevation in the concentration of blood urea nitrogen, creatinine, and cellular waste products resulting from diminished glomerular filtration rate in the kidney. In preterm infants, the plasma creatinine level rises in the first 48 hours of age. Failure of the serum creatinine level to fall after the 6th day of age or persistent increase in serum creatinine suggests impairment of renal function. Diagnostic criteria for AKI have been proposed based on alterations in serum creatinine. Revised versions developed by the AKI Network (AKIN) describe different levels of severity that aim to predict the prognosis in affected patients. Objective: To determine the prevalence of AKI in premature newborns using the AKIN classification as a tool to predict outcome. Study Design: This is a retrospective review of data collected from medical records of premature infants adequate for gestational age with weight less than 1500 grams, admitted to the University Pediatric Hospital Neonatal Intensive Care Unit during 2009 to 2011. The study was approved by the IRB. Results: The study included 229 infants, 168 of them survived at least 2 weeks. The overall mortality was 19.6% (33/168). Development of AKIN stage 1 at 2nd week of life predicted mortality (OR 7.28; 1.9-27.6; $p > 0.003$). Conclusion: Acute kidney injury diagnosed by AKIN at 2nd week of age predicts mortality in very low birth weight neonates. Calculation of AKIN score is a useful tool for early identification of AKI leading to potential interventions to reduce AKI incidence and improve long-term outcome.

144 Analysis of KPC-positive Gram-Negative Bacilli Clinical Isolates for the Periods of 2009 and 2012. *Teresa Martínez-Torres, Guillermo J. Vázquez, Edna E. Aquino, María I. Santé, Iraida E. Robledo*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

The carbapenems are beta-lactam antibiotics (BLA) reserved for the treatment of multi-drug resistant (MDR) bacterial infections. Bacteria with the Klebsiella pneumoniae carbapenemase (KPC) genes are resistant to all BLA including the carbapenems and most have resistance factors to non-BLA. A 2009 PCR surveillance study in PR showed significant numbers of KPC-positive Klebsiella pneumoniae (Kp), Escherichia coli (Ec), Pseudomonas aeruginosa (Pa) and Acinetobacter baumannii (Ab) clinical isolates. This finding highlights a serious medical problem as treatment options are limited. The aim of this study was to compare the number and geographic distribution of KPC-positive Kp, Ec, Pa and Ab isolates collected in 2012 with those obtained in 2009. The hypothesis is that KPC-positive isolates are important nosocomial pathogens. PCR for the identification of selected beta-lactamases was performed in MDR Kp, Ec, Pa and Ab isolates collected from the same 2009 participating hospitals and subjected to comparative statistical analysis. A significant increase in total MDR isolates was noted, while KPC-positive organisms remained stable. Kp continue to be the most common KPC-positive organisms in all geographic areas. A significant increase in KPC-positive Ec and Ab and decrease in Pa was observed. Variations in bacterial distribution were noted amongst the regions. A significant number of isolates were also resistance to non-BLA. In conclusion, there is a serious problem with KPC-positive organisms and public health measures should be undertaken immediately. Support by MBRS/RISE R25GM061838, RCMI/NIH 2G12-RR003051 and 8G12-MD007600.

145 Optimization of the CYP2C9 coding region amplification for DHPLC analysis. *Karla I. Claudio-Campos, Jessicca Y. Renta, Allison Fonseca, Juan Marrero, Jorge Duconge*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

CYP2C9 gene encodes for a protein which is a member of the superfamily of the cytochromes P450's. Studies have shown CYP2C9 important role in warfarin metabolism. Warfarin (Coumadin®) is an anticoagulant drug that requires individual monitoring since serious adverse events are common. Genetic factors influence variability in warfarin dosing. Puerto Rican patients might be carrying unknown genetic variants in the CYP2C9 locus, due to their diverse genetic background. The aim of this research is to assess the presence of not previously reported polymorphisms in the coding regions of the CYP2C9. The samples to be analyzed are Puerto Rican patients undergoing warfarin therapy who are not carriers of the commonly known polymorphisms for the CYP2C9 gene. This study will be performed by using denaturing high performance liquid chromatography (DHPLC). Primers were designed for each of the nine exons of the gene. Control DNAs were used to amplify each exon and the amplicon was sequenced in order to determine the reference DNA that will be used for DHPLC analysis. Identification of a reference DNA is essential in DHPLC since it allows determining if DNA samples from patients under warfarin therapy have not previously reported variants in the gene CYP2C9. Exons from control DNAs were successfully amplified with designed primers and were sequenced. Resulting sequences were compared with human CYP2C9 sequences available on NCBI database. Reference DNAs were determined for each exon on the CYP2C9 gene locus in order to perform the corresponding DHPLC runs. Supported by grants from NIH G12RR-03051 and NIH-NHLBI SC2HL11039301.

146 Neurodevelopmental Outcome in Infants with Surgically Ligated Patent Ductus Arteriosus. *Kary M. Bouet-Rivera, Camille Lupianez, Lourdes García-Fragoso, Inés García, Juan Rivera, Marta Valcárcel*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Background: Patent ductus arteriosus (PDA) is the most common cardiovascular abnormality of prematurity occurring in about a third of infants below 30 weeks of gestation and up to 60% of infants less than 28 weeks. The presence of a persistent PDA has been associated with neonatal morbidities due to alterations in renal, cerebral, systemic and mesenteric perfusion. Objectives: To describe the characteristics of very low birth infants (VLBW) who required surgical ligation and to compare neurodevelopment at 18 months of age with that of newborns who did not require such procedure. Methods: The medical records of VLBW infants who underwent PDA surgical ligation from 2006 to 2011 and were followed up at the University Pediatric Hospital High Risk Clinics were analyzed and compared with birth weight and gestational age matched controls to determine the neurodevelopmental outcome at 12-18 months of age. The study was approved by the IRB. Results: Fourteen infants who underwent surgical ligation were included. The mean birth weight was 1119g and mean gestational age was 27 weeks. The infants undergoing PDA surgical ligation (n=14) did not show a difference in the risk of neurodevelopmental delay when compared to the control group (n=18). Gross motor delay was seen in 43% of infants who underwent surgical ligation as compared to 23% of controls but the difference was not statistically significant (p-0.3) Conclusions: Having a PDA that requires surgical ligation is not related to neurodevelopmental delay in VLBW preterm infants. The relation between PDA ligation and gross motor delay needs to be evaluated with a larger sample.

147 Bilateral Basal Ganglia Hemorrhages: an Unusual Case of Toxoplasma Encephalitis. *Glorimar Rivera-Colón*, Consuelo Climent†*. *Ponce School of Medicine and Health Sciences, Ponce, Puerto Rico; †University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

We describe the case of a 59 year old female with history of chronic alcoholism who, suddenly, presented incoherent speech, visual hallucinations, generalized weakness and excessive sleepiness. A heat computer tomography scan revealed bilateral basal ganglia intracranial hemorrhages. A hypertensive crisis with central nervous system as target was suspected. A VDRL and rapid plasma reagent tests were positive and neurosyphilis was included in the possible diagnoses. Death occurred on the 6th hospital day and the autopsy was requested to rule-out neurosyphilis. The autopsy confirmed the hemorrhages in the basal ganglia which were associated with a Toxoplasma gondii infection. Post-mortem, the anti-HIV- antibodies and FTA ABS were positive. Bilateral, mirror image, basal ganglia hemorrhages is an extremely rare presentation of Toxoplasma encephalitis.

148 The clinical and predictive factors for relapse after an initial event of acute disseminated encephalomyelitis in children. *Marie B. Hidalgo-Rivera, María E. Dávila*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Acute disseminated encephalomyelitis (ADEM) is an inflammatory monophasic condition of the central nervous system (CNS), but recurrent and multiphasic conditions have been described. In this study we aimed to recognize clinical, neuroradiologic, and cerebral spinal fluid (CSF) features present at the initial event of ADEM in children, as possible predictive factors of relapses that may lead to a recurrent or multiphasic ADEM. A retrospective observational review of medical records was conducted in all children younger than 18 years who presented with diagnosis of ADEM using the International Pediatric Multiple Sclerosis Study Group definitions, from January 2005 to June 2012 at the University Pediatric Hospital. Thirteen subjects were included in the study. The mean age at onset was 11 ± 4 years, with male predominance of 69.2%. Seven children had a mild encephalopathy, two had moderate encephalopathy, and four presented with severe encephalopathy at the first event. Eleven patients had supratentorial and infratentorial lesions, and in six of the patients the lesions were greater than 1cm. Only one patient presented with oligoclonal bands in CSF. Seven patients with ADEM went on to relapse. Six patients were multiphasic, and one patient had recurrent ADEM. These results suggest that no association was found in the grades of encephalopathy, the presence of oligoclonal bands in CSF, and localization and size of CNS lesions, as possible predictive factors for relapses in ADEM. Therefore, more studies are needed to characterize the possible risk factors that may lead to relapses in ADEM.

149 Prevalence of anemia in children 1 to 3 year old who attend the Emergency Department. *Leticia Gely-Rojas, Lourdes García-Fragoso, Juanita Negrón-Pagán, Stephanie Maldonado, Manuel Santos*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Children 1 to 3 year old are vulnerable to iron deficiency anemia because maternal iron stores are depleted during periods of rapid growth. Iron deficiency, without anemia may adversely affect long-term neurodevelopment and behavior. Objective: 1. Determine the prevalence of anemia in children 1-3 y/o and associated factors. 2. Identify iron rich foods in the children's diet. Methods: Data was obtained from parents of children 1 to 3 years of age who attended the University Pediatric Hospital and Carolina University Hospital Emergency Departments from September 2011 to November 2012. CBC results were obtained from the medical record. The study was

approved by the IRB. Results: A total of 102 parents answered a survey. The prevalence of anemia (Hb <11g/dL) was 30.4%, compared to that of USA that is around 5.1%. Low MCV levels and high RDW levels were found in 71.6% of all the children which correlate with iron deficiency. No relationship was seen between anemia and age, birth weight, medical insurance, parents education level, breastfeeding, and vitamins use. Most of our children do not integrate an adequate amount of iron rich food in their diet. Conclusions: Children in this study group had a high prevalence of anemia. The fact that many children had low levels of MCV and high levels of RDW suggesting the presence of Iron deficiency with or without anemia is of concern due to the potential adverse effects this may have in neurodevelopment. Primary physicians need to be aware of the importance of universal screening for anemia starting at 12 months of age and further testing for iron deficiency if suspected.

150 Cocaine potentiates cathepsin B secretion in the plasma of HIV seropositive Hispanic women. *Frances M. Zenón-Meléndez, Marines Plaud-Valentín, Valerie Wojna, Loyda M. Meléndez*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico and NeuroAIDS Program, University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Human immunodeficiency virus (HIV) infection is now being driven by drug-abusing populations. Epidemiological studies on drug abusers with AIDS link abuse of cocaine to increase incidence of HIV seroprevalence and progression to AIDS. Cocaine can enhance virus replication in microglia cells and impairs the function of macrophages. Also, cocaine has the ability to influence the cytokine release in some immune effector cells. Our laboratory reported dysregulation of macrophage-secreted cathepsin B contributing to HIV-1-linked neuronal apoptosis. We asked if cathepsin B and its inhibitors are more elevated in plasma and CSF from women HIV+ cocaine users than women HIV+ non-drug users. Plasma and CSF samples of 24 HIV seropositive Hispanic women cohort were selected for this study;12 from plasma and 12 from CSF. From each group 6 are HIV-infected and 6 are HIV-infected cocaine-users. Samples were evaluated for cystatins B and C, and cathepsin B expression and activity by ELISA and confirmed using ANOVA. We found a significant increase of cathepsin B secretion (**p< 0.01), cystatin B secretion (**p<0.01) and cathepsin B activity (*p< 0.05) in plasma samples of HIV-infected drug users compared with HIV-infected women with no drugs. Our results show that cocaine increased dysregulation of cathepsin B secretion and activity and of its inhibitor cystatin B in plasma HIV-infected cocaine abusers compared with HIV-infected patients suggesting that the drug potentiates the development of HIV-induced chronic inflammation. R01 MH083516-01, SNRP-NINDS-1-U54NS43, and 2G12-RR003051/NIMHHD 8G12-MD007600 Translational Proteomics Center.

151 Pharmacogenetic-driven Warfarin Dosing Algorithm in Puerto Ricans. *Alga S. Ramos-Morales*, Yirelia Alejandro*, Joan Vázquez*, Ivette Valentín*, Giselle Rivera†, Iadelisse Cruz†, Jorge Duconge**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †VA Caribbean Healthcare System, San Juan, Puerto Rico

Warfarin is the current standard-of-care in oral anticoagulant for thromboembolic disorders. Individual's unique genetic make-up plays a fundamental role in the warfarin dose variability. CYP2C9 and VKORC1 genotypes have been shown to account for 45% of response variability in different populations, but this information currently lacks for Puerto Ricans. The objective of this study is to develop a Puerto Rican customized pharmacogenetic-driven warfarin dosing algorithm using a learning sample of patients with several thromboembolic problems from the VACHS. This was a single-center pharmacogenetic study in 163 Puerto Rican patients on stable warfarin therapy. A multiple linear regression analysis was performed using maintenance warfarin dose as the dependent variable and following a stepwise addition and backward elimination regression procedures. After considering the effect of genotypes, we also considered clinical variables and Vitamin K intake as potential regressor variables that independently explain warfarin dose variation. A novel warfarin-dosing algorithm for the VA-CHS Puerto Rican population was developed using a derivation cohort of 163 patients and explained 68% of variability based on pharmacogenetic data. Our model resulted more precise for determining low and intermediate doses. We applied it to a validation sample of 55 patients and obtained an R2 of 51%. Moreover, we included a clinically significant admixture variable to yield a model based on a derivation cohort 181 patients. We also compared the predictability of the developed pharmacogenetic algorithm with other established similar algorithms.

152 Factors that determine the proficiency of pediatric residents in performing endotracheal intubations. *Verónica Ramírez-Ramón, Alicia Fernández-Seín, Anabel Puig-Ramos*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

The adequate performance of an endotracheal intubation in a pediatric airway is a mandatory competence to be achieved by residents in any Pediatric Residency program. Most of the studies done on this topic have focused on the neonatal patient. Objectives: (1) To determine if proficiency of pediatric residents in performing endotracheal improves during the residency in different scenarios within the hospital. (2) To determine the impact of patient's age and anatomy on the achievement of a successful intubation. (3) To identify limiting factors in the success of residents performing pediatric endotracheal intubation. Methods: This is a prospective observational cohort study. Data was collected from an "Endotracheal Intubation

Procedure Evaluation Form" which was distributed in four hospital settings at University Pediatric Hospital: Pediatric Ward, ER, NICU and PICU, between September 2011 and November 2012. The study was IRB approved. Results: A total of forty data sheets have been submitted and analyzed. In our setting, 40% of intubations were performed by a subspecialty fellow or attending. A significant increase in level of success was observed correlating with resident level of training (Χ2 (14.63, 3); p value 0.002). The majority of intubations (67.5%) performed at our institution occur within an adequate time frame of less than 20 seconds. Conclusions: Performance of a successful intubation correlates with resident level of training. In our setting, many intubations end up being performed by an attending or fellow. Endotracheal intubation success rates are not significantly higher in infants than in older children.

153 Prevalence of smoking and respiratory illnesses in a group of adolescents. *Leilanie Pérez-Ramírez, Liz Janice Febo, Viviana Blanco, Paola Mojica, Yasmín Pedrogo, Lourdes García*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Background: Smoking is one of the leading causes of preventable death in the United States. Tobacco use is a serious pediatric health issue, as dependence begins during childhood or adolescence in the majority of tobacco users. Objectives: Asses the prevalence of tobacco smoking adolescents and associated health morbidities. Methods: A survey was completed by adolescents at the University Pediatric Hospital emergency room and Rio Piedras Health Center Pediatric clinics. Survey included sociodemographic data, smoking history, general knowledge of smoking and quitting methods, and specific questions about health conditions of the participants. Results: Sixty two adolescents participated in the study and mean age was 14 years old (11-19 years old). Twenty four percent (24.2%) reported having asthma and 24.2 % have allergies. Forty six (46.7%) percent of the asthmatic adolescents are hospitalized yearly and 33% use asthma maintenance medications. Two of the adolescents reported being cigarette smokers (3.2%). Twenty four (23.9%) percent of the adolescents live in homes where someone smokes inside the house. Most of the adolescents have never been asked about smoking status (67.7%). Conclusions: Cigarette smoking prevalence in this study is 3.2%, which shows a lower prevalence than the US Hispanic adolescent population (6.7%). Most of the adolescents have never been asked about smoking status and the adolescents who smoke have never being asked about quitting smoking. Is important that adolescents be assessed about smoking status and be counseled about smoking so that cessation and prevention can be carried out effectively.

154 Long-term Neurodevelopmental and Behavioral Outcomes of Late Preterm Puerto Rican Infants. *Mireya M. Bolo-Díaz*, Gisela Negrín†, Marisel Vázquez‡, Anabel Puig‡*. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †San Juan City Hospital, San Juan, Puerto Rico; ‡University Pediatric Hospital, Rio Piedras, Puerto Rico

Background: Late preterm infants (34-36 6/7 weeks' gestation) have been recognized as a high risk group in terms of morbidity/mortality compared to term infants (37-41 weeks' gestation). This group has been found to have long-term neurodevelopmental and behavioral disabilities. During last decade several studies have evaluated these outcomes. However, none of them in only a Hispanic population or including a broad spectrum of neurodevelopmental disabilities in the same study sample. Objective: To compare Puerto Rican patients with history of late-preterm birth to those with term birth, based on longstanding neurodevelopmental and behavioral morbidities. Method: A retrospective observational cohort study of 485 medical records of patients aged 1 month-17 years old followed in Neurodevelopment clinics at San Juan City Hospital, Puerto Rico from January 2007 to February 2012. Diagnoses were given by same neurodevelopmental pediatrician based on CAT-CLAMS, WRAT-R, Gesell figures, DSM IV criteria and extended neurologic exam. Results: From a total of 485 revised medical records, 322 were included in this study (64 late-preterm; 258 term). Neuromotor, visuomotor, language and behavioral abnormalities were the most frequent long-term neurodevelopmental and behavioral morbidities in both groups with statistically significant higher frequencies in late-preterm group(p=0.01). Conclusion: Puerto Rican infants born late-preterm are at a significantly higher risk of long-term neurodevelopmental and behavioral disabilities compared to those born at term. Neuromotor, visuomotor, language and behavioral morbidities being the most frequent.

155 Voluntary vs. Involuntary commitment: contrasting profiles between patients arriving to Emergency Room Services at University of Puerto Rico Hospital. *Milka Vega-Pérez, Héctor L. Rivera-Reyes, Carlos M. Morales-Rodríguez, Luz N. Colón-de Martí*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Overall number of involuntary holds is increasing in many countries, and in Puerto Rico very little is known about the prevalence and psychiatric profile of patients involuntarily admitted to a Psychiatric Institution. We studied the clinical and socio-demographic characteristics of voluntarily (VP) vs. involuntarily committed patients (IP) after psychiatric evaluation at ER setting in Puerto Rico. A total of 67 charts were included for prevalence and comparative analysis. An informative sheet was completed for each record revised gathering data including: commitment status, chief complaint, age, sex, educational level, civil status, occupational status, housing living area, past psychiatric diagnosis and hospitalizations, substance use, current treatment, course of symptoms and disposition after evaluation. Descriptive analysis included frequency, mean and per-

cent measures. The sample was mainly males (53.7%) between 31-59 years (70.1%), more than half were single (50.7%) and unemployed (58.2%). 86.6% had a previous psychiatric diagnosis and 73.1% were on treatment. Of the subjects admitted only 16.4% were IP. Compared to VP subjects, IP showed higher percent of males (72.7%), above high school level (63.7%), unemployed (72.7%), with higher number of previous hospitalizations (72.7%) and substance use (63.6%). This preliminary profile shows a difference in demographic status and mental health history between VP and IP. While these differences are similar to those reported by other countries, further studies could contribute to a better understanding of important trends to consider in the Hispanic population.

156 Outcomes of Congenital Heart Surgery in children with Down Syndrome: A fifteen years experience. *Liza C. Sánchez-Plazas, Enrique Carrión, Lourdes García-Fragoso*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Background: Trisomy 21 or Down syndrome (DS) is the most common chromosomal abnormality reported in humans. Reports in Puerto Rico estimated 197 babies born with DS between 2001 and 2004. Congenital heart disease (CHD) is reported to occur in about 40% to 60% of patients with DS, with complete atrioventricular (AV) septal defect being the most common. Technological advances, improvement in surgical techniques and in the care of patients, have contributed to the significant improved outcomes of children undergoing heart surgery. Objective: Describe the epidemiology of DS patients with CHD that had undergone heart surgery in PR and describe their outcomes. Methodology: Medical records review from children with DS who had heart surgery at the Cardiovascular Center of Puerto Rico in a five year period. IRB approved. Results: A total of 40 patients were included in the study. The most common CHD among patients with DS was AV canal (41.4%) followed by patent ductus arteriosus (PDA;18.1%) and ventricular septal defect (VSD;17.2%). Surgical repair was done for AV canal (23.3%), PDA (23.3%) and VSD (20%). Surgical procedures were performed most commonly at 4 to 6 months of age. Complications occurred in 50% of patients, being infection the most common (25.7%), followed by different types of pulmonary complications. There was 95% survival after surgical intervention. Conclusion: AV canal was the most common CHD in patients with DS, correlating with the reviewed literature. CHD surgery in children with DS is successful with low mortality and contributes to the improvement in the health status of these children.

157 Hispanic women with HAND exhibit higher diversity of gp120 and lower antioxidant capacity. *Krystal Colón-Rivera*, Gisela Delgado†, Frances M. Zenón*, Richard Noel‡, Vanessa Rivera-Amill‡, Idali Martínez*, Loyda M. Meléndez**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Rio Piedras, Puerto Rico; ‡Ponce School of Medicine and Health Sciences, Ponce, Puerto Rico

HIV infection of lymphocytes and monocytes is mediated by the binding of HIV gp120 envelope protein to the cellular CD4 and CCR5 or CXCR4 receptors. Previous studies from our laboratory demonstrated that CXCR4 usage (X4 viruses) and dual co-receptor usage (X4/R5 viruses) decreased antioxidants in monocytes from women with HIV neurocognitive disorders (HAND). We hypothesize that specific sequence changes within the HIV-1 gp120 cause antioxidant dysfunction leading to HAND. To test this hypothesis, total antioxidant capacity (TAC) from peripheral blood mononuclear cell (PBMC) supernatants derived from 21 Hispanic women with HAND and controls were measured and analyzed by One-way ANOVA. HIV gp120 V1-V5 gene region from 8 primary isolates were amplified by PCR, cloned, sequenced, and analyzed with the Web PSSM Software and MEGA 4.0. Pseudotyped HIV, were only gp120 V1-V5 envelope varied, was used for infection of THP-1 macrophages and subsequent studies of antioxidant function. The TAC was significantly decreased for HIV X4-tropic ($p>0.001$) and X4/R5-tropic viruses ($p>0.05$) compared to R5-tropic viruses. V1-V5 region from women with normal cognition demonstrated significantly less variability than patients with CI. Phylogenetic and TAC data suggest that HIV envelopes from HAND patients with higher sequence diversity and lower TAC induce antioxidant dysfunction. Our studies demonstrate that changes in HIV gp120 sequences could affect TAC and HAND. Targeting specific HIV gp120 sequences could help to predict and prevent HAND. Supported in part by: R01-MH08316-01, R25-GM061838, G12RR03050, G12RR03051 and SNRP-NINDS-1-U54NS431.

158 Validation of a Sensitive Method for the Determination of Ivermectin in Human Plasma. *Madeline González-Morales*, Lawrence L. Fleckenstein†, Mark Schmidt†*. *University of Puerto Rico, Aguadilla, Puerto Rico; †University of Iowa, Iowa, United States of America

Strongyloides stercoralis is an intestinal nematode that usually occurs in immunocompromised hosts and can cause gastrointestinal and pulmonary symptoms as well as hypoalbuminemia. Ivermectin is an antiparasitic agent used in humans for the treatment of strongyloidiasis, it binds avidly to plasma proteins, especially albumin, leading to a low levels of free drug. Free levels are important because they are responsible for toxicity and therapeutic outcomes of the drug. The objective of this research is to perform a method for the quantification of ivermectin levels in human plasma in order to determine them in patients with strongyloidiasis. The method is needed to determine if, as a consequence of their hypoalbuminemia, the free levels of the drug are elevated. The method consists of spiking 500 µl of human plasma with ivermectin and internal standard, abamectin.

The extraction of the drugs from human plasma is done using solid phase extraction cartridge. The use of a sensitive high-performance liquid chromatography using fluorescence detection method is used for the quantification of ivermectin in human plasma. The separation is achieved using a HPLC with a Gemini C18 5µ column and a mobile phase of THF-ACN-water. Calibration curves and control samples were prepared daily for the validation of the method. The results of validation demonstrate that the standard curve is linear over the concentration range 0.08-80 ng/ml and the chromatograms show a complete separation of Ivermectin and Abamectin peaks. The method appears to be accurate, reproducible and suitable for pharmacokinetic studies. Supported by SROP/McNair Program.

159 Modulation of OCT-2 affects cimetidine uptake in the nasal mucosa. *Bryan L. González-Rivera*, Mauren D. Donovan†*. *University of Puerto Rico, Aguadilla, Puerto Rico; †University of Iowa, Iowa, United States of America

Intranasal delivery allows drugs that do not cross the blood-brain barrier to be delivered to the CNS eliminating systemic administration. The objective of this study was to investigate the role of organic cation transporters (OCT-2) in the uptake of small, hydrophilic molecules across the nasal epithelium. Cimetidine, an OCT-2 substrate, was used as a model to evaluate the activity of this transporter in the olfactory and the respiratory tissues. In vitro transport studies were carried out across excised nasal respiratory and olfactory mucosa. Different concentrations were studied to evaluate the relationship between increasing concentration and flux. Additionally, the effect of an OCT-2 inhibitor, pentamidine, on the flux of cimetidine across the nasal mucosa was also studied. An HPLC method was used to quantify cimetidine in the flux samples. The calibration curve obtained for cimetidine in buffer was found to be linear over a concentration range of 1 to 50 ng/mL with an r2=0.99. Transport studies showed that the flux of cimetidine increased linearly with increasing cimetidine concentrations. A saturation in flux was not observed in the concentration ranges studied. The addition of pentamidine, resulted in a decrease in the flux of cimetidine. These results demonstrate that OCT-2 plays an important role in the uptake of cimetidine across the nasal mucosa. OCT-2 expressed in the nasal epithelium was found to play a significant role in the transport of cimetidine across olfactory tissues. Olfactory flux was greater than respiratory flux, likely to the thinner olfactory tissue sample. Supported by SROP/McNair Program.

160 Descriptive analysis of clinical trials in Puerto Rico. *Wilfredo E. De Jesús-Monge*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Background: The results of clinical trials provide the evidence for guidelines of patient care in medicine and US Hispanics are underrepresented as subjects in them. This situation leads to suboptimal applicability of trial findings in this population. Ninety-nine percent (99%) of the Puerto Rican population is of Hispanic origin. Therefore, the participation of PR Hispanics in clinical trials can greatly contribute with the optimal applicability of their results, while making clinical guidelines more relevant to this population. Objective: To descriptively analyze current clinical trials in PR. Methods: All clinical trials that are currently recruiting subjects in PR (November 2012) and their relevant data were retrieved from ClinicalTrials.gov, a worldwide registry of clinical studies, and a descriptive analysis was performed. Results: One-hundred sixty-seven (167) clinical trials were identified. The majority of the trials are targeted to Oncology (26.9%), Human Immunodeficiency Virus (HIV, 15%), Hepatitis C Virus (HCV, 9.6%), and Cardiovascular (CV, 7.8%) disease areas. The trials of these areas are mainly interventional (mostly of therapeutic type), of adult age, and held in San Juan. In addition, most of the Oncology and HIV trials are sponsored by cooperative groups or government; while most of the HCV and CV trials are sponsored by industry. Conclusion: The disease areas of the clinical trials in PR should be consonant with the burden of that disease in its population in order to provide an alternative to the current medical management and to make the clinical guidelines more relevant to Hispanics in PR.

161 A Framework to Develop a Multi-institutional Network Collaboration to Address Health Disparities through Distance Education. *Carlos A. Ortiz-Reyes*, Magda Shaheen†, Jinji Zheng‡, Barbara Segarra*, Jeremiah O. Adigun**, Himilce Vélez††, Alice Tse‡‡, Estela S. Estapé*, Lizbelle De Jesús*, Magaly Torres*§§. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Charles Drew University, California, United States of America; ‡Morehouse School of Medicine, Georgia, United States of America; **Meharry Medical College, Tennessee, United States of America; ††Ponce School of Medicine and Health Sciences, Ponce, Puerto Rico; ‡‡Hawaii University, Hawaii, United States of America; §§Universidad Central del Caribe, Bayamon, Puerto Rico

The Distance Learning Networking Group (DLNG) is a collaborative initiative organized by the University of Puerto Rico, Medical Sciences Campus, and clinical and translational leadership, co-sponsored by National Institute of Health (CRECD, HiREC and PRCTRC) programs during the development of the multi-institutional course: Health Disparities: A Translational Research Approach. The goal of the initiative is to help in developing a multi-institutional online network for the dissemination and sharing of clinical and translational training and educational resources through various technological methods. The purpose of the group is to help determine

the feasibility of distance education as a mode of instruction to introduce the multi-disciplinary components of health disparities. The group includes representatives from seven (7) different universities in USA with the challenge to define strategies to strength the multicultural, and multi-institutional online collaboration. Today technologies have an important role to play in addressing health disparities through distance education. The DLNG explore and promote the use of online platforms and information technologies in offering and evaluating courses among institutions. As part of our analysis and results of this network a multi-institutional evaluation rubric for online courses have been developed. The multi-institutional instrument represents an opportunity to share and disseminate knowledge to help reduce health disparities.

162 **Pilot Project: Implementation of the Course in Health Disparities: A Research Approach**. *Lourdes E. Soto-de Laurido*, Estela S. Estapé*, Edna Acosta*, Angel Mauricio-Mayor†, Lizbelle De Jesús*, Carlos Ortiz**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Universidad Central del Caribe, Bayamon, Puerto Rico

It is the first time that the Post-Doctoral Master in Clinical and Translational Research of the Medical Sciences Campus implemented a course completely On-line. We will describe the Pilot Project developed to implement the Health Disparities: A Translational Research Approach Course from October to December 2012. This course was designed with a multidisciplinary and interdisciplinary focus to address translational research in health disparities. The course defined health disparities taking into consideration the historical context, determinants and theoretical frameworks among other topics. It included the different components of translational research and its relevance in health disparities including ethic principles and the role of community engagement as a strategy in translating health research to communities in an effort to eliminate health disparities. We will discuss the different phases in the implementation process: instructional design, videos, lecturers from inside and outside Puerto Rico, course content, format, communication with scholars and achievement of the course objectives by units and the role of the course coordinators. At the same time we will compare the experience of the scholars living in Puerto Rico and the one from one School of Medicine from United States. Evaluation outcomes will be presented and the different rubrics used during the teaching process.

163 **Concrete Poem: Creative, Interactive Strategy for Active Learning**. *Wanda I. Marrero-Vázquez, Elga Vega, Francés Rodríguez*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Rationale: The School of Pharmacy of the University of Puerto Rico curriculum is ability based on a liberal framework with emphasis on humanistic growth through the development of ten general professional abilities. Therefore, the teaching and learning process is directed to encourage active learning as one of the means to achieve the greatest development of the abilities. Objectives: To stimulate divergent thinking, reinforce thinking skills, and promote the application of new information through the discussion of new ideas and the introduction of multiple ways of expression. To use an unconventional active learning technique as an assessment on the depth of knowledge acquired. Methodology: Concrete Poem was utilized during the Integrated Sciences, Therapeutics and Patient Care I course specifically for the Respiratory Conditions segment. Each group chose a word or concept related to the respiratory conditions already presented in the segment. The projects were evaluated by the topic's professor, a panel of judges, and the students. Results: Seven projects were in poster format and one was made in a disposable cup for hot beverages. The professor as well as the judges' response to the Poems was very positive and enlightening. The students' evaluations were equally positive and revealing. Conclusion: The interactive learning strategy, Concrete Poem, was a novel means to allow students to apply and integrate knowledge. Just as concept maps and diagrams, it can show the level of knowledge acquired in terms of extent and depth.

164 **Community Engagement: A Service-Learning Experience at the School of Pharmacy Medicinal Plants Garden**. *Myriam L. González-Cordero, Ninoshka Coll, Wanda T. Maldonado*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

This project describes the activities designed for the Service-Learning Practicum (36 hours, 1 credit IPPE) that engaged Second Professional Year (PY2) students at the School of Pharmacy Medicinal Plants Garden with different community stakeholders. The objectives of the experiences were the following: To establish a relationship between the community and the Medicinal Plants Garden; develop awareness about the benefits and risks of medicinal plants, and to generate different learning approaches about the use and abuse of medicinal plants. The students established a relationship with fifth grade students of a local school, the support personnel of the School of Pharmacy, and the members of Las Margaritas Center for the Elderly, in order to assess their needs regarding knowledge about medicinal plants. After the assessment, the students developed a walking tour through the garden where the participants were able to learn more about the medicinal plants. The students also designed an exhibition and workshop to explore the garden through the senses. A new educational program for the Medicinal Plants Garden was developed by the PY2 students. The students and the community stakeholders gained knowledge and a better understanding of medicinal plants. The value of the Medicinal Plants Garden was also promoted among the participants. A relationship between the Medicinal Plants Garden and different

community stakeholders was developed. The students and the participants learned and developed awareness about the use of medicinal plants. The Medicinal Plants Garden became an additional scenario for the Service-Learning Practicum.

165 Promoviendo métodos de enseñanza y experiencias de aprendizaje a través de los cursos en línea. *Zeleida M. Vázquez-Rivera, Ana M. Parrilla-Rodríguez*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

La sobrecarga laboral de muchos profesionales limita el tiempo disponible para educación continuada. Los cursos en línea son flexibles y promueven que los profesionales puedan llevar a cabo el adiestramiento a su conveniencia. El Programa de Salud de la Madre y el Niño está comprometido con el adiestramiento de profesionales de la salud en el manejo de lactancia materna. Objetivo: Conocer la aceptación sobre los nuevos ofrecimientos en línea del curso de Capacitación para Educador en Lactancia Materna y el Certificado Profesional en Manejo de Lactancia Materna. Metodología: Se desarrolló una encuesta en Survey Monkey y se envió por correo electrónico, grupo google y facebook a 360 Educadores en Lactancia Materna. Resultados: 127 participantes completaron el cuestionario de la encuesta. 93.4% (n=114) de los participantes está interesado en renovar su Certificado en Educador en Lactancia Materna. El 37.7% (n=46) de los participantes ha tomado algún curso académico en línea. El 89.2% (n=107) de los participantes está interesado en tomar algunos cursos en formato webinar. Al analizar las experiencias en los cursos en línea de los participantes, se observó que las experiencias de éstos fueron buenas y excelentes ya que son más flexibles para las personas que trabajan y solo pueden estudiar en las noches o fines de semana. Además, en la mayoría de los casos les permite acceder en cualquier momento al adiestramiento. Conclusión: Promover cursos a distancia permite que muchos profesionales tengan acceso y flexibilidad a la educación no tradicional. Al mismo tiempo facilita la organización del tiempo en los profesionales.

166 Necesidades de capacitación en salud pública de la fuerza laboral del Sistema de Salud de la Capital. *Elvis Santiago-Rodríguez, José A. Capriles-Quirós, Ruth E. Ríos-Motta, Coralis Marrero-Padilla*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

Trasfondo: Salud de la Capital es una entidad municipal que ofrece servicios de salud a la población de San Juan (SJ), Puerto Rico (PR). Los problemas de salud pública que enfrenta en la actualidad PR y en específico, SJ, hacen indispensable la capacitación de su fuerza laboral. Objetivos: Identificar las necesidades de capacitación en salud pública de la fuerza laboral de Salud de la Capital. Métodos: Se realizó una encuesta que recogió información sociodemográfica, experiencia en salud pública y percepción sobre las competencias de la salud pública del personal activo. De 916 cuestionarios distribuidos, 441 accedieron participar (48% tasa de respuesta). Se realizaron análisis estadísticos descriptivos e inferenciales. Resultados: El 81% de la muestra eran mujeres, 36% tenía entre 50 a 59 años y 40% tenía bachillerato. Más del 30 y 40% lleva trabajando más de 20 años en su programa y en el campo de la salud pública. El 43% tiene conocimiento práctico de salud pública. Entre las barreras que imposibilitan participar de adiestramientos, el 63% manifiesta falta de apoyo económico. Los participantes prefieren (72.1%) la modalidad presencial para recibir adiestramiento. El promedio de puntuaciones de autopercepción de competencias en salud pública varió de 1.64 (No tengo conocimiento o destrezas) a 2.10 (Tengo poco conocimiento o destrezas). Conclusiones: Estos datos evidencian la necesidad de que programas como el Centro de Adiestramiento en Salud Pública de Puerto Rico-Florida genere una mayor capacitación en salud pública de la fuerza laboral de SJ (Funding: Award UB6HP20189, Department of Health and Human Resources).

167 Assessment of the UPR Medical Students Clinical Performance at Second and Fourth Year Clinical Exams. *Vilmarie J. Tañón-Santini, Nerian Ortiz, Yasmín Pedrogo*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Background: Graduating medical students must properly conduct a history and medical exam to diagnose and adequately manage patients. At the UPR Medical Sciences Campus, clinical skills are evaluated using the Clinical Skills Assessment (CSA) exam the Clinical Practice Examination (CPX) and the USMLE Step 2 Clinical Skills exam. Objective: Evaluate students' performance in the clinical competency examinations during 2nd and 4th year of Medicine. Methods: Scores of clinical competency examinations of medical students during 2nd and 4th year of medicine were evaluated as well as their performance in the NBME license examination Clinical Skills (CS) exam. This study was approved by the IRB. Results: Subjects included 837 students from 2004 to 2011. The mean score for history taking and physical exam on the CSA was 81.0 and 79.6 respectively. However, those same variables obtained means of 80.7 and 76.0 on the CPX. No difference was found (p=0.49) in history taking scores between CSA and CPX. Nevertheless, there was a statistical significance (p=0.00) upon comparison of physical exam scores. USMLE Step 2 CS was taken by 671 4th year medical students from 2005-2011 and 613 passed the test (91%). Conclusions: History taking skills between 2nd and 4th year students remained without significant variance. However, physical exam skills decreased significantly. This is worrisome, since physical examination is of uttermost importance for every physician in the evaluation of a patient. This data could serve as a guide to help emphasize this topic in clinical clerkships and tests in an effort to improve these skills.

168 Data mining Google as an indicator of information dissemination on STD's. *Diana Soto-De Jesús*. University of Amsterdam, The Netherlands

According to the Pew Research Center 59% of US adults search for health information online. This poses the need to study what information is available and how it is distributed. This research used cross-spherical analysis using software from the Digital Methods Initiative to gather data on how often specific STD's are mentioned when querying the term "STD's". Among the Blogosphere and Newsphere AIDS is the most prevalent STD mentioned, while in the Websphere it is HIV. While in the Websphere there is information on different STD's, in the Blogosphere and Newsphere AIDS again predominates. Chlamidia is barely cited in the Newssphere and in the Blogosphere. The current health panorama depicts a lowering of AIDS cases and an up in HIV cases, yet AIDS dominates the information available in the spheres that are defined by being uptodate (News and Blogs). Furthermore, in 2008, 1,210,523 cases of Chlamydia infections were reported to the CDC, "the largest number of cases ever reported to CDC for any condition" (CDC, Sexually Transmitted). Yet, Chlamidia is barely a bleep in the Newssphere and pretty much nonexistent in the Blogosphere. Cross-spherical analysis offers the opportunity to identify certain gaps in public awareness and may ease the delineation of upcoming education campaigns. With over 1.8 billion users worldwide, the Internet has emerged as a medium that can not be ignored; what people find online shapes the information they receive and reflects their biases. Public health educators should be aware of what information is available and how it is distributed in this most important of mediums.

169 Chlamydia Trachomatis Knowledge among a Sample of Students of the South Central Rural Area of Puerto Rico. *Patricia Ostolaza-Galarza, María Del Carmen Santos-Ortíz, René R. Dávila-Torres, Ivelisse García-Meléndez, Víctor E. Reyes-Ortíz*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

PAHO established the Human Sexual Right declaration and a strategic plan for 2008-2013, recognizing the importance of sexual education in the prevention of sexually transmitted diseases. However, several studies had showed the lack of knowledge among those in higher risks, women in reproductive age and adolescents. This study aimed to explore the general knowledge if adolescents in the south central rural area of Puerto Rico. A cross sectional study was performed using students in 7th-9th grade. A total of 140 students completed a self-administrated questionnaire that was analyzed using SPSS 17.0. Results showed that 63.6% of the participants had inadequate knowledge. Specific knowledge regarding the etiology, prevention practices, symptom, effects on child and mother health among others were also found inadequate. Risk factors and availability of health services were generally unknown among the adolescents. Last, bivariate results, showed statistically significant differences among adolescents in 8th grades and 9th & 7th, having being test for C. trachomatis, had received school health interventions, and having had unprotected sex ($p<0.01$). Bivariate analysis did not find gender or age differences or other social determinants. Our results show the necessity of sexual education programs among adolescents covering areas related to health services access, C. trachomatis etiology, risk factors, and the effects of contagion on the child and the mother health.

170 Un modelo de servicios centrado en la familia para la población con autismo en Puerto Rico. *Annie Alonso-Amador, Ilia Torres*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

En Puerto Rico, existe una escasez de servicios apropiados para la población con autismo. En abril 2012, se establece el Centro de Autismo en San Juan con el propósito de ofrecer servicios de diagnóstico e intervención a niños con autismo de 0-5 años y a sus familias además de capacitar a proveedores de servicios a esta población. Este centro de excelencia en la intervención temprana del autismo, además de proveer servicios de intervención, sirve de taller para el aprendizaje de estudiantes y ofrece adiestramientos interdisciplinarios tanto para estudiantes como a proveedores de servicios y a familias. El mismo es administrado por el Instituto de Deficiencias en el Desarrollo de la Escuela Graduada de Salud Pública del Recinto de Ciencias Médicas de la Universidad de Puerto Rico. Tiene como misión proveer servicios de alta calidad mediante diagnósticos e intervenciones a corto plazo y servicios de coordinación de servicios al participante y a su familia. El Centro está fundamentado en un modelo de servicios centrado en la familia el cual persigue capacitar y habilitar a las familias para que puedan funcionar de manera efectiva en sus contextos sociales. Hasta el momento, el Centro ha brindado atención directa a 54 niños, orientación acerca de servicios disponibles para la población con autismo a 143 familias no elegibles, más de 50 proveedores de servicios, familias y estudiantes han participado de adiestramientos, y ofrecido servicios de referido a más de 200 niños con autismo y familias.

171 Accuracy of the Root ZX II determining root canal working length in natural and acrylic teeth mounted in the ModuPro Endo. *Christian C. Cacho-Martinicorena, Carmen Santa*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Acceptable measurements of the electronic apex locator usually have been defined as being within 0.5 mm of the apical foramen. The objective of this study is to determine the accuracy of the apex locator Root ZX II when working on acrylic and natural teeth mounted to the ModuPRO Endo. A total of 24 acrylic and extracted natural teeth were used. Before mounting the teeth, tooth length (TL) was measured for each root from an external reference point to the anatomical root apex using a caliper calibrated in 0.5 mm. An estimated working length

(EWL) was determined for each root canal subtracting 0.5 mm from the TL. Radiographs were taken to confirm the working length (WL1) at 0.5 mm from the radiographic apex. Working length and reference point for each canal were recorded. All teeth were mounted on the ModuPRO Endo. Using the recorded reference point the working length (WL2) for each canal was determined using the apex locator. A total of 40 canals were measured. All measurements were tabulated and recorded. A WL2 measurement was considered accurate if it was ± 0.5 mm from the WL1. Six of the forty-three measurements taken (14%) were assessed as corresponding exactly to the radiographic outline of the tooth. Thirty-three of the readings (77%) were assessed as being ± 0.5 mm of the radiographic outline of the tooth. The use of EALs on acrylic teeth is a reliable method for determining root canal length. 90.6% of the readings were within 0.5 mm of the radiographic outline of the tooth. Therefore, the use of ModuPRO Endo as a research and teaching tool in relation to the use of EALs could be safely considered.

172 Plan para la implantación del reglamento Ley de Acompañamiento durante el Trabajo de Parto, Nacimiento y Postparto. *Beatriz Laureano-Rodríguez, Ana M. Parrilla-Rodríguez*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

La Ley Núm. 156 de 10 de agosto de 2006 - Ley de Acompañamiento durante el trabajo de Parto, Nacimiento y Post-Parto no cuenta con un reglamento para solucionar las querellas que se realizan. La falta de un reglamento impide que se puedan evitar violaciones a los derechos de las mujeres durante el trabajo de parto. La evidencia científica indica que el tener un acompañante durante el parto minimiza muchos de las complicaciones del parto y mejora la satisfacción de la madre. Objetivo: Redactar un reglamento que maneje y soluciones las querellas recibidas en la la Oficina de la Procuradora de las Mujeres relacionadas a esta ley y fomentar de esa manera el parto humanizado. Método: Se realizó una revisión sistemática de la literatura, se realizaron entrevistas a personas de interés y se diseñó un plan de trabajo para la redacción de un reglamento, su implantación y su evaluación. Se evalúo la viabilidad de la implantación de la estrategia. Resultados: La Oficina de la Procuradora de las Mujeres cuenta con los recursos fiscales y humanos para implantar este reglamento. Su personal tiene las destrezas necesarias para evaluar el cumplimiento de esta ley en los hospitales de Puerto Rico. Conclusión: La operalización de esta ley a través de un reglamento eventualmente eliminará y resolverá los casos de violaciones a los derechos de las mujeres y sus bebés contemplados en la ley. La promoción y educación sobre esta ley en los hospitales, centros de maternidad y a la población en general redundará en beneficios a la salud de las madres y sus hijos.

173 Percepción de los Profesores y Estudiantes de un Programa de Bachillerato en Enfermería Sobre las Técnicas de Avalúo del Aprendizaje y su Uso en las Prácticas Clínicas. *Jesús D. Quirindongo-Velázquez, Carmen L. Madera-Ayala*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Las agencias acreditadoras de las universidades como la Middle States Association of Higher Education (MSHE) y las agencias de acreditaciones profesionales de enfermería como la American Association of Colleges of Nursing (AACN) y la Comisión de Acreditación de la Liga Nacional de Enfermería (NLNAC) han incorporado en sus estándares el uso de las estrategias y evidencia para el avalúo del aprendizaje y de los programas. En este estudio se identificó la percepción de los profesores y estudiantes sobre el uso de las medidas directas e indirectas para el avalúo del aprendizaje clínico. Además se comparó la percepción de los profesores y estudiantes respeto a las técnicas de avalúo utilizadas en el área clínica. Se utilizó el instrumento "Learning Assessment – Clinical Area" (LACA); diseñado por el investigador y sometido a un panel de experto con un coeficiente alfa de 0.92. Luego de la aprobación del IRB, 61 estudiantes y 10 profesores de enfermería de una institución universitaria del área norte de Puerto Rico participaron en el estudio. El 62.3% de los estudiantes menciona que el profesor utiliza diversidad de técnicas de avalúo en la ejecutoría clínica. El 68.9% de los estudiantes perciben que los objetivos establecidos para el curso clínico van en acorde con las experiencias clínicas. Según los estudiantes, las técnicas de avalúo más utilizadas en área clínica por los profesores se encuentran: estudios de casos, examen físico, portfolio y preguntas abiertas. Mientras que los profesores perciben en que necesitan mejorar en las técnica de avalúo de PBL y simuladores.

174 Tutoriales en línea para el desarrollo de las competencias de información en bibliotecas académicas. *Efraín Flores-Rivera, Rogelio Lugo-Camacho*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

La enseñanza en línea se ha convertido en una opción efectiva para el desarrollo de las competencias de información (CI) de los estudiantes universitarios. En este estudio, se realizó un análisis de contenido de los tutoriales en línea de CI disponibles en las páginas de bibliotecas universitarias de Puerto Rico. Se examinaron los siguientes elementos de los tutoriales: temas, estrategias de enseñanza, duración aproximada, uso de audiovisuales y visibilidad. De las 48 páginas electrónicas visitadas, se encontró que 37 (77%) incluían uno o más tutoriales en línea sobre CI, con un total 118 tutoriales identificados. Los temas más frecuentes son: uso de bases de datos (34.8%), estrategias de búsqueda efectivas (22.9%), uso del Internet (20.3%), manuales de estilo (10.2%), redacción académica (13.9%) y plagio (.03%). Las estrategias de enseñanza más utilizadas son: la exposición lineal (48%); ejercicios interactivos (28%) y demostraciones (24%). La duración promedio de los tutoriales fue de 43.5 minutos. Los recursos audiovisuales más empleados son: ilustraciones o gráficas (83%); narración en voice-over (9%);

animación (5%); podcasts (3%). En cuanto a su visibilidad, se encontró que 68% de los tutoriales requerían 2 clics desde la página de la biblioteca para ser encontrados; 26 % requería 1 solo clic; y 6%, 3 clics o más. Se concluye que nuestras bibliotecas académicas utilizan ampliamente el tutorial en línea como recurso para el desarrollo de las CI de los estudiantes. No obstante, la variedad temática, las estrategias de enseñanza y los recursos tecnológicos utilizados en su desarrollo, son bastante limitados todavía.

175 Application of an area-based socioeconomic position index to assess disparities in the seroprevalence of hepatitis C in Puerto Rico. *Noried M. De Jesús-Velázquez, Erick L. Suárez-Pérez, Cynthia M. Pérez-Cardona*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Surveillance data in the United States (US) have documented that African-Americans and Hispanics continue to be disproportionately affected by viral hepatitis. Seroprevalence of hepatitis C among Puerto Rican adults (2.3%) is higher than in the general US or Caucasian American populations, with injecting drug use as the most commonly identified risk factor for infection. We performed a secondary data analysis of data collected in a population-based study conducted from 2005 to 2008 to examine disparities in the seroprevalence of hepatitis C using an area-based socioeconomic position index. We used principal components to construct the socioeconomic position (SEP) index based on information available in the US Census 2000. Testing for antibody to hepatitis C was performed with a chemiluminescent immunoassay and confirmation by recombinant immunoblot assay. Low SEP was associated with higher odds of hepatitis C seropositivity, although statistical significance was not achieved (POR=1.90, 95% CI=0.94, 3.84, p>0.10). However, low SEP was significantly associated with hepatitis C seropositivity among males (POR=3.36, 95% CI=1.33, 8.47) and adults that reported more than 10 sexual lifetime partners (POR=3.09, 95% CI=1.07, 8.90). Further analysis of the extent and contributing factors to health disparities in hepatitis C in Hispanics living in Puerto Rico is needed to assist in the identification of target areas where public health interventions should be implemented.

176 Impacto en la Reforma de Salud en la Prevalencia de Sellantes de Fosas y Fisuras en niños de 12 años de edad en Puerto Rico. *Metsiel J. Donate-Cardona, Dr. Fernando Haddock, Dr. Augusto Elías-Boneta*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

Las caries es un proceso de interacción entre la película y la superficie dental donde se desarrolla la bacteria que altera el pH del diente. Uno de los métodos preventivos primario para este crecimiento son los sellantes de fosas y fisuras. En Puerto Rico la Reforma de salud se implantó en el 1993 bajo la ley #72, su objetivo principal: eliminar el sistema dual en la población médico-indigente, y acceso al servicio privado. Luego se implantó la renovación del servicio de salud en el 2010 bajo la ley #197 donde se expanden los servicios al sector privado. El mismo ha tenido un impacto en el campo de la salud oral como medida preventiva de sellantes en la población escolar de niños de 12 años de edad convirtiéndose en el enfoque principal de esta investigación. Por lo que se podría decir que si para el año 2010 hay un aumento en la frecuencia de tratamientos de sellantes de fosas y fisuras de al menos 10% en la población escolar de niños de 12 años en Puerto Rico, entonces los tratamientos preventivos están más accesibles a la población médico-indigente porque la ley #197 ha expandido los servicios de salud oral. Se llevó a cabo en 136 escuelas alrededor de toda la isla con 1550 individuos evaluados aleatoriamente en el anonimato por cuatro examinadores calibrados bajo la NICDR. Los resultados del 2010 fueron comparados con los del 1997 a través de un estudio de corte transversal con prueba estadística ji-cuadrada. Obtuvimos un aumento significativo de más de 10% en la prevalencia de sellantes dentales en todas las clasificaciones durante el transcurso 1997-2010.

177 Type 2 diabetes mellitus and colorectal neoplasia risk in Puerto Rican Hispanics: A case-control study. *Katerina Freyre-Díaz*, Yaritza Díaz-Algorri†, Dilka González‡, María E. Lozada†, Sofia M. López-Díaz†, Doris H. Toro‡, Marcia R. Cruz-Correa†*. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico; ‡VA Caribbean Healthcare System, San Juan, Puerto Rico

Epidemiological studies have provided inconclusive evidence regarding the potential link between type 2 diabetes mellitus (DM) and colorectal cancer (CRC). To evaluate the association between type 2 DM and colorectal neoplasia (CRN) in Puerto Rican adults enrolled in the studies Epidemiology of Loss of Imprinting in Colorectal Cancer, Familial Colorectal Cancer Registry and the Type 2 diabetes mellitus and colorectal neoplasia risk in Hispanics: A case-control study at the VA Caribbean Healthcare System. The case-control study included patients with incident CRN and controls with negative colonoscopy and without previous history of CRC or adenomas diagnosed from January 1, 2005 to December 31, 2009. Unconditional logistic regression was employed to estimate the odds ratio (OR) between type 2 DM and CRN using STATA 10.0. A total of 501 participants (mean age 60.3 ± 12.6 yrs., 57.9% males), prevalence of type 2 DM was 24.8%. 323 patients with CRN and 178 controls were evaluated. Cases had lower education (p<0.001) and reported lower use of NSAIDS (p=0.054) and physical activity (p=0.005) compared to the controls. There were no statistical significant associations between DM and CRN (OR=1.21; 95% CI: 0.79-1.87), DM and CRC (OR=1.20; 95% CI: 0.76-1.90) or DM and colorectal adenomas (OR=1.24; 95% CI: 0.68-2.27). We did not observe a sta-

tistical significant association between type 2 DM and CRN. Nonetheless, a tendency towards an increase risk of colorectal neoplasia was observed among type 2 DM patients. Possible explanation for our lack of association may be related to high prevalence of type 2 DM in cases and controls.

178 Outcomes of Percutaneous Aortic Balloon Valvotomy at the Cardiovascular Center of Puerto Rico and the Caribbean. *Francisco E. Parrilla-Quiñones, Jorge Ortega-Gil, Karen Rodríguez-Maldonado, José Pérez-Cardona*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

The natural history of symptomatic aortic stenosis (AS) carries a poor prognosis (1). Medically treated patients with symptomatic AS have a 1- and 5-year survival of 60% and 32%, respectively (2). Aortic valve replacement (AVR) is the only effective treatment for severe AS that alleviates symptoms and improves survival. However, the mortality rate associated with AVR increases substantially with increasing age, the presence of left ventricular dysfunction, or other serious comorbid conditions. These factors are considered one of the main reasons for which one-third of patients with severe AS are not referred for surgery, instead are referred to percutaneous aortic balloon valvotomy. In this retrospective study, the record of 21 patients who underwent PABV between 2006-2009 at the Cardiovascular Center of Puerto Rico and the Caribbean were analyzed. The study showed that 14 patients (87.5%) of 16 interviewed throughout phone had recurrence of symptoms and 10 patients had died (66%) after 6 months of percutaneous aortic balloon valvotomy. Only 28.6 % of the patients were free of symptoms during the first 3 months and 9.6% at 6 months. The results are similar to that found in literature, where patients present some improvement just after procedure but with poor long term outcomes. These results confirm previous studies reports in which were demonstrated that despite the transitory improvement in symptoms after PABV, there recurrence of symptoms after 6 month and there is not improvement in mortality.

179 Impact of HbA1c on Acute Myocardial Infarction Extension in Puerto Rican Patients. *Gruschenka N. Mojica-Sánchez*, Juan Carlos-Zevallos MD*, Luis R. Pericchi PhD†, Mario R. García-Palmieri MD**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Rio Piedras, Puerto Rico

The scientific literature suggests that abnormal glycosylated hemoglobin (HbA1c) is associated with extended myocardial damage; however, limited information is available among Hispanics on this subject. We examined the impact of HbA1c measured at hospital admission on myocardial extension in Puerto Rican patients hospitalized with an initial acute myocardial infarction (AMI). Through a secondary analysis of the Puerto Rico Heart Attack Study, we reviewed the medical records of patients consecutively hospitalized with AMI during 2007 and 2009 in 21 hospitals of Puerto Rico, and calculated the probability of patients with HbA1c levels >6.0% to develop extended myocardial damage, as measured by Troponin (cTnI) levels >4.0ng/ml. Of 3,814 patients, 1,796 (47%) were diabetics, and 442 had available HbA1c values. The median age was 67 years, and 56% were males. Diabetics with HbA1c >6.0% (88%) smoke less (15% vs. 23%; p< 0.02), had similar proportion of non-ST elevation myocardial infarction (79% vs.73%; p=0.3), and higher cTnI >4.0ng/ml (56% vs. 36%; p< 0.05) than diabetics with HbA1c <6.0%. The probability of having a cTnI >4.0ng/ml was significantly higher in older patients [OR: 1.1(.95CI: 1.0-1.1), p< 0.005], and two and a half times higher in patients with HbA1c >6.0% [OR: 2.5 (.95CI: 1.2-5.2), p< 0.01]. All relationships held when adjusted for age and sex. HbA1c >6.0% in Puerto Rican patients hospitalized with AMI poses a significant risk for larger myocardial damage. Early measurement of HbA1c along with proper treatment may reduce the extent of myocardial necrosis in this population.

180 Physical environment, diet quality, and obesity in 12-years old children from four public schools of the metropolitan area. *Roxana Y. Torres-Cruz, Mónica Serrano-Serrano, Cristina Palacios-Alzuru, Cynthia Pérez-Cardona*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Home physical environment (HPE) is related to diet and has been proposed as a determinant of childhood obesity. This cross-sectional study explored HPE and its association with diet quality (DQ) and obesity in a sample of 117 children aged 12 years (67 girls, 50 boys) from 4 public schools located in the metropolitan area. HPE was assessed by asking questions regarding availability and accessibility of healthy and unhealthy foods. Diet intake was assessed using a 24-h diet recall. DQ was calculated from the 24-h diet recalls using the Healthy Eating Index (HEI)-2005, which reflects compliance to federal guidelines. HEI ranges from 0 to 100 and is classified as poor (≤50), needs improvement (51-80) and good (>80). BMI was computed based on measured weight and height and categorized according to CDC growth charts. More than one-third (34.7%) of children were overweight/obese. Nearly 15% had poor DQ and 85.5% needs improvement. Lowest HEI median scores were found for fruits, vegetables, and whole grains. Median scores for total HEI, dark and orange vegetables and oils were significantly (p<0.05) lower in overweight/obese compared to normal weight children. Preliminary analysis of HPE indicated that a similar percentage of children indicated to always have available healthy and unhealthy foods at home (about 17%); however, a higher percentage of children indicated to never have available healthy foods at home (4.2%) compared to unhealthy foods (1.8%). Public health policies should target a more healthful HPE to promote a better DQ and maintain a healthy body weight in children.

181 Traumatic Brain And Spinal Cord Injuries During Infancy And Early Childhood In Puerto Rico. *Ingrid V. Rodríguez-Rivera*, Idania R. Rodríguez†, Enid García*, Ricardo H. Brau**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Instituto de Estadísticas de Puerto Rico, San Juan, Puetro Rico

Traumatic brain (TBI) and spinal cord injury (SCI) are leading causes of death and disability among children. There is a need for information about the mechanisms and circumstances of TBI and SCI in children 0 to 4 years old living in Puerto Rico is available. We evaluated the demographic, clinical, and event characteristics of TBI and SCI patients in this age-group in Puerto Rico. A secondary data analysis was conducted in all children younger than five years evaluated due to head trauma at the Section of Neurosurgery from January 1, 2007 to May 11, 2011. Descriptive analysis demonstrated that most cases were children younger than 2 years old, males, involved in a falling event that occurred under the care of both parents, or the mother at home. Educational strategies to decrease the risk and consequences of TBI in this age group are needed in Puerto Rico.

182 Violent Death Among Men in Puerto Rico Between 2001-2010. *Linda R. Pérez-Laras*, Aleika Restituyo*, Solianne M. Martínez†, Linda R. Laras‡, María Conte§*. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Mayagüez, Puerto Rico; ‡University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; §Instituto de Ciencias Forenses de Puerto Rico

Violent Death is a serious judicial and public health issue that has deep consequences in society. In 2009, the United States ranked violent deaths by homicide as the number 15th cause of death, while suicide was located at number 10. This study's objective is to describe the characteristics observed through data obtained through the crime database of The Institute in Puerto Rico about Suicide and Homicide of Men, 2001-2010. From 7955 of homicides 93% of victims were men, with homicides ranking higher in densely populated areas. 69% of men were in their early adulthood and the cause of death of 88% of them were firearms. On the other hand, there were 2712 suicides with 84% of them being men. Suicides were higher in densely populated areas, where 48% of men were in intermediate adulthood and which 68% of them were caused by asphyxia from suspension. The impact on the death of a member of a family or someone in their productive year is a loss for all Puerto Rico. Governmental agencies and community programs that provide services can better implement programs in the region impacted most while supporting efforts to effective ones. More studies are needed to further understand the specific circumstances of victim's death that may provide more possible risk factors to puertorricans. The IRB number is 9090113 approved on 11/26/12. No funding.

183 Prevalence and Risk Factors for Alcohol Use among Fifth and Sixth Grade Children in Puerto Rico, 2005-07. *Linnette Rodríguez-Figueroa*, Juan C. Reyes-Pulliza*, Margarita R. Moscoso-Álvarez†, Héctor M. Colón**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Rio Piedras, Puerto Rico

Underage drinking is a major public health problem in PR. Almost 25% of adolescent drinkers report beginning before age 12, but most prevention efforts are targeted to teens. Alcohol use and its risk factors among children is rarely discussed. Consulta Juvenil VII is a cross-sectional survey conducted in 2005-07 in a representative sample of 5th-6th grade students. The sample (n=1,708) was selected using a multi-stage stratified cluster sampling design. Multiple logistic regression models were used to evaluate the association between alcohol use and socio-demographic, individual, peers, school, family, and community characteristics. Collinearity was assessed before multiple regression models. Prevalence of alcohol use was 34.6% (95% CI=30.7-38.5%). Smoking, ever been offered illicit drugs, and having friends who drink were the most important predictors of alcohol use among students. Other risk factors included: damaging property, forgetting planned tasks, antisocial behavior, good/excellent health, none/little perceived risk in 1-2 daily drinks, and having siblings or parents that drink. Our findings seem to suggest that risk factors for pre-adolescents' alcohol use are different from those identified among PR adolescents. There also seem to be cultural differences. Unlike other populations, peer factors appear to be more influential in a PR child's alcohol use than family factors. These results provide important baseline information and a better understanding of alcohol use by elementary school students that should be considered when designing and implementing prevention programs for our pre-adolescents.

184 La participación de la fuerza trabajadora en Puerto Rico y el rol de los jóvenes adultos. *Michelle Sonera-Cuevas, Ana L. Dávila*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

Durante los últimos 40 años Puerto Rico ha mostrado una disminución en el empleo y un aumento de personas fuera del grupo trabajador. Este comportamiento puede influir negativamente a la calidad de vida y desarrollo del país. La pérdida de trabajadores productivos y en edad laboral, la pérdida de ingresos y ganancias son solo algunas de las consecuencias adversas que este proceso implica. En Puerto Rico se ha observado una tendencia descendente en las tasas de participación laboral. En el 1970 la tasa de participación laboral para ambos sexos fue de 48 por ciento y en el 2010 bajo a 41.9 por ciento. Para los hombres esta tasa tiende a disminuir a través de los años mientras que en las mujeres tiende a aumentar. Este trabajo tiene como objetivo examinar la trayectoria de las tasas de participación en la en la fuerza trabajadora en Puerto Rico durante las últi-

mas décadas y sus implicaciones para los adultos jóvenes de 16 a 34 años. Se utilizaron los datos procedentes Departamento del Trabajo. La tasa de participación de los hombres en el 1970 pasó de 70.8 por ciento a 51.3 por ciento en el 2010. Para las mujeres aumentó de 28.0 por ciento; para el año 2010 a 34.1 por ciento en 2010. En los primeros grupos de edades 16-19 y 20-24 la participación laboral de los hombres es mayor que las mujeres. A partir del grupo de 25-34 años en adelante las mujeres sobrepasan significativamente a los hombres. Este análisis desde una perspectiva demográfica es importante para establecer políticas públicas que ayuden a aumentar la participación de la fuerza trabajadora y así contribuir al desarrollo del País y a aumentar sus riquezas.

185 Las cesáreas de madres de 35 años o más y los riesgos del embarazo, Puerto Rico: 2005-09. *Zaira Y. Rosario-Pabón, Ana Luisa Dávila-Román*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

En Puerto Rico la proporción de cesáreas ha ido en aumento a través de las últimas décadas hasta alcanzar uno de los niveles más altos del mundo. Se ha encontrado que la probabilidad de los partos por cesárea crece según aumenta la edad de la madre; las razones para este aumento no están del todo definidas. El objetivo de este estudio es analizar la relación que existe entre los factores de riesgo en el embarazo de las madres mayores de 34 años con la proporción de cesáreas de este grupo de edad. Las fuentes de datos utilizadas fueron los archivos de nacimientos del Departamento de Salud de Puerto Rico para el periodo del 2005 al 2009. Se utilizó el programa estadístico SPSS para realizar los análisis de las variables de interés. Al analizar las variables relacionadas con el parto de las mujeres mayores de 34 años se pudo observar que un 60 por ciento de los mismos fueron cesáreas, de las cuales la mitad no informaron factores de riesgo. La proporción de cesáreas de los otros grupos de edad están por debajo de las de madres en edad avanzada y un poco más de una cuarta parte de las madres en edades jóvenes reportaron cesáreas ausentes de factores de riesgo. Estos hallazgos indican que las mujeres de edad avanzada terminan más frecuentemente pasando por una cesárea ausente de factores de riesgo que las madres en edades más jóvenes. Con la postergación de la maternidad estos hallazgos adquieren importancia debido a que son indicativos de que las proporciones de cesáreas no parecen disminuir con el paso del tiempo.

186 Attitudes towards sexual intercourse: Differences according sexual experience and gender. *Margarita R. Moscoso-Álvarez*, Linnette Rodríguez-Figueroa†, Juan C. Reyes†, Héctor M. Colón†*. *University of Puerto Rico, Rio Piedras, Puerto Rico; †University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Educational programs have been developed to prevent teens from being sexually active and to reduce their STIs/pregnancy risk, serious problems among PR youth. This study evaluates attitudes towards sexual intercourse among teens by sexual experience, gender, age, and educational activities using the Consulta Juvenil VIII cross-sectional survey. The sample (n=10,134) was selected using a multi-stage stratified cluster sampling design, and is representative of all 7th-12th grade students in PR. Half of the students were males and between 13-15 years old. Although 26.9% reported sexual debut, 54.1% said they would abstain from sex. Reasons for abstaining included being too young, possible infection, being against their beliefs, and guilty feeling. There were differences in the reasons when compared by gender, age, and sexual intercourse experience. The main reasons among sexually-experienced males were possible infection and beliefs; females indicated possible infection and youth. The main reason among those with no experience was age. The decision to abstain was not significantly different when evaluating participation in educational activities related with pregnancy prevention or STDs. Effective sexual health programs are needed to mitigate the growing public health challenges of HIV, STDs, and pregnancy. Prevention programs should be directed to increase teens' resiliency. Lessons should address safe sex, unfavorable attitudes towards sexual behavior, risk perception, and personal beliefs. Findings from this study will have important implications for the development of preventive intervention programs for adolescents.

187 Diferenciales sociodemográficos en usuarios de marihuana y alcohol (ASSMCA) Puerto Rico: 2008-2010. *Erick Villanueva-Rosa, Lisa L. Ayala, Ana Luisa Dávila-Román*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

El mundo es un escenario cambiante no estático, por lo que para lograr estar en balance con él hace falta enfrentarse a los desafíos que éste presenta de manera directa y efectiva. Aunque recientemente, estados como Washington y Colorado han optado por la legalización de la marihuana para uso recreativo, aún el tema de dicha droga es un tabú. Uno de los mayores argumentos en contra de la legalización de la marihuana estriba en la problemática sobre los efectos del consumo de ésta a la salud. Sin embargo estudios demuestran que el alcohol, el cual es legal y muy accesible en PR, tiene mayores repercusiones a la salud que la marihuana. El objetivo de este trabajo es describir un perfil comparativo entre los usuarios de marihuana y alcohol, como drogas de mayor uso y frecuencia en la población, que fueron admitidos a recibir tratamiento en ASSMCA de Puerto Rico durante el 2008-2010. La fuente de datos proviene de ASSMCA de PR. Los usuarios de alcohol eran 95% hombres y 5% mujeres. De los usuarios de marihuana 91.3% eran hombres y 8.7% mujeres. La mayoría de los usuarios de alcohol oscilaban entre las edades de 30 a 54 años con un 63.4%, mientras que un 82.3% los usuarios de marihuana tenía 29 años o menos. El grupo de solteros de entre los usuarios de marihuana (74.83%) casi iguala a la sumatoria de solteros, casados y divorciados (78.8%)

de los usuarios de alcohol. El presente estudio busca contribuir con información válida y precisa, que pueda ser utilizada a favor de la legislación de políticas efectivas para el control del uso de marihuana y alcohol en PR, y los retos que esto conlleve en la sociedad contemporánea.

188 Cancer incidence and mortality trends in Puerto Rico using dynamic bayesian modeling. *David A. Torres-Núñez, Luis R. Pericchi*. University of Puerto Rico, Rio Piedras, Puerto Rico

Projections of cancer incidence and mortality provide a valuable indication of the current and future situation of the cancer in Puerto Rico. These are invaluable inputs for planning and decision making, and assist in the efficient allocation of resources to meet the future needs for the prevention, detection, and treatment of cancer. We estimate the present and predict the future (2014) of incidence for the top cancer tumor types in Puerto Rico (PR), by gender, age group and primary cancer site, to design public policy. Incidence data from Puerto Rico Central Cancer Registry were obtained for the years 1985 to 2009. The dynamic autoregressive models used in modern epidemiology are function of age-period-cohort (APC). Robust priors were fitted using Bayesian methods. We use model selection using the Deviance Information Criteria (DIC) to compare APC model with Age-period (AP), Age-cohort (AC) and Period-cohort (PC) models. The model produces point estimations as well as probability intervals for 2001 and 2014 by gender and five (5) year age bands. We analyzed the fifteen (15) most important tumors types, including colon, lung and bronchus, breast in situ and malignant, and prostate among others. We introduce a novel robust and stable prior the autoregressive variance, the scaled beta prior of the second kind (Beta2 prior). We found that this leads to a stable convergence of the model at the Markov Chain Monte Carlo (MCMC) implementation. We also produce statistical tools to check the goodness of fit of the selected models.

189 Epidemiology of pediatric burn victims evaluated and treated at the University Pediatric Hospital. *Marlen N. Díaz-Pou*, Milagros Martín-de Pumarejo†, Nerian Ortiz†*. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University Pediatric Hospital, Rio Piedras, Puerto Rico

Every day many children are treated worldwide at emergency departments due to burn related injuries. Younger children mostly suffer from scald burns while older children are more likely to sustain injuries from flame burns caused by direct contact with fire. Objective: Identify the epidemiology and most common causes of burns in children evaluated and treated at the University Pediatric Hospital (UPH). Methods: Data was obtained from a survey to parents/caretakers and medical record review of children arriving to UPH who have suffered burns from October 2011-October 2012. The study was IRB approved. Results: A total of 44 parents of children 0-16 years of age completed the survey (73% mothers). The most common cause of burns in our population occurred due to contact with a hot liquid 35% (other than hot water), followed by hot water 30% and the least common from contact with hot objects (iron) 2%. Most accidents occurred at home where an adult was present but not directly supervising the child. Burns occur at all ages with a higher prevalence around 4 years old. In 98% of cases it was the first time and parents referred to have at least some basic knowledge on how to treat burns. Conclusions: Burns represent a serious threat to our pediatric patients and are one of the most common causes of non-intentional accidents occurring in the pediatric age group. Most of them occur at home where an adult was present which make them preventable. Knowing the risk factors and characteristics of burn victims will help us establish guidelines on prevention specific to our population.

190 Condiciones de salud de mujeres de edad mayor que fueron esterilizadas, PREHCO: 2002-2003. *Ana Luisa Dávila-Román*, Esther María León†, Alberto García*, María C. Larriuz**. *Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico; †Organización Panamericana de Salud, Washington, DC, United States of America

Desde el siglo pasado Puerto Rico ostenta una de las más altas tasas de esterilización femenina con propósitos contraceptivos. La Encuesta de Salud Reproductiva de 1995-96 informó que poco menos de la mitad de las mujeres casadas o unidas estaba esterilizada. El proyecto PREHCO, Condiciones de salud de los adultos mayores en Puerto Rico, es representativo de la población de 60 años e incluye información sobre las características sociodemográficas y de salud de esta población. El objetivo de este trabajo es presentar un perfil de las mujeres de edad mayor esterilizadas y comparar las condiciones de salud de estas mujeres con las que no optaron por este método contraconceptivo. 44.5 por ciento de las mujeres de 60 años o más fueron operadas para limitar su prole. La proporción de esterilizadas desciende con la edad. De éstas el 43.2 también pasaron por una histerectomía posteriormente. La edad promedio a la esterilización fue a los 31.6 años. Las que se sometieron a la histerectomía lo hicieron 12.3 años más tarde. El 7.5 por ciento de las no esterilizadas indicó no padecer de ninguna enfermedad comparado con 10.9 de las operadas. El 76.4 por ciento de las esterilizadas señaló que su salud era regular o mala en contra posición con 61.6 por ciento de las que no estaban esterilizadas.

191 Accuracy of Adiposity Measures as Predictors of Cardiometabolic Risk in Puerto Rican Adolescents. *Katya Giovannetti-Rivera*, Cynthia Pérez*, Ana P. Ortiz†, Sai-Ching J. Yeung‡, Enrique F. Fuentes-Mattei‡, Guermarie Velázquez-Torres‡§, Raúl Bernabé†*. *University of Puerto Rico Medical Sciences Campus, San

Juan, Puerto Rico; †University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico; ‡The University of Texas MD Anderson Cancer Center, Texas, United States of America; §The University of Texas Graduate School of Biomedical Sciences at Houston, Texas, United States of America

Pediatric obesity has reached epidemic proportions in recent years, yet it remains undetermined which adiposity measure is best at describing childhood obesity & predicting detrimental health outcomes. We examined the correlation of anthropometric measures [body mass index (BMI), waist circumference (WC), waist-to-hip (WHR) & waist-to-height (WHtR) ratios] with cardiometabolic risk factors (CMRFs) in 101 Puerto Rican adolescents at a pediatric clinic in 2009-2010. The predictive values of the adiposity measures were evaluated by non-parametric receiver-operating characteristic (ROC) regression. Comparison of the areas under the curves (AUCs) identified the measure with the greatest accuracy in predicting CMRFs and CMRF clustering. Nearly 48% were overweight or obese. All measures except WHR significantly correlated with adipokines & IR. While BMIz-score had the strongest correlation with IR & adiponectin, WHtR correlated mostly with hs-CRP & leptin. High bp was best predicted by WC (AUC=.74 p<.01). WHtR & WC were the most precise when predicting low HDL-C (AUCs= .67 & .68) & the most accurate when predicting CMRF clustering (AUCs=.78; p<.01). In conclusion, nearly half of adolescents were obese & exhibited CMRFs. Since WC & WHtR were the most significant predictors for CMRF clustering, we propose the use of these classifiers of central obesity for the optimal predictive assessment of CMRFs in future research of similar ethnic minorities. Support: NIH U54-RR026139 U54-MD007587

192 **Epidemiology of Volleyball Injuries in Young Females**. *Deric A. López-Rodríguez*, Manuel Mas†, Gerardo E. Miranda†*. *Universidad Central del Caribe, Bayamón, Puerto Rico; †University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Volleyball is currently among the most common club sports in the United States and Puerto Rico and adolescent girls make up the largest number of athletes. Purpose: To describe volleyball related injuries in young females in Puerto Rico; identify injury patterns, and risk factors. Methods: One hundred (100) young females (avg age 13.6 years) from local volleyball club leagues filled a written questionnaire. It included demographic, and current or previous injury information. The primary outcome measure is the frequency of volleyball related injury, evaluated by anatomic area, type, mechanism, and etiology. Secondary outcome measures include association of injury to position played, other sport participation, time of exposure, and game versus practice situation. Results: One hundred and two (102) injuries were reported. The lower extremities accounted for most acute injuries (51%); the ankle was the most commonly injured body part (35%). In the upper extremities acute injuries involved mostly the wrist and hand. Meanwhile, overuse injuries were evenly distributed in the shoulder, back/trunk, and knee. The most common mechanism of acute injuries was contact with floor and contact with another player, whereas overuse injuries occurred without contact, and occurred more frequently during practice (54%). Conclusion: Young female front row players are at high risk for acute volleyball injuries involving the ankle. Further research needs to be done in this population in order to better understand if these elements alter injury mechanism, risk factors, and to plan preventive measures. Funding: No funding. Approved by IRB

193 **Time trends and patterns of birth prevalence rates of oral clefts in Puerto Rico**. *María A. Angulo-Martínez*, Clarimar Soto†, Mairim Soto*, Nicole A. Esquilin‡, Nadya V. Sullivan‡, Carmen J. Buxó**. *University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †University of Puerto Rico, Mayagüez, Puerto Rico; ‡University of Puerto Rico, Rio Piedras, Puerto Rico

Oral clefts are one of the most common birth defects in Puerto Rico. Orofacial clefts are congenital defects located in the facial area including the nose, lips and palate of the individual. The aim of this systematic literature review is to evaluate the prevalence of orofacial clefts in Puerto Rico and describe the prevalence rates time trends and patterns. The data used to develop this analysis was retrieved from the Birth Defects Surveillance System Annual Reports published in 2010 and 2012 by the Puerto Rico Department of Health. The data also demonstrates that the general birth prevalence of orofacial defects has decreased between 2004 and 2010. Cleft palate cases decreased from 6.83 to 6.13 per 10,000 live births and cleft lip and palate has also decreased from 6.42 to 6.09 per 10,000 live births during 2004-2008 vs. 2006-2010. Cleft lip cases increased from 2.59 to 2.94 per 10,000 live births during the same periods. However, an increased significant trend ($p<0.05$) in the birth prevalence of oral clefts in Puerto Ricans was evident during the last decade. A limited number of studies have been published about oral cleft birth prevalence in Puerto Rico. Findings demonstrate that the birth prevalence rates of oral cleft in Puerto Rico may vary due to several causes: etiologic factors, establishment of birth defects surveillance system and reporting compliance. Futures studies should be conducted to identify risk factors for oral clefts in Puerto Rico to reduce the birth prevalence of this congenital defect.

194 **Brain death findings on magnetic resonance imaging**. *Daphne M. Loubriel-Torres, Guido Santacana, Daniel Del Prado*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Hypothesis: MR imaging is a reliable and accurate ancillary test and is therefore useful in the diagnosis of brain death Lear-

ning objective: To demonstrate the usefulness and accuracy of magnetic resonance imaging in the diagnosis of brain death Methods: Multiplanar multi-sequence MR imaging findings from two clinically diagnosed brain dead patients were compared with findings in previous studies of MR imaging in brain dead patients. Results: Our findings of tonsilar herniation and complete absence of vascular flow voids are consistent with findings in previous studies using MRI for the diagnosis of brain death. These findings were found to be reliable indicators for diagnosis in patients who were previously diagnosed using clinical criteria with brain death. Conclusion: MR imaging may be a reliable and accurate ancillary test useful in the diagnosis of brain death.

195 Skeletal maxillary changes following maxillary protraction with face mask in oral clefts patients. *Cristina Ortiz-Díaz, Antonio Rivera-Luna, Carmen J. Buxó-Martínez*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Cleft lip and palate patients are characterized by midfacial growth deficiency. These patients have skeletal discrepancies between maxilla and mandible creating an anterior and/or posterior crossbite. Maxillary protraction therapy using a face mask improves the sagittal discrepancy. The aim of this study was to identify maxillary skeletal changes following face mask therapy in cleft lip and palate patients using a systematic literature review. Relevant full text articles were identified by searching in PubMed database (1987-2004) using the following keywords: "face mask therapy and cephalometric in cleft lip and palate patients" and "cervical vertebral maturation (CVM) method". Initially, 40 abstracts were found. Using our selection criteria: four studies that investigated skeletal maxillary effects using face mask in cleft lip and palate patients and another one about the cervical vertebral maturation method were finally selected. According to our literature review, studies focused on evaluating the skeletal growth with cephalometric measurements in patients with cleft lip and palate using the face mask treatment, most studies reported that the maxilla was moved significantly forward and mandible was rotated inferiorly and posteriorly compared to control group. Limitations were found including sample size, power, no calibration reported, no randomization, not blinded, and many variables involved. Results support the need to conduct studies that describe sagittal and vertical patterns with face mask treatment effects. In addition, no studies to date evaluated face mask therapy on the Puerto Rican population.

196 Satisfaction of facial appearance and psychosocial aspects in patients with oral clefts. *Patricia Ortiz-Díaz, María I. Salcedo-González, Carmen J. Buxó-Martínez*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

Cleft lip and/or palate (CL/P) have been recognized as the most common defect in craniofacial disorders in newborns. Its consequences generate significant clinical and psychosocial impact. The objective of this study was to perform a systematic review of literature about the satisfaction of facial appearance and psychosocial aspects in CL/P patients. A systematic critical review of literature was conducted using PubMed (2005-2012). We used the following keywords: "facial appearance" and "psychosocial" in CL/P. Studies based on facial appearance and psychosocial aspects in CL/P patients with all kind of study designs were selected. A total of 282 articles were found; but only 16 complied with the criteria defined above. Previous studies found that people with CL/P have problems meeting people, lower self-esteem, and a tendency to be more depressed because of their condition. The prevalence of psychosocial problems increased with the patients' age. Subjects with oral cleft rated their appearance as less impaired relative to those without clefts. Oral cleft patients had some dissatisfaction with their appearance. The teeth, lips, speech, and nose were the features these patients and parents felt that these needed more attention. Studies concluded that CL/P patients have their self-confidence affected by the cleft condition. A limitation among the studies reviewed was the lack of a standard method to evaluate psychosocial problems and facial appearance making it difficult to compare studies.

197 Competencias, Actitudes, Manejo y Autoevaluación en la utilización de la Tecnología por Directores de Programas de Enfermería en el Nivel de Educación Superior en Puerto Rico. *Elizabeth Román-Rivera*. University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico

La sociedad actual requiere de un administrador académico preparado con competencias de manejo de tecnologías informáticas. Este estudio descriptivo correlacional, proyectó determinar la relación entre las variables competencias, actitudes, manejo y autoevaluación en la utilización de tecnología de Directores de Programas de Enfermería. Los participantes del estudio fueron directores de programas de enfermería, en un universo de 63 sujetos participaron 55 (87%). Los instrumentos utilizados en la recopilación de datos: Technology in Education Competency Survey, Faculty Attitudes Toward Information Technology y Technology Competence for School Administrators Assessment Tool. Para el análisis de los datos se utilizaron estadísticas no paramétricas. Hallazgos revelan una mayoría de mujeres 45 años +, que enseñan a nivel de bachillerato y tienen computadoras en el hogar. Perciben un alto grado de competencia (74%), un alto grado de manejo de tecnología (97%), un 39% informó un nivel alto y un 58% un nivel mediano en actitudes. No se encontró correlación estadísticamente significativa entre estas variables. En la variable autoevaluación sobre el uso de tecnologías, un 38% se consideró alto y un 38% mediano. Entre las variables competencia y autoevaluación se encontró relación con un valor de .696 y .210 (p.014), no hubo correlación estadísticamente significativa entre las variables actitud y manejo. Se encontró

relación entre el tipo de institución en que laboran y el nivel de competencia, (.461 p, 0.05). Otras correlaciones similares se presentan también con la variable autoevaluación por lo cual se puede inferir que investigaciones adicionales son necesarias en el área de la educación en enfermería y el uso de la tecnología.

198 Conocimiento sobre el sueño del personal de enfermería en la unidad de cuidado intensivo. *Mélany Alicea-Ávila, Marta Rivero-Méndez, Milagros I. Figueroa-Ramos*. Recinto de Ciencias Médicas, Universidad de Puerto Rico, San Juan, Puerto Rico

Antecedentes: El sueño en las unidades de cuidado intensivo (UCI) se caracteriza por ser fragmentado. A pesar de los avances en el estudio del fenómeno de sueño en la UCI existe la necesidad de desarrollar investigaciones dirigidas a estudiar el conocimiento del fenómeno entre el personal de enfermería. Objetivos:(1) Explorar el conocimiento base del personal de enfermería de una UCI sobre el fenómeno de sueño en pacientes de intensivo;(2) Examinar si existen diferencias entre el grupo experimental y el grupo control en el conocimiento sobre el sueño antes y después de la intervención educativa en el personal de enfermería de una UCI; y (3) Explorar el efecto de una pre-prueba en la post-prueba sobre el conocimiento del sueño en el personal de enfermería de una UCI. Método: Diseño cuasi-experimental de medidas repetidas en 3 tiempos (pre-prueba, post-prueba y prueba de seguimiento) con 30 enfermeros/as en una UCI. Resultados: Existe un déficit de conocimiento sobre la fisiología sueño y las intervenciones terapéuticas para la promoción del sueño en la UCI. El grupo experimental aumentó significativamente (28.3%; M = 10.60) su conocimiento después de una intervención educativa en comparación al grupo control (M = 6.93). La pre-prueba no tuvo efecto estadísticamente significativo (p = .176) en los resultados de la post-prueba sobre el conocimiento del sueño en el personal de enfermería. Conclusión: Se recomienda el desarrollo de programas educativos dirigidos a atender cualquier déficit o reforzar conocimientos del personal de enfermería acerca del fenómeno del sueño en la UCI.

Abstracts that reported IRB/IACUC protocol number

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