



## Abstracts of the XXX Annual Research and Education Forum

### • Poster Presentations •

**R-001 Post-transcriptional Control of Human Interleukin-3 Mediated by its 3'-UTR.** Marimar Hernández-Pérez<sup>1</sup>, Natalia Almodovar<sup>2</sup>, José A. González-Feliciano<sup>2</sup>, and Carlos I. González, PhD<sup>1,2</sup>. <sup>1</sup>Department of Biochemistry, UPR-Medical Sciences; <sup>2</sup>Department of Biology, UPR-RP.

Human interleukin-3 (IL-3) is a cytokine that stimulates the growth and differentiation of early lymphoid stem cells and has been implicated in certain types of cancer. IL-3 is a member of a class of transiently expressed mRNAs that harbor Adenosine/Uridine-Rich Elements (ARE) in their 3'-UTRs. The 3'-UTRs of many cytokines play a role in post-transcriptional control by altering mRNA stability and/or translation. Transfection assays using HeLa and Jurkat cells harboring a luciferase-IL-3 3'-UTR reporter showed a significant reduction in luciferase activity. The mRNA levels of these luciferase chimera do not show any significant differences in HeLa and T-cells, suggesting that the hIL-3 3'-UTR mediates post-transcriptional control. To understand how the AREs from the hIL-3 3'-UTR are involved in controlling translation, we conducted site-directed mutagenesis of four ARE clusters that were identified in the hIL-3 3'-UTR. Firefly luciferase reporters harboring ARE mutations were transfected into HeLa and T cells. The luciferase chimeras lacking the hIL-3 ARE showed an increase in luciferase activity. Electrophoretic mobility shift assays (EMSA) demonstrated that TIA-1 and HuR, two ARE-BP previously associated with translational control, bind to the hIL-3 ARE. These studies will help delineate the functionality of AREs in the translational control of human IL-3 and its relationship with oncogenesis. Supported by grants from NIH to C.I.G. (KO1 HL-04355-05, U54 CA96297, P20 RR 016174). M.H. is supported by the RISE Program, R25GM061838.

**R-002 HPV 16 Infection and Physical Status in Hispanic Patients with Colorectal Cancer: A case-control study.** Heriberto M. Rodríguez<sup>1</sup>, Mercedes Y. Lacourt<sup>2</sup>, Raul D. Bernabe<sup>2</sup>, Marcia R. Cruz-Correa<sup>2</sup>. <sup>1</sup>Univ. of Puerto Rico Rio Piedras Campus, <sup>2</sup>University of Puerto Rico Comp Cancer Center.

HPV DNA is detected in anogenital cancer, head and neck cancer and esophageal cancer. Integration of viral DNA into host genome is essential for carcinogenesis. The role of HPV

in colorectal cancer (CRC) has not been elucidated. Our objectives were to evaluate the presence of HPV16 infection in patients with CRC and to probe the viral integrations status in CRC and its adjacent mucosa. To determine the association of HPV 16 and CRC, we did a case-control study using tumor and adjacent tissues from cases with CRC, and compared the prevalence of HPV 16 with normal mucosa from individuals without CRC. We analyzed the presence of HPV DNA in the tissue samples. Head-to-tail junctions of HPV genomes were analyzed to test the integration of HPV genome in to the host. Hypothesis testing was performed using Fisher exact with STATA 10.0. A total of 21 CRC cases (mean age 63 ± 11 y.o.) and 20 controls (mean age 63 ± 9 y.o.) were evaluated. HPV 16 DNA was identified in 13 of 21 (62%) patients with CRC and in none of 20 (0%) controls (p = 0.0002). HPV 16 DNA was observed in all rectal cases and in 10 (55.5%) of colon cases. Among the 9 cases where both tumor and adjacent tissue was available, 2 of the 9 (22%) exhibited HPV16 DNA in both tumor and adjacent tissues. Nine of the ten (90%) tumors and all adjacent normal mucosa (5/5) contained the HPV integrated form. The high frequency of HPV infection and viral DNA integration in the host genome suggests that HPV 16 may play a role in the pathogenesis of colorectal carcinogenesis.

**R-003 Ovarian Adenocarcinoma Metastatic to Right Middle Finger: Case Report.** B Murati MD, R Vélez MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Ovarian cancer is the 6th most common cancer worldwide, 5th in Western countries and accounts for 6% of all cancers in the female in the United States. Many of these ovarian neoplasms cannot be detected early, and they are responsible for almost 50% of deaths from cancer of the female genital tract (4th in cancer mortality). 80% of ovarian tumors are benign, mostly in women 20-45 years old, while malignant tumors are more common in 40-65 years old. We present the case of a 59 year old female with history of ovarian malignancy in 2004. Recently, the patient presented a right hand middle finger mass with a 3 month evolution. The finger was amputated and the diagnosis was metastatic adenocarcinoma, consistent with ovarian primary. CEA immunostain was positive focally, CA125, CK20, CK7, RP, ER and pankeratin were diffusely positive, CA19-9 weakly focally positive, GCDPF-15, TTF-1, and mammaglobin were negative, consistent with metastatic

adenocarcinoma of ovary. 18% of patients with ovarian neoplasms will have evidence of extraperitoneal distant metastases. Most common sites of metastases are pleura, liver, lung, and lymph nodes. Skin metastases have been described in 1.9-5.1% cases according to different sources, but have been located in the abdomen, mostly from contiguous spread of the tumor. Ovarian carcinoma is one of the rarest origin for skin metastases, presenting in 4% of all different primary tumors. This particular presentation in a finger is even rarer.

**R-004 CpG Island Methylator Phenotype (CIMP) and P53 methylation patterns in Puerto Rican Hispanic colorectal cancer patients.** Cristina I. Castro, Mercedes Y. Lacourt, Raúl D. Bernabe, Marcia R. Cruz-Correa. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

The CpG island methylator phenotype (CIMP) with extensive promoter methylation seems to be a distinct epigenotype of colorectal cancer (CRC). CpG island hypermethylation is associated with poor prognosis and lower response to chemotherapy in CRC patients. In this study we determined the CIMP status and the methylation pattern of P53 gene in CRC to establish a possible correlation between aberrant methylation and clinicopathological characteristics. We employed methylation-specific PCR to evaluate DNA methylation in eight CIMP-specific promoters and P53 gene in twenty-five CRC cases. The clinicopathological and methylation patterns were correlated to the CIMP status using Wilcoxon rank tests, Chi square and Fisher exact t-tests, as appropriate using STATA 10.0. Twenty-five CRC cases mean age at diagnosis ( $64.2 \pm 11.7$  years; 11 males) were evaluated. Tumors were mostly located in the distal colon (76.2%), were moderately differentiated (88.8%), and were Dukes Stage B/C (86.7%). Twelve percent (3/25) of CRC cases were CIMP-High, 80% (20/25) were CIMP-Low and 16% (4/25) were No-CIMP. Aberrant methylation was not detected in the P53 gene. This pilot study is the first work to evaluate the CIMP status in Puerto Rican Hispanics CRC patients. Understanding epigenetic silencing by methylation in CpG islands will enable understanding of the colorectal tumorigenesis in Hispanic patients that may help tailor screening and therapeutic strategies for Hispanic patients.

**R-005 Role of dietary soy isoflavones in cancer metastasis.** Elisa Otero-Franqui, Michelle Martínez, Suranganie Dharmawardhane. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Death from breast cancer is usually due to metastasis. A role for soy isoflavones in metastatic breast cancer was investigated by creating mammary tumors in nude mice from fluorescent protein tagged-metastatic human breast cancer cells. Mice were administered vehicle or soy isoflavones: genistein (10 mg/kg body weight (BW)), daidzein (10 mg/kg BW), or genistein, daidzein, and glycitein (10:9:1). Tumor progression was quantified by whole body fluorescence image analysis followed by

analysis of excised organs for metastases. Results show that daidzein significantly increased while genistein decreased mammary tumor growth by 38% and 33% respectively, compared to vehicle. Daidzein increased lung, heart, and kidney metastases while genistein decreased bone and liver metastases. Combined soy isoflavones did not affect mammary tumor growth but increased metastasis. PI3-K pathway real time PCR array analysis on excised tumors demonstrates that genistein significantly downregulated 26% of the genes tested, including gene and protein expression of Rho GTPases RHOA, RAC1, and CDC42, and their downstream effector PAK1 that affect cancer cell invasion and metastasis. Daidzein upregulated 14% of the genes including CCND1, GRB2, MAPK1, JUN, CTNNB1, IRS1, EIF4G1, and GSK3B that regulate proliferation and protein synthesis. Combined soy isoflavone treatment significantly upregulated expression of the eukaryotic initiation factor eIF4E implicating enhanced protein translation in cancer metastasis. In conclusion, soy diets may exert complex effects on breast cancer patients and survivors.

**R-006 Risk of Recurrence of Colorectal Neoplasia among Type 2 Diabetes Mellitus Patients Randomized to Placebo in the Polyp Prevention Clinical Trials.** Alejandro L. Acevedo, MD, Marcia R. Cruz-Correa, MD, PhD, Yaritza Díaz, MS, María Grau, PhD, Cynthia M. Pérez, PhD, John A. Baron, MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Diabetes Mellitus (DM) have reported to be associated with increased risk of colorectal cancer (CRC). However, very limited data have examined the risk of recurrence of colorectal neoplasia (CRN) among patients with type 2 DM. We examined the risk of recurrence of CRN and type 2 DM. Retrospective cohort study evaluated subjects recruited into several randomized clinical trials (RCT) (Colorectal Adenoma Prevention Study, Calcium Polyp Prevention Study and Aspirin/Folate Prevention Study). Type 2 DM was established by previous medical diagnosis. Participants had to have undergone colonoscopy with removal of all polyps within three to four months before study entry and they must have had follow-up colonoscopies. Logistic regression was employed to estimate the relative risk between type 2 DM and CRN. 2,915 individuals (2068 men; 85.3% White; mean age  $59.7 \pm 9.3$  yrs) were enrolled into any of the RCT. 882 subjects were assigned to placebo vs. 2033 to active drug; mean follow-up time was  $35.0 \pm 3.9$  months from randomization to first colonoscopy. 208 subjects had type 2 DM (mean age  $62.9 \pm 7.6$  yrs; 75.5% females), of which 61 (29.3%) were assigned to placebo. Colorectal adenomas developed in 44.5% (27/61) and 55.1% (410/744) of DM and non-DM patients, respectively ( $p=0.40$ ) assigned to placebo. CRC developed in 1.64% (1/61) of DM patients vs. 0.4% (3/744) of non-DM patients (adjusted RR=4.1; 95%CI: 0.1-52.0;  $p=0.19$ ). Recurrence of CRN was not increased among patients with DM compared to non-DM patients. A small number of subjects

with DM and short follow-up time may have limited the power of the study to detect differences in CRN.

**R-007 Prevalence of colorectal neoplasia in asymptomatic Hispanics undergoing screening colonoscopy.** Liselle Lathroum, BS, Fernando Ramos-Mercado, MD, Myriam Villafana, MD, Marcia R. Cruz-Correa, MD, PhD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

In Puerto Rico (PR), colorectal cancer (CRC) is the third cause of cancer death in men and the second cause of cancer death in women. Since compliance with CRC screening is low among Hispanics, information on prevalence of colorectal neoplasia (CRN) will aid in implementation of algorithms for CRC screening. To determine the prevalence and risk factors associated with CRN among asymptomatic Puerto Rican Hispanics. We performed a retrospective review of the medical records of patients who underwent screening colonoscopy at a large ambulatory gastroenterology practice in PR from January 2008 to September 2009. Hypothesis testing for the association of CRN with covariates was performed with t-test, X<sup>2</sup>, and logistic regression. 745 individuals (451 women; mean age 58.9 ± 10.3yrs). Prevalence of CRN was 25.1% and was more common among men than women (32.0%vs.20.6%, respectively p=0.001). Prevalence of CRN increased with age (23%vs.34% in the 6th and the 8th decades of life, respectively). Adenomas were more located in the proximal colon (67.7%) and 84% were ≤1cm. Males were 2 times more likely than women to have CRN (OR=1.92; 95%CI: 1.4-2.6). Prevalence of CRN among Hispanics is similar to that reported among non-Hispanic Whites in US. In Hispanics CRN was more located in the proximal colon, similar to African Americans. This observation may be related to genomic admixture of Hispanic population, environmental factors and/or screening patterns. Our findings suggest ethnic and gender variation in CRN patterns in Hispanics, which may have important implications in screening algorithms for this ethnic group.

**R-008 Interacting Partners of the Stress-Response Transcription Co-activator LEDGF/p75.** Lesli-mar Ríos, Lai Sum Leoh, Maria Filippova, Manuel Llano and Carlos A. Casiano. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

The oncoprotein lens epithelium derived growth factor p75 (LEDGF/p75) is a key player in the cellular response to oxidative stress. LEDGF/p75 induced by oxidative stress promotes resistance to stress-induced cell death by activating specific stress and anti-oxidant genes. Our laboratory reported that LEDGF/p75 expression is elevated in advanced stage prostatic adenocarcinoma. To understand the mechanisms by which LEDGF/p75 activate stress genes and promotes protection against oxidative stress-induced cell death we planned to identify cellular interacting partners of LEDGF/p75. The screening of transcription protein arrays done previously in our labo-

ratory identified CDX2, Menin, Hand2 and LHX2 as possible interacting partners. Menin has been linked to LEDGF/p75 in leukemia. Hand2 has been linked to pancreatic cancer while LHX2 is linked to chronic myelogenous leukemia and lung cancer and CDX2 to prostate cancer. This study was aimed to characterize and validate CDX2, Menin, Hand2, and LHX2 as interacting partners of LEDGF/p75. We used in vitro pull down experiments with recombinant GST tagged p75 to detect interaction with the transcription factors in U2OS and PC3 cell lysates. Pull down of GST-p75 was detected by immunoblotting. We found that Menin is an interacting partner of LEDGF/p75 in prostate cancer cells. We did not detect interactions with CDX2, Hand2 and LHX2. This may be due to weak interactions, failure to mimic the tumor microenvironment, or to interference of the tag or the protein conformation. Further experiments are necessary to verify the interactions of LEDGF/p75 with CDX2, Hand2 and LHX2.

**R-009 Discovery of a Rare Inactive CYP2D6 Allele in Puerto Ricans.** S. Corey<sup>1</sup> and G. González Tejera<sup>2</sup>. Univ Puerto Rico Medical Sciences Campus, Depts Pharmacology<sup>1</sup> and Toxicology and Psychiatry<sup>2</sup>, Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

The cytochrome P450 enzyme CYP2D6 is the product of a highly polymorphic gene. The enzyme plays a significant role in the degradation of about 25% of current drugs, including most modern antidepressants and antipsychotics, and activates two important prodrugs, tamoxifen, an adjuvant used in treatment of breast cancer, and codeine. The rare allele has a non-synonymous mutation, R440H, near the active site. Only one case had been known previously. In the course of a study to identify inactive and reduced activity CYP2D6 alleles in the Puerto Rican population using the Roche AmpliChip P450 test, we identified two cases out of 45 total that could not be unambiguously interpreted. The cases were resolved by long-range PCR and genotyped as \*1/\*31 and \*9/\*31 by A Gaedigk (The Children's Mercy Hospital, Kansas City, Mo). Additionally, one case was identified in a pool of 150 self-identified Hispanic patients collected in the Kansas City area (A. Gaedigk). The allele was absent from 237 Caucasian and 154 African-American subjects collected in Kansas City. [Supported in part by G12RR03051 (RCMI Program, UPR Medical Sciences Campus) from the National Center for Research Resources (NCRR)].

**R-010 Extranodal Marginal Zone Lymphoma of Mucosa-associated Lymphoid Tissue (MALT lymphoma) of the Gallbladder: A Case Report.** E. Agosto-Arroyo, MD<sup>1</sup>, R. Vélez, MD<sup>1</sup>, J. Lojo, MD<sup>2</sup>. University of Puerto Rico-Medical Sciences Campus, School of Medicine, Department of Pathology<sup>1</sup>, Department of Surgery<sup>2</sup>

Extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue (MALT lymphoma) is a low grade lymphoma

which may arise in numerous sites, but only a few cases have been reported in the gallbladder as the primary site. We present the case of an 84 year old female patient with symptoms suggestive of cholelithiasis, for which radiologic studies were done revealing a gallbladder mass requiring cholecystectomy. Gross examination of the gallbladder revealed a multilobulated exophytic intraluminal mass involving the entire lumen. Morphology and immunophenotype of this lesion were typical of a MALT lymphoma, showing small to medium sized lymphoid cells. A significant proportion of cells showed monocytoid features and plasma cell differentiation. The tumoral cells were positive to CD20, CD79a (B-cell markers), CD43 (unspecific marker), and negative for CD3 and CD5 (T-cell markers). Since monoclonality could not be established by kappa and lambda light chains, the case was consulted to the National Institutes of Health at Bethesda, MD, for a second opinion. After re-evaluation, a definite plasma cell light chain restriction could not be documented and a molecular study for B cell clonality was required. DNA was extracted from formalin-fixed paraffin-embedded tissue and PCR amplified for detection of immunoglobulin gene and rearrangements involving the V $\kappa$  and J $\kappa$  locus, and the V $\kappa$  and kDE locus. The results were consistent with a significant immunoglobulin heavy chain and V $\kappa$  and J $\kappa$  locus rearrangements. In summary, the molecular analysis showed clonal rearrangements consistent with the diagnosis of MALT lymphoma.

**R-011      Synthesis of Small Molecule Inhibitors of Rac1 as Anti-Invasive Breast Cancer Compounds.** Yanira Benítez, Alina De la Mota, Suranganie Dharmawardhane, Cornelis P. Vlaar and Eliud Hernández. Escuela de Farmacia, UPR-Recinto de Ciencias Médicas.

Rac proteins are not mutated in most invasive human cancers but are found to be overactive or overexpressed contributing to cancer progression and metastasis. Since the activation of Rho GTPases is controlled by guanine nucleotide exchange factors (GEFs), inhibition of the interaction of Rac with its GEFs is a targeted strategy for blocking Rac activation. The crystal structure (Sondek, J., et al., 2000) of Rac1 in complex with its GEF Tiam1 revealed a key groove on Rac1 that is responsible for the specificity of binding with its GEF. Based on these findings, Gao et al., 2004 identified NSC23766 from a virtual screening from the NCI database, as a specific inhibitor of the Rac1-Tiam1 interaction in vitro with an approximate IC<sub>50</sub> value of 50  $\mu$ M. In our research, new derivatives of NSC23766 were synthesized to improve the inhibitory action of NSC23766. Several of these new derivatives are more potent inhibitors of Rac activity in MDA-MB-435 metastatic breast cancer cells without affecting cell viability of mammary epithelial cells (MCF-10A). The new compounds demonstrate to be more efficient than NSC23766 in inhibiting cell migration and reducing cell spreading and extension of lamellipodia. The synthesis of NSC23766 derivatives and their inhibitory action

on highly metastatic breast cancer cells will be presented and discussed. RISE Program UPR-Cayey (5R25 GM 059429-11) and RCMI UPR-MS (G12 RR 03051).

**R-012      Risk factors for abnormal cervical cytology in pregnant women attending the University Hospital in San Juan, Puerto Rico.** Jaffet Seda-Rodríguez, MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Cervical dysplasia and associated risk factors in pregnant women aged 15 to 30 years that attend obstetrics division clinics at the University Hospital. We performed a review of 237 prenatal charts from patients attending the obstetrics clinics. The variables studied were: age, place of birth, gestational age at first visit, gravidity, age at first coitus, number of sexual partners, tobacco use, Papanicolaou smear results, and cervical GC/CT results. The relationship between cervical cytology results and the variables was assessed. 82.7% had gravidity of 1-3, and 48.7% were in their second trimester of gestation. Their first coitus was between ages 13 and 17 years (60.8%), and 78% had between 1 and 3 sexual partners. 6.8% of the patients had an abnormal cervical cytology test. Of these, 75% were ASCUS, 19% LGSIL, and 6% HGSIL. Increasing gravidity and older age at first coitus were found to be associated with a decrease in the prevalence of an abnormal Papanicolaou smear ( $p=0.960$ ,  $0.393$ ). As the number of sexual partners increased, the prevalence of abnormal cervical cytology decreased ( $p=0.860$ ). A positive Chlamydia test was found to be associated with abnormal cervical cytology ( $p=0.001$ ). The overall prevalence of cervical dysplasia among pregnant women who attend the high-risk obstetrics division clinics at the University Hospital is similar to what has been reported in USA. Among all variables studied, only a positive Chlamydia test was found to be associated with an abnormal cervical cytology test. Prenatal care is an excellent opportunity for cervical cytology testing.

**R-013      T cell/histiocyte-rich large B-cell lymphoma-Case report and review of literature.** Vicmari Arce, MD<sup>1</sup>, Román Vélez, MD<sup>1</sup>, Keila Rivera, MD<sup>1</sup>, Wandaly Pardo, MD<sup>2</sup>. Dept. of Pathology and Lab. Medicine<sup>1</sup> and Dept. of Hematology-Oncology<sup>2</sup> of UPR, Medical Sciences Campus.

This is a case of a 52 year-old male patient with complaints of night fevers and abdominal pain. Complete blood cell count revealed pancytopenia. A thorax CT scan revealed multiple large left axillary lymph nodes, the largest one measuring about 4 cm. with splenomegaly and ill defined lesions diffusely infiltrating the splenic parenchyma. A left axillary lymph node excision revealed a T-cell/histiocyte-rich large B-cell lymphoma. The patient is currently in chemotherapy. T cell/histiocyte-rich large B-cell lymphoma (THRLBCL) is an uncommon and recently added entity in the World Health Or-

gization (WHO) Classification of tumors of hematopoietic and lymphoid tissues. It has been described mostly in middle-aged men presenting with fever, malaise and hepatosplenomegaly. Its pathologic morphology shows diffuse or (less commonly) vaguely nodular pattern effacing normal lymph node architecture. It is comprised of few scattered single large B cells embedded in a background of small lymphocytes, mainly T cells, and a variable amount of histiocytes, which represent the principal components of this lymphoma and may aid greatly in its diagnosis. The differential diagnosis is with the neoplastic lymphocyte predominant (LP) cells of nodular lymphocyte-predominant Hodgkin lymphoma (NLPHL), but they are more variable in size. This neoplasm is considered aggressive with common refractoriness to chemotherapy.

**R-014 Pro-inflammatory Potential of Endotoxin found in PM10 from Saharan Dust that reaches Puerto Rico.** Mario G. Ortiz-Martínez and Braulio D. Jiménez. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Airborne PM10 is a complex mixture of organic/inorganic compounds (within a size range) which are considered to be "inhalable particles", since they can be deposited in the lower part of the respiratory tract where they can trigger inflammation processes. PM10 concentration increments are registered when Puerto Rico receives the impact of Saharan/African Dust (SDE). One of the components found in PM10 are biological materials such as bacterial endotoxins (ENX). This study evaluates the pro-inflammatory potential (IL-6 and IL-8) of ENX from SDE in an in vitro model of human bronchial epithelial cells (BEAS-2B). The organic fraction of PM10 from SDE collected at a rural (Fajardo) and urban (Guaynabo) site was extracted and the ENX concentration, cell cytotoxicity and cytokine induction were measured. SDE organic extracts exhibited a cytotoxic dose response effect and stimulated IL-6 and IL-8 release. Inhibition of ENX in extracts with polymyxin B (PMB) increased cell viability and decreased cytokine induction produced by the urban organic extracts. Results highlighted ENX as an important cytotoxic and pro-inflammatory promoter of SDE PM10. The combination of ENX that comes in SDE and that found in the urban site appeared to produce a stronger response. (Supported by MBRS-RISE)

**R-015 Analysis of CXCR4 mediated signaling in human melanoma cell lines.** Frances M. Palermo, Kendra Cook, Balraj Singh. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Many studies have suggested a relation between the CXCR4 receptor and the initiation and progression of primary and metastatic cancer. Moreover, Cox-2 and CXCR4 may be linked to a common signaling trail. For that reason, the aim of this study was to identify the expression and activation levels of some key proteins in the melanoma cell lines, related to the growth and signaling pattern in a malignant tumor. As a subject of study

we used: Mel 1890, BR 227, Mel 888, Mel 1558, N2, BJ 336, Mel 1011, Mel 526, Mel 1861, Mel 628, Mel 1088, SK-Mel 23 and Mel 938, which are human melanoma cells lines. By using Western Blot, the identification of expression levels of the following proteins was made: CXCR4, Cox-2, AKT, p-AKT, Erk, and NOS2. It is shown that for the AKT, p-AKT, and CXCR4 proteins all cell lines were positive. However some of them presented an overexpression in BR 227 cell line. We found that the ligand SDF-1 activated CXCR4 in some cell lines, e.g., BJ 336. However, in several cell lines CXCR4 was activated in a ligand-independent manner. We conclude that management of the chemokine pathway could lead us to achieve functional therapies against malignant tumors.

**R-016 Neurophthalmology meets Oncology: A case report.** Javier Jardón, MS IV, Natalio J. Izquierdo, MD, and Luis Delgado MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Breast cancer is the second most common type of cancer worldwide. Breast cancer affects women more frequently than men. It remains one of the leading causes of mortality among cancer patients. Breast cancer may metastasize to the bones, lungs, lymph nodes, liver and to the brain. Brain metastasis occurs in approximately 10% of breast cancer patients. A 69-year-old woman with a past medical history of breast cancer in the last year came to an outpatient ophthalmologic clinic for follow-up evaluation of her glaucoma. Patient complained of ataxia, tinnitus, and headaches. She had a comprehensive ophthalmologic examination and a Humphreys Visual Field test. Her field analysis showed a bilateral left congruous hemianopia. The congruous finding of the hemianopia made authors suspect that the lesion was in the posterior visual tract. One of the authors (NJI) ordered an MRI. It showed an intra-parenchymal lesion with a cystic component, peripheral enhancement and associated edema in the right cerebellar hemisphere. Both the symptoms and visual field findings are compatible with a breast cancer metastatic lesion to the cerebellum, as evidenced by the MRI. Our case report reminds physicians the importance of neurologic symptoms in patients with history of breast cancer, and that co-management of these patients is of utmost importance.

**R-017 Case-case study of factors associated to hMLH1, hMSH2, and hMSH6 protein expression among endometrial cancer patients of the University Hospital of San Juan, Puerto Rico: A Preliminary Analysis.** L González<sup>1</sup>, MJ Marcos<sup>1,2</sup>, J Billoch<sup>1</sup>, S Umpierre<sup>1,3</sup>, MY Lacourt<sup>4</sup>, RD Bernabé<sup>4</sup>, E Charneco<sup>5</sup>, AP Ortiz<sup>1</sup>, EL Suárez<sup>1</sup> & MR Cruz-Correa<sup>1,4</sup>. <sup>1</sup>Medical Sciences Campus, <sup>2</sup>ASEM, <sup>3</sup>UDH, <sup>4</sup>UPR-CCC, <sup>5</sup>PRCC.

Women affected by Lynch syndrome (LS) present a 40% to 60% lifetime risk of EC. Hence, EC is the most common non-colorectal carcinoma among women affected by LS, which is

characterized by the absence of the mismatch repair (MMR) proteins. This case-case study aims to determine the frequency of expression (+/-) of the hMLH1, hMSH2, and hMSH6 MMR proteins and factors (age, family history of cancer [first degree relative], and obesity) that can be associated to their negative expression in endometrial cancer (EC) patients treated at the University Hospital of Puerto Rico between 2004 and 2008. A secondary database provided the necessary data (variables of interest and covariates) of 92 EC patients over the age of 21. Only patients with formalin fixed paraffin embedded tissue available from ASEM tumor bank were eligible for the study. MMR protein expression was determined by immunohistochemistry (IHC). Cases were defined as tumors with negative expression for at least one of the MMR proteins, while those with a positive expression for all three MMR proteins were controls. Twenty-three tumors have been evaluated thus far for the hMSH2 and hMLH1 proteins, with a negative expression shown in 3 out of 23 (13%) patients (2 cases for hMLH1 and 1 for hMSH2). None of the 22 tumors evaluated for hMSH6 showed an absence of the protein. This study will determine the presence of LS in women with EC as their sentinel tumor, will provide insight on the role of genetics among Hispanic women with EC, and will allow consideration of possible determinants of LS.

**R-018 Prevalence of HPV Infections in HIV Positive Women who Attend the Maternal Infant Studies Center: Preliminary Findings.** Scorsone A.M., Ortiz A.P., Venegas H., Tamayo V., and Zorrilla C.D. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Background: Human Papillomavirus (HPV) is the most common sexually transmitted infection in the US. The prevalence of HPV among US women ages 14-59 is an estimated 27%. Literature suggests that prevalence rates among HIV-infected women can range from 36% to 97%; varying according to specific samples' risk behaviors and study population. In Puerto Rico, HPV prevalence in HIV positive women is unknown and in 2008 there was an estimated 14,546 women living with HIV/AIDS. Methodology: Cross-sectional study with a sample size of 320 consecutive women, 21 and over, who attend the Maternal Infant Studies Center at the UPR-RCM. Data was collected on HPV positivity, cervical cytology, HPV risk/co-factors, and HIV information through assisted self-administered questionnaires, gynecological examination, HPV-PCR linear array genotyping, and blood samples. Results: Mean age of currently enrolled participants (n=100) is currently 38 years, 27.4% graduated High School, 42% were married or had consensual partners and 44% earned less than \$300/month. Based on HPV samples from the first recruited 91 women, the prevalence of HPV is 59.6%, with 31.5% being HR-HPV types and 55.1% LR-HPV types. Conclusion: The high prevalence of HPV/HIV co-infections among this study warrants further investigation into risk/co-factors and HPV types present with-

in the population. Public health interventions, including HPV vaccination and cervical cancer screening should be promoted in HIV positive women, in order to prevent HPV related malignancies among them, including genital warts and cervical cancer. Funding provided by PR-CCHD and RCMI; has IRB approved.

**R-019 Cytotoxic screening of Thioredoxin Reductase inhibitors as potential new anti-cancer drugs.** Janice M. Santiago, Sandraliz Espinosa, Cornelis P. Vlaar, Marianela Pérez-Torres. UPR-Medical Sciences Campus, School of Pharmacy, Department of Pharmaceutical Sciences, San Juan, Puerto Rico.

Thioredoxin Reductase 1 (TrxR1) plays a prominent role in mammalian cells re-dox regulation, antioxidant defense, cell proliferation and apoptosis. An important selenoprotein, TrxR1 is thought to participate in cancer prevention, but is also known to be over-expressed in breast cancer cells. Novel compounds containing pharmacophoric cyclic 1, 2 disulfides and cyclic thiosulfinate groups were designed, synthesized and tested for their ability to inhibit TrxR. The TrxR inhibitors were evaluated through screening in normal cells (MCF12A) and a panel of breast cancer cell lines that reflect different stages of the disease; the non-tumorigenic cell lines T47D and MDA-MB-453, the tumorigenic cell lines MCF-7, ZR-75-1, BT-20, SkBr-3 and the metastatic breast cancer cell lines BT474, and MDA-MB-231. Each cell line was grown and plated into 96-well plates before treatment. The cells were treated for a 72 hour period with 10  $\mu$ M of each compound and assayed using MTT. In addition, we used immunoblot analysis to determine the levels of TrxR1. Our results showed that 5 of the 8 cyclic thiosulfates: CPV-161(74-94%), CPV-154(73-93%), CPV-159(80-99%), CPV-156(72-95%), CPV-164(67-99%) and 1 of the 32 cyclic disulfides, SED-087(55-86%) demonstrated substantial inhibitory activity towards all the cell lines tested. Furthermore, at least one of the thiosulfinate compounds did not significantly affect cell proliferation of the non-malignant cell line. Our results also showed that the TrxR1 is present in the cell lines. In conclusion, we have identified a possible candidate compound for further development as novel anti-cancer drug.

**R-020 Neuregulin-1Beta Regulates the Expression of the Epidermal Growth Factor Receptor in Breast Adenocarcinoma Cell Lines.** María M. Malavé, Lisandra Negrón-Vega, Elsa M. Cora, Marianela Pérez-Torres. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

The ErbB family of receptor tyrosine kinases participates in the regulation of key cellular processes such as proliferation, differentiation and survival. Neuregulins, ligands for the ErbB3 and ErbB4 receptors, regulate genes that are implicated in cancer progression. Previous reports have indicated a posi-

tive correlation in the mRNA expression of EGFR and neuregulin in a panel of breast cancer cell lines and in a set of 54 breast tumors. We hypothesized that neuregulins regulate the expression of EGFR in breast cancer cells. We treated a set of breast adenocarcinoma cell lines with different concentrations of Neuregulin-1 beta (NRG-1 $\beta$ ) and measured the mRNA levels of EGFR using reverse-transcriptase real-time PCR. Treatment with NRG-1 $\beta$  (50 ng/ml) increased the expression of EGFR by 10-fold in MCF-7 cells, 2-fold in BT-20 and ZR-75-1 cells, 3.7-fold in T47D cells. In contrast, EGFR levels did not increase in MDA-MB-468 and MDA-MB-453 cells treated with NRG-1 $\beta$ . In addition, our results showed that the protein levels of EGFR increased in MCF-7 and T47D cells treated with NRG-1 $\beta$  when compared to untreated cells. No change in EGFR protein levels was observed in MDA-MB-468 and BT-20 cells treated with NRG-1 $\beta$ . Our data strongly suggest a role for NRG-1 $\beta$  in the regulation of EGFR in breast cancer cell lines; however, it seems that regulation is dependent on cell type. Current efforts are focused in determining the mechanisms underlying the neuregulin-mediated regulation of the expression of EGFR. Supported by the NIH/NIGMS (SC2GM084789).

**R-021 Zerumbone, a sesquiterpene from Asiatic ginger, sensitizes colorectal cancer cells to radiation.** Krishnan S., Deorukhkar A., López-Mercado A. Universidad de Puerto Rico, Recinto de Río Piedras.

Resistance of colorectal cancers to conventional therapeutic modalities, radiation and chemotherapy, poses a challenge in treatment of these cancers. Agents that can enhance the effects of current therapies are exciting prospects to improve treatment response. Plant phytochemicals have been shown to positively modulate radio- or chemotherapy in many cancers. We have evaluated the effects of zerumbone, a naturally occurring sesquiterpene from the Asiatic ginger plant (*Zingiber zerumbet*), in enhancing the tumoricidal effects of radiation in colorectal cancer in vitro. The effect of Zerumbone in combination with radiation in vitro was assessed using colon cancer cell line HCT116. The toxicity of the drug was determined by XTT. The combination of zerumbone with radiation was analyzed using clonogenic survival assays. Effect of Zerumbone on radiation-induced DNA damage was evaluated using immunofluorescence assessment of histone 2AX phosphorylation. Evaluation of apoptosis was assessed using PARP cleavage as an indicator. Zerumbone demonstrated potent single-agent anti-proliferative activity and, at non-toxic doses, significantly inhibited the post-irradiation clonogenic survival of colon cancer cell line HCT116. In addition, zerumbone prolonged the radiation-induced expression of  $\gamma$  H2AX foci in HCT116 cells. Zerumbone significantly enhanced radiation-induced apoptosis. Our results demonstrate that zerumbone is a potent radiosensitizer of colorectal cancer in vitro. Zerumbone's radiosensitizing properties could be attributed, in part, to its

ability to prolong radiation-induced DNA repair and enhance radiation-induced apoptosis.

**R-022 Sarcomatoid Carcinoma of the Uterine Cervix: A Case Report.** Delgado-Colón D, MD, Marcos M, MD, Vélez R, MD, Bertoli M, MD. University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Pathology.

Sarcomatoid carcinoma, also known as sarcomatoid squamous cell carcinoma, is a malignant neoplasia, more commonly found on the upper aerodigestive tract, with only less than 20 cases described in the literature originating in the uterine cervix. Most women are between the ages of 30-70 years old, but it is more commonly found on postmenopausal women. We present the case of a 26 years old female patient with intrauterine pregnancy at 33 3/7 weeks of gestation with a protruding mass in the cervical os, which was biopsied. The histopathological examination of the reported cases revealed an epithelial component which merged with a spindle cell component of the tumor (major component). In our case, most of the tumor in the biopsy was composed of intersecting fascicles of malignant spindle cells; therefore a preliminary diagnosis of malignant neoplasia suggestive of leiomyosarcoma was made. A panel of immunohistochemical tests was performed. The differential diagnoses of malignant mixed mullerian tumor, leiomyosarcoma and endometrial stromal sarcoma had to be considered. The tumor showed cytoplasmic positivity for pankeratin and vimentin, which confirms the epithelial origin of the tumor; p-16 immunoreactivity suggests the uterine cervix as the primary site of the tumor. Based on these morphologic and immunohistochemical characteristics, the tumor was diagnosed as sarcomatoid carcinoma of the cervix. The location of this tumor at the uterine cervix is extremely rare and a precise diagnosis is important in the management of these patients due to its aggressive behavior.

**R-023 Expression and Purification of the human Lymphocyte Activation Gene-3 for Structural Studies.** Amílcar Rivera-Rivera, Zarixia Zavala-Ruiz. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

The lymphocyte activation gene 3 (LAG-3/CD-223) protein was first identified as a cell surface molecule selectively expressed in activated human T lymphocytes, Natural Killer cells and more recently on T-cell-dependent activated B cells. The LAG-3 is a transmembrane protein that contains 7 domains and is a homolog of CD4 protein. LAG-3 binds Major Histocompatibility Complex (MHC) class II molecules with much higher affinity than CD4 and acts as an inhibitor of antigen-driven T cell expansion and a regulator of the T cell response. This protein can also be detected in a soluble form (sLAG-3), and in fact, it is now known that can be cleaved from the cell surface. In the soluble form, sLAG-3 induces MHC class II medi-

ated signaling in dendritic cells, leading to their activation and maturation as well as production of cytokines. Also high levels of sLAG-3 protein in the sera of breast cancer patients tend to correlate with good prognosis of the disease. This correlation suggests that sLAG-3 may well be an important effectors molecule regulating the immune response to tumor antigens. We plan to study the structure of the extracellular part of the protein and the interaction with MHCII. We reported the insertion of the different variants of the LAG-3 gene into the pENTR vector, and the transfection in Chinese Hamster Ovary cells (CHO). In addition, we demonstrated the expression and purification of the LAG-3 protein. This information will give us a better understanding of the function of sLAG-3 and why this protein is a good adjuvant for vaccines. (Supported by FIPF-seed Funds and NIH/NIAID 1SC2AI081661-01)

**R-024 Atypical Clinical Presentation of Advanced Stage Lung Adenocarcinoma: A Case Report.**

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Lung adenocarcinoma is commonly associated with non-smoker patients and lymphangitic spread is a complication. Commonly a patient's clinical presentation correlates with the disease progression and stage but, in our patient that was not the case, since she was entirely asymptomatic until few days prior to hospitalization. This is the case of a 55 y/o non-smoker female patient with an unremarkable past medical history, who complained of shortness of breath related to minimal exertion and night sweats of two weeks of evolution. Upon physical examination she was cachectic and the lungs were clear to auscultation. In a work up the arterial blood gases were within normal limits and a chest plain film showed abnormal radiologic findings suggestive of an infectious process. A chest Computer Tomography (CT) scan revealed a right lung consolidation suggestive of pulmonary infarct, multiple non-calcified 0.2 to 1.3 cm pulmonary nodules, a pattern suggestive of tumoral lymphangitic spread and a pulmonary artery main branch thromboembolism. The cytopathology examination of a bronchoalveolar lavage was suggestive of neoplasia. A percutaneous CT-guided lung biopsy confirmed the pathologic diagnosis of an adenocarcinoma. The immunohistochemical studies favor the lung as the most likely primary tumor site. According to the pathologic and radiologic findings, this patient was diagnosed with lung adenocarcinoma in clinical stage IV, an unexpected diagnosis based on the patients clinical symptoms at presentation.

**R-025 The Use of Inhaled Nitric Oxide in Newborns with PPHN.** García A<sup>1</sup>, García L<sup>2</sup>, Rivera J<sup>2</sup>. UPR School of Medicine, Department of Pediatrics<sup>1</sup>, Neonatology Section<sup>2</sup>. San Juan, PR.

Nitric oxide relaxes vascular smooth muscle and can be delivered to the lung by means of an inhalation device. It is indicated for the treatment of hypoxic respiratory failure. Objective: To describe the clinical course of patients with persistent pulmonary hypertension of the newborn (PPHN) treated with inhaled nitric oxide (iNO). Methods: Medical records of newborns with PPHN and treated with iNO at the University Pediatric Hospital Neonatal Intensive Care unit from March 2006-April 2008 were reviewed. The study was approved by the IRB. Results: The study included 31 newborns. Mean birth weight was 2,740 grams (822-3,700) and mean gestational age was 36 weeks (32-40). Seventy-two percent were born vaginally, 71% were males, and 57% were outborn. Mean APGAR scores were 7 and 8 at 1 and 5 minutes. The iNO was delivered by high frequency ventilation (73%) or by conventional ventilation (27%). Complications included pneumothorax (35%), pulmonary hemorrhage (9%), intraventricular hemorrhage (45%), and oxygen requirement at home (39%). None of the patients developed methemoglobinemia. Sixty-five percent of the infants survived. Survival was associated to higher 1 minute ( $p=0.012$ ) and 5 minutes ( $p<0.01$ ) APGAR scores and better ejection fractions at initiation of iNO therapy ( $p=0.046$ ). Most infants who died had congenital anomalies (80%). Pulmonary hemorrhage was only seen in infants who died. Conclusions: Survival in patients with PPHN treated with iNO is related to higher APGAR scores and better cardiac function at initiation of treatment. Pulmonary hemorrhage is an ominous sign related to increased mortality.

**R-026 Sexual Practices of Puerto Rican Women Undergoing Human Papillomavirus (HPV) Vaccination at the University of Puerto Rico Comprehensive Cancer Center.** Delgado-López J., Romaguera-Agrait J., Medina-Cucurella E. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Human Papillomavirus is the most common sexually transmitted infection in the United States with an estimated 20 million currently infected according to the CDC. Many risk factors have been associated with HPV infection, especially sexual practices. Few HPV risk factor studies have either included or focused on Hispanics. This study aims to identify sexual practices in Puerto Rican women undergoing HPV vaccination at the University of Puerto Rico Comprehensive Cancer Center. Data about demographics and sexual practices was collected from the validated questionnaire answered at the Cancer Center at the time of enrolling in the HPV vaccination study. Eighty-eight participants answered the questionnaire and information about age, marital status, educational level, toxic habits and sexual practices was obtained. 81% of participants responded being sexually active and 23.9% had first sexual intercourse at 18 years old. These results demonstrated similar behavioral risk factors for HPV infection as in the United States. Puerto Rican women have similar behavior risk patterns as American women.

**R-027 Sclerosing paraganglioma of the cauda equina. A case report and review of literature.** Leslie López MD, Marie L. Rivera MD, Fanor M. Saavedra MD, Juan Vigo MD. Departments of Pathology and Laboratory Medicine and Neurosurgery, University of Puerto Rico, Medical Science Campus.

Paragangliomas are neuroendocrine tumors. The most common locations are the adrenal medulla, the carotid body and glomus jugulare. Paragangliomas rarely develop within the central nervous system (CNS). When they occur in the CNS, the most common location is the cauda equina. Even more uncommon is the occurrence of the sclerosing variant of paraganglioma. We present the case of a 44 year old man who presented with complaints of back pain and paraparesis. On imaging studies a cauda equina tumor was found that was surgically removed. Histologically, the tumor consisted of large polygonal epithelioid cells with delicate, "salt and pepper" chromatin and abundant eosinophilic cytoplasm. The tumor cells were arranged in nests and trabeculae separated by extensive stromal collagenization or hyalinized fibrous tissue. Focally, sclerosis was present, giving the tumor a pseudoinfiltrative growth pattern. The tumor cells were immunopositive for synaptophysin, chromogranin and pankeratin and immunonegative for S-100. On the basis of the histological and immunohistochemical analysis the tumor was diagnosed as paraganglioma, sclerosing variant. Sclerosing paraganglioma may represent a diagnostic challenge due to its rarity and its histologic resemblance to an invasive neoplasm. Careful inspection to search for areas of classic paraganglioma along with the appropriate immunohistochemical stains should help in distinguishing this lesion. This rare entity should be considered in the differential diagnosis of cauda equina lesions.

**R-028 Association between HPV Knowledge and High-Risk Behaviors in Puerto Rico.** Reyes JC<sup>1</sup>, Ortiz AP<sup>1,2</sup>, Colón HM<sup>1</sup>, Tortolero-Luna G<sup>2</sup>. <sup>1</sup>School of Public Health, Medical Sciences Campus University of Puerto Rico, <sup>2</sup>Comprehensive Cancer Center.

Information of HPV knowledge among high-risk populations is limited. This study aimed to determine the association of high-risk behaviors and HPV knowledge in Puerto Rico. A household survey was conducted (2008) among a probability sample of persons 15 to 74 years old living in Puerto Rico (n=3,187). Questions regarding HPV knowledge were administered to a sub-group of study participants (n=1,476). A computerized questionnaire assessed information on substance use and other high-risk behaviors. Overall, 37.2% of the study sample had ever heard about HPV and 33.4% had heard about the HPV vaccine. Multivariate logistic regression models showed that after adjusting for sex and age, only smokers were less likely to know about HPV (OR=0.57, 95% CI=0.45, 0.72). Meanwhile, smokers (OR=0.60, 95% CI=0.47-0.78)

and persons with alcohol abuse/dependence (OR=0.39, 95% CI=0.18-0.85) were less likely to have heard about the HPV vaccine. No significant association was observed between drug use, history of STD or health care coverage and the studied outcomes. Knowledge of HPV and the HPV vaccine was poor in this population. In addition, smokers and persons with alcohol abuse/dependence seem to have an even lower knowledge about HPV. This is of special relevance as these populations are potentially at increased risk of HPV infections and HPV related malignancies. Based on these findings, preventive interventions should be developed aimed at integrating HPV screening and education in primary health care settings, particularly in those settings which attend these populations.

**R-029 Myeloid Sarcoma of the Brain Presenting as a Posterior Fossa Tumor: A Case Report.** J. Billoch-Lima<sup>1</sup>; R. Vélez-Rosario, MD<sup>1</sup>; M. Rivera-Zengotita MD<sup>1</sup>. <sup>1</sup>UPR, Medical Science Campus, Department of Pathology and Laboratory Medicine. San Juan, PR.

Myeloid sarcoma (MS) is defined as a mass of immature myeloid cells (blasts) arising outside of the bone marrow, which partially or totally effaces the normal tissue architecture. It can develop de-novo or in association to acute myelogenous leukemia (AML) (1.4-9%). In most cases it presents a myelomonocytic (M4) or pure monoblastic (M5) morphology. It is slightly more frequent in males of advanced age. Any anatomic site can be involved, with the skin, lymph nodes, GI tract, bone, soft tissue, and testis being the most common. Brain intraparenchymal location is very rare, with only a handful of examples, and presenting an increased propensity for the posterior fossa. We present the case of a 1 year old girl with history of Myelomonocytic AML (M4) with a t(10;11), who was treated with chemotherapy with clinical remission. A month later, she presented with irritability and a head CT scan demonstrated a hyperdense space occupying lesion on the posterior fossa, for which she underwent neurosurgical intervention. Immunoperoxidase tests done on the resected mass showed positivity for CD15 and CD68, and negativity for CD34 and myeloperoxidase, leading to the diagnosis of myeloid sarcoma, monoblastic type.

**R-030 Papillary Thyroid Carcinoma Arising in Struma Ovarii associated with hypothyroidism. A case report.** Ramiro-Pérez, MD; Román-Vélez, MD. UPR Medical Sciences Campus, Department of Pathology.

Malignant struma ovarii are rare tumors that arise from benign ectopic thyroid tissue in the ovary. Struma ovarii is a rare ovarian monodermal teratoma composed exclusively or predominantly of thyroid tissue, accounting for 2.7% of all ovarian teratomas. Papillary carcinomas are the most commonly occurring thyroid-type carcinomas arising in ovarian struma. Clinical presentation may include pelvic mass, ascites and Meig's syn-

drome. In 5 to 10% of cases patients may present with hyperthyroidism due to a thyroid adenoma in the struma. We report the case of a 63-year-old female patient with past medical history of hypothyroidism and previous total abdominal hysterectomy more than 20 years ago, now presenting a pelvic mass that was treated by surgical removal, along with appendectomy and omental sampling. The mass measured 17 cm in main dimension and weighed 1200g. Histological examination of the pelvic mass revealed a papillary thyroid carcinoma arising in a struma ovarii that completely replaced the ovary. This is a very rare tumor in this site.

**R-031 Malignant Melanoma presenting as a Urinary Bladder Tumor with widespread metastases. Case report.** Katty O. Estrella<sup>1</sup>, Anarda González<sup>1</sup> and Román Vélez<sup>1</sup>. From the <sup>1</sup>Department of Pathology, University of Puerto Rico, Medical Sciences Campus, and University Hospital, Rio Piedras, Puerto Rico.

Malignant melanoma is a malignant melanocytic neoplasm which may occur in the urinary bladder as a primary or more frequently, as metastatic tumor. Some ten cases of primary bladder malignant melanoma have been described in the literature with many distant metastases and rapid fatal outcome. We report a case of a 26 year old white man with previous medical history of right inguinal hernia, recurrent lipomas, and hematuria since two months. Computerized Tomography of his head was consistent with metastatic lesions in the brain. Diagnostic specimens included a transurethral bladder biopsy and right inguinal lymph node resection. Hematoxylin and Eosin stained slides of the biopsies were evaluated and immunostains of both lesions were also performed. Histologic sections of biopsies showed a pleomorphic undifferentiated tumor. Immunostains were positive for S-100 protein, HMB-45 and Melan-A which supported the diagnosis of malignant melanoma. He died days later with intracerebral, lung, heart, intestine, thyroid and lymph node metastases. At the autopsy, the bladder mucosa showed ulcerations at the posterior wall and a hyperpigmented area at the trigonus vesicalis. Also, a post-mortem search of a primary skin tumor revealed multiple pigmented nevi, but malignant melanoma was not seen in these lesions. There is always the possibility of a vanishing skin primary, even though the skin of the patient had been recently examined carefully by a Dermatologist and no suspicious lesions were identified.

**R-032 A case of Hepatic Neuroendocrine Carcinoma in a child from Puerto Rico.** Alejandro Cambara, MD; Freddy Montalvo, MD; Nilka Barrios, MD; Chris Wong, MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Primary hepatic carcinoids are extremely rare, with none evidence of previous case in any child from Puerto Rico. Carcinoid tumors of the liver are predominantly metastases from

the gastrointestinal tract. There are only a few cases of primary hepatic carcinoid tumors reported. They originate from neuroendocrine cells (enterochromaffin or amine precursor uptake and decarboxylase [APUD] cells), which embryologically are of neural crest origin. The diagnosis of primary carcinoid is rarely suspected preoperatively. The authors describe a female patient, 11 y/o with a long history of chronic diarrhea and lost weight, previously diagnosed with IBS at age 7. Patient had also been treated for chronic gastritis and other gastric complaints for several years. Previously to admission to our hospital, she was complaining of abdominal pain and distention. Found with huge hepatomegaly and splenomegaly and weight on 10th percentile for age. Abdominal CT showed a diffuse coarse pattern suggesting infiltrative process. Hepatic Biopsy was done that came with results of Hepatic Neuroendocrine Tumor. Neuroendocrine markers and immunohistochemistry confirmed diagnosis. At this point we are still trying to identify a primary tumor, if any, in order to establish a prognosis and future treatment for this patient. This is the first known case reported in Puerto Rico in the pediatric population.

**R-033 An interplay between the nuclear-cytoplasmic shuttling protein Mex67 and the RNA helicase Upf1 promotes mRNA translation.** A. Agosto<sup>1</sup>, I. Cajigas<sup>1</sup>, L. Estrella<sup>1</sup>, P. Guzzardo<sup>1</sup>, T. Gross<sup>2</sup>, H. Krebber<sup>2</sup>, M. Wilkinson<sup>3</sup> and C. González<sup>1</sup>. <sup>1</sup>Dept. Biol. UPR-RP; <sup>2</sup>Phillips-Univ. Germany; <sup>3</sup>Dept. Reproductive Medicine, U. California-San Diego.

Gene expression is mediated by a series of events, starting with transcription and ending with translation. Rather than being a series of independent events, it is clear that these steps are coupled. This coupling confers two advantages: efficient expression and an opportunity to exert quality control between individual steps. Mutations in factors that coordinate these steps have been associated with cancer. While the mechanisms responsible for these coupling events are not well understood, it is likely that multi-functional proteins regulating more than one step of gene expression are involved. After synthesis in the nucleus, mRNAs are assembled into mRNA particles (mRNPs) that are exported to the cytoplasm. It has been shown that components of these mRNPs control both mRNA export and their fate in the cytoplasm. We provide evidence that two proteins, Mex67 and Upf1, previously known to act at different steps of mRNA metabolism also cooperate to promote a common cytoplasmic event: translation. Yeast strains lacking Upf1 and harboring the mex67-5 allele display decreased growth rates, enhanced sensitivity to translational inhibitory drugs, contain fewer polysomes, are defective in translation termination and accumulate Mex67 in high molecular-weight complexes. Helicase-deficient mutants of Upf1 are not able to rescue these phenotypes. Expression of helicase-dead Upf1 triggers the accumulation of a mutant Mex67 in processing bodies, suggesting that functional versions of these proteins are critical to

ensure faithful protein synthesis. Supported by grants to CIG (KO1 HL-04355, U54 CA96297, RISE and FIPI).

**R-034 Mitochondrial DNA damage increases in an age-dependent manner in liver from Apex1 haploinsufficient mice.** Ceidy Torres-Ortiz, Christi A. Walter, Sylvette Ayala-Torres and Carlos A. Torres-Ramos. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Apurinic/aprimidinic endonuclease 1 or Apex1 (in murine), 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 reactive oxygen species. In vitro and in vivo evidence suggests that DNA repair capacity declines with age and that APEX1 may be limiting in certain tissues. We hypothesize that APEX1 plays a major role in protecting liver mitochondrial DNA (mtDNA) from the effects of ROS generated during aging. To test this hypothesis, we employed a mouse model in which one copy of the Apex1 gene has been deleted (Apex1<sup>+/-</sup>) resulting in Apex1 haploinsufficiency. We determined the amount of mtDNA lesions in liver tissue of different age groups (6, 16 and 26 months) in wild type (WT) and Apex1<sup>+/-</sup> mice using a gene specific assay based on PCR (QPCR). The QPCR assay can detect a variety of DNA lesions such as abasic sites, strand breaks and oxidized bases, among others. The results of these experiments show a significant increase in mtDNA lesions in both WT and Apex1<sup>+/-</sup> 26-month-old mice as compared to young (6 months-old) animals. Moreover, the 26-month-old Apex1<sup>+/-</sup> mice show a 2.5 fold increase in mtDNA lesions over aged-matched WT animals suggesting that Apex1 haploinsufficiency leads to an age-dependent increase in mtDNA lesions. These results underscore the role of BER in maintaining mtDNA stability in liver. Supported by SSC3GM084759, 5R25GM061838 and G12RR03051.

**R-035 The Shuttling Protein Npl3 Promotes Translation Termination Accuracy in *Saccharomyces cerevisiae*.** M. Correa<sup>1</sup>, L. Estrella<sup>1</sup>, M.F. Wilkinson<sup>2</sup>, and C.I. González<sup>1,3</sup>. <sup>1</sup>Dept. Biology, UPR-RP, SJ, PR; <sup>2</sup>Dept. of Reproductive Medicine, U. of California-San Diego; CA <sup>3</sup>Dept. Biochemistry, UPR-MSC, SJ, PR.

Translation fidelity is critical for protein synthesis and to ensure correct cell functioning. Mutations in the protein synthesis machinery that increase synthesis of mistranslated proteins result in cell death and degeneration and are associated with cancer and other human disorders. Heterogeneous nuclear ribonucleoproteins (hnRNPs) are multifunctional proteins that bind to newly synthesized mRNAs in the nucleus and participate in many subsequent steps of gene expression. A well-studied *Saccharomyces cerevisiae* hnRNP that has several nuclear functions is Npl3p. Here, we provide evidence that Npl3p also has a cytoplasmic role: it functions in translation

termination fidelity. Yeast harboring the npl3-95 mutant allele have impaired ability to translate LacZ, enhanced sensitivity to cycloheximide and paromomycin, and increased ability to readthrough translation termination codons. Most of these defects are enhanced in yeast that also lack Upf1p, a factor crucial for the nonsense-mediated decay (NMD) RNA surveillance pathway that is also known to be involved in translation termination. We show that the npl3-95 mutant allele encodes a form of Npl3p that is part of high molecular-weight complexes that co-fractionate with the poly(A)-binding protein Pab1p. Together, these results lead us to propose a model in which Npl3p engenders translational fidelity by promoting the remodeling of mRNPs during translation termination. Supported by grants to C.I.G. (KO1 HL-04355, U54 CA96297, PR-LSAMP, RISE 2R25GM61151 and FIPI).

**R-036 Effects of PM2.5 from Puerto Rico on the post-transcriptional control of pro-inflammatory cytokines.** E. Rivera-Ramírez<sup>2,3</sup>, L. B. Méndez<sup>1,3,4</sup> and B. D. Jiménez-Vélez<sup>1,3</sup>. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

The molecular mechanisms by which PM2.5 promotes inflammatory responses are not well understood. Recent data suggests that post-transcriptional control mechanisms, particularly those implicated in controlling mRNA stability, are crucially involved in determining the levels of cytokines gene expression during an acute inflammatory response. However there is no experimental evidence on the effects of PM2.5 in the mRNA half-lives of cytokines. Therefore, the main goal of this research was to determine the effects of PM2.5 in the mRNA stabilization of pro-inflammatory cytokines. Time course experiments were conducted in a human bronchial epithelial cell line exposed to diesel exhaust particles, a standard reference material of urban dust, and to organic extracts of ambient PM2.5 collected in Puerto Rico. Induction of IL-6 and IL-8 mRNAs levels were observed as early as 30 min. of exposure. Preliminary results demonstrated increments in the half-lives of IL-6 and IL-8 mRNAs of cells exposed with PM2.5. These data suggest that mRNA stabilization of cytokines is one of the molecular mechanisms by which PM2.5 induces acute inflammatory responses in the lung.

**R-037 MGMT Promoter Methylation and clinical outcomes in brain tumor patients.** Natalia Almodóvar, Andrea Cortés, Randa El-Zein. Universidad de Puerto Rico, Recinto de Río Piedras.

The DNA-repair protein called MGMT is a DNA repair enzyme that is in charge of removing alkyl groups from the O-6 position of guanine. One MGMT protein has the capacity of cell repair for one alkyl group, however if there are more alkyl groups, they will contribute to cell death. An alkylating drug called temozolomide (TMZ) has been found to be effective in

the treatment of glioblastomas. The expression of the enzyme MGMT correlates with a patient's response to TMZ in several tumor types. We determined the MGMT promoter methylation status in the lymphocytes' DNA of patients who were enrolled in a radiotherapy treatment program with adjuvant TMZ and compare it with their response. Patient response to adjuvant chemotherapy was evaluated by two clinical parameters (Time-to-failure and Time-to-death). We used methylation-specific PCR to study the promoter methylation of the MGMT gene. Our results showed that in lymphocytes, all the promoter regions of our patients were methylated. In addition, we analyzed whether treatment affects the free progression tumor time after surgery. Patients who were treated with TMZ and another chemotherapy agent combined showed the most mean survival time, in comparison with patients who had TMZ as single agent or the ones that had a single chemotherapy agent different to TMZ. In conclusion, larger studies are needed in order to efficiently assess the effects of adjuvant chemotherapy in the free progression time and in the overall mean survival time of these types of patients and also analysis of methylation status must be carried out in tumor tissue.

**R-038 Use of NIR as an alternative to X-ray Diffraction to optimize parameters of drying.** Zulienid Hernaiz-Méndez y Evone S. Ghaly. Escuela de Farmacia, UPR-Recinto de Ciencias Médicas.

Near-infrared spectroscopy has advantage of capacity of measurement chemical and physical properties of a product. This technique is rapid, non-destructive and can be applicable in the industry. X-ray Diffraction has been used to characterize heterogeneous solid mixtures to determine relative abundance of crystalline compounds. It's our interest to use the new technology of NIR for phase transformation determination. Our purpose is to develop a model using NIR to evaluate the amorphous, specific and stable polymorph form of acetaminophen. This method used twenty tablets per batch of acetaminophen formulation of the same composition using wet granulation dried at different temperature (45°C, 50°C, 60°C, 70°C and 90°C) at 3 hours and 12 hours for NIR and XRD determinations. Dissolution studies were performed in the formulations mentioned above using apparatus 1 at 37°C and 50 rpm, with UV detection at 243 nm. The cubic model demonstrated the best correlation between NIR and XRD data. Dissolution studies demonstrated that the batch dried for 3 hours at 60°C dissolved 70% in 4 hours, while the batch dried at 90°C for 12 hours dissolved 70% in 30 minutes. XRD angle 2-theta values from formulations were compared to NIR reflectance data to obtain a calibration curve. The correlation parameters using Quant 2 software for the formulations at 3 hours was 71.08±0.01 and 83.44±0.01 at 12 hours. A validation model to determine phase transformation using NIR was developed. The method has been used to optimize the best period of time for drying and stability of acetaminophen.

**R-039 New Study for the Controlled Release of Diphenhydramine HCl Tablets.** Medina S., Ghaly E. Escuela de Farmacia, UPR-Recinto de Ciencias Médicas.

This study is to develop and formulate a controlled-release formulation for Diphenhydramine HCl tablets using Precirol ATO 5 as the retardant agent. Different batches of tablets, each tablet contains 100 mg of Diphenhydramine HCl, with different levels of Precirol ATO 5 (Ratios 2:1, 1:1, 1:2, 1:3, drug:lipid) and using Lactose as diluent and Magnesium Stearate as lubricant were prepared by direct compression technique. Tablets were evaluated for their physical properties, drug content, and in vitro drug release. The in vitro release studies were performed using US Pharmacopeia type 1 apparatus (basket method) in 900 mL of purified water at 50 rpm. All the formulations had a good physical integrity, and the drug content and physical properties of all batches were within the specifications. Tablets containing the 1:2 (drug:lipid) ratio were found to show good initial release (24% in first hour) and good extended release for 6 hours (74%). While tablets of the same composition but prepared with ratio 2:1 release 74% at 1 hour and 100% at 6 hours, ratio 1:1 release 53% at 1 hour and 90% at 6 hours, ratio 1:3 release 25% at 1 hour and 89% at 6 hours. The results of the in vitro release studies showed that Diphenhydramine HCl was released in a slower and lesser extent by Fickian diffusion-controlled release from the tablets with 1:2 ratio (drug:lipid) which was chosen as the best formulation in this study. From the data obtained in our experiments it could be concluded that Precirol ATO 5 is suitable for preparing Diphenhydramine HCl controlled release tablets by direct compression technique.

**R-040 Modulate the drug release of Diphenhydramine chloride with the combinations of Eudragit RL PO and Carbopol using Direct Compression Technique.** N. Caamaño; E.S. Ghaly. Universidad de Puerto Rico, Recinto de Río Piedras.

Purpose: The objective of this investigation is to modulate the drug release of diphenhydramine chloride using a combination of two polymers Eudragit RLPO & Carbopol 71G and by Direct Compression. Methods: Controlled release dosage forms of Diphenhydramine were prepared with two polymers Carbopol 71G and Eudragit RLPO at different concentrations (15, 30, 50%) using direct compression. Magnesium stearate was used as lubricant while lactose was used as a diluent. Tablets were tested for physical properties and drug release using USP Basket rotational method. Results: When tested for dissolution, Eudragit/Carbopol 30% showed a much greater effectiveness in controlling drug release as compared with Eudragit/Carbopol 15% and Eudragit/Carbopol 50%. When tested for dissolution, the tablets released only 52% in six hours. Combined formulations Eudragit /Carbopol 30% was selected for further testing since they showed an optimal controlled

release and were tested for dissolution for up to 12, tested at different rotational speeds and in different dissolution media. The tablets when tested in Phosphate buffer gave a very slow release of 33% in compared with 0.1HCL released of 73% in six hours. Conclusion: The incorporation of two polymers was found to affect the drug release. The correlation coefficients of the different kinetic models for the selected formulation Eudragit /Carbopol30% showed that the highest correlation coefficient achieved was by Zero Order. The testing showed a greater control release rate indicating that the composition can control the rate of drug release at 30% of polymer application.

**R-041 Phase Transformation of Drug During Wet Granulation and Drying Using Near Infrared Spectroscopy.** Hildalisse Toro-Díaz, Evone S. Ghaly. Escuela de Farmacia, UPR-Recinto de Ciencias Médicas.

Phase transformation of a drug may occur during wet granulation when water leaves the crystals of the material. The amount of conversion depends on the drying conditions used. The hypothesis of this study is that the NIR technology can be used to evaluate the phase transformation of ibuprofen during wet granulation, which is known to have more than one solid state. This study is also related to the optimization of the drying process to stabilize the active pharmaceutical ingredient in amorphous phase or in a specific polymorph and to use NIR as an alternative for Differential Scanning Calorimetry (DSC) and X-Ray Diffraction (XRD). Fourteen formulations were prepared with the independent variables being time temperature, and diluent. The enthalpy of the formulations were determined with the DSC and compared to NIR reflectance data to determine the relationship between both. The data obtained by these analyses were used for calibration and validation of the NIR model. The NIR model was able to determine formulation's phase transformation for those who contain lactose with a correlation coefficient 87.6. Also, a good correlation was found when formulations containing MCC and Mannitol were examined. It was found correlation between temperature of drying, enthalpy, and dissolution profiles. As the temperature increases, the percent drug release was higher for all formulations. All formulations dried at 90°C exhibit highest dissolution profiles. The use of NIR spectroscopy is a viable alternative since it does not require sample preparation and can predict the enthalpy values when it is calibrated with a reference method.

**R-042 Expression and Activation of P2Y Receptors on different C6 Glioma Cells Phenotypes.** José O. García, Melissa Serrano, Iris K. Salgado, Alexandra Cruz, Héctor M. Maldonado, Fernando A. González, and Walter I. Silva. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Nucleotides are released as extracellular molecules having influence on a broad range of physiological and pathophysiological

responses, such as astrogliosis. The nucleotide receptors role during astrocytic differentiation seen in processes such as astrogliosis is unknown. C6 glioma cells can be induced to differentiate into an astrocyte-like phenotype and are known to express three receptor subtypes: P2Y1, P2Y2, and P2Y12. Real time RT-PCR and immunoblot analysis also demonstrated the P2Y6 receptor expression. As well, sucrose density gradient fractionation with Na<sub>2</sub>CO<sub>3</sub> was executed for P2Y2 and P2Y6 receptors. A time course analysis of P2Y1, P2Y2, P2Y6 and P2Y12 receptor expression was undertaken. A P2Y1 mRNA decline occurred at 48 hrs of differentiation. In turn, P2Y2 receptors mRNA and protein are significantly down-regulated during time course. In contrast, P2Y6 receptors mRNA was up-regulated at 48 hrs, whereas its protein is significantly down-regulated. Meanwhile, P2Y12 mRNA showed a significant up-regulation at 24 hrs. Furthermore, P2Y2 and P2Y6 receptors proteins were identified between fractions 3-5, characterized to be membrane raft microdomains fractions. UTP agonist shifts P2Y2 receptor protein from membrane rafts fractions to higher density fractions. Nevertheless, UDP agonist didn't show significant changes on P2Y6 receptor protein. The P2Y receptor subtypes expression patterns and their membrane rafts association may be intimately correlated to the astrogliosis process seen during injuries, aging and senescence in order to limit tissue degeneration and preserve their function.

**R-043 Dengue Virus Modulation of the Innate and Adaptive Immune Response by Toll-Like Receptors *in vivo*.** Y. Angleró, P. Pantoja, T. Arana, F. Rivera, I. Rodríguez, M. Martínez, L. Giavedoni, V. Hodara, E. Kraiselburd, J. Muñoz-Jordan and C.A. Sariol. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Recently key roles have been assigned to Pattern-Recognition Receptors (PRR) in determining the outcome of DENV infection. They activate innate immune responses recognizing viral replication intermediary molecules. The PRR are: Toll-like receptors 7/8 (TLRs) that bind ssRNA, TLR3 and RIG-I/MDA5 that recognize dsRNA. At the moment, there are slight knowledge about the role of TLRs in the early innate response that drive adaptive response after DENV infection. On this work we look for the role of TLR on the quality of the anti-DENV immune response *in vivo* in non-human primates. For this purpose animals were infected with DENV1, one cohort was also stimulated with TLR3-7/8 agonists and one cohort received TLRs agonists only. As results, the infected-stimulated animals had significantly higher frequency of double positive CD40/CD86 myeloid DC, and circulating cytokine CXCL10 at day 15 compared with those only infected. Animals respond to TLRs stimulation with significantly higher levels of anti-inflammatory cytokine IL-1 Ra. Of note, the quantity of total specific anti-DENV antibodies was also significantly higher one month after infection in animals receiving TLRs agonists. Finally the stimulation with TLR agonist modified the quality

of the anti-DENV B cells response by inhibiting IgG1 subclass switching. Neutralizing antibodies showed a non-significant trend to be higher in the group of animal infected and stimulated. These showed activation of the innate immune and modification of the adaptative immune response in the setting of an acute DENV infection. Support by R25GM061838, A157158, U42 RR16021 and U24 RR18108.

**R-044 Neuromuscular Timing Between Healthy Women And Women With Semitendinosus-gracilis ACL Reconstruction During Drop Jumps.** Martin G Rosario MPT, Alexis Ortiz PhD, PT. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Women with anterior cruciate ligament (ACL) reconstruction with hamstring-gracilis (SG) autograft have shown neuromuscular compensatory strategies to maintain knee stability during landing tasks. Purpose: Identify quadriceps/hamstrings neuromuscular timing during landing from a bilateral and single-legged drop jumps between women with SG ACL reconstruction and non-injured women. Methods: Twenty-nine women (non-injured = 15, SG = 14) performed five trials of a double-legged and single-legged drop jumps from a 60-cm and 40-cm height box, respectively. Electromyography (EMG) data of quadriceps and hamstring muscle groups were collected at 1kHz. The time taken in seconds to reach peak EMG activity during landing from both jumps was the variable of interest. Data was screened for normality and outliers previous to analyses. Independent t-tests were used to compare latency of the quadriceps and hamstrings between groups for both tasks. Results: Twenty-seven and 26 participants were included for the double drop jump and single-leg drop jump comparisons, respectively. No statistically significant differences during the double and single-legged drop jumps for latency of the quadriceps or hamstrings were found. Conclusions: It appears that women with SG ACL reconstruction possess similar neuromuscular timing patterns for the quadriceps and hamstrings than women without knee surgery during both landings. Supported in part by 12RR03051, P20RR11126, R25RR017589 and NSCA Foundation.

**R-045 Effectiveness study of the Parenting Education Program: Promoting positive parenting among urban parents.** Sánchez Cesareo, Marizaida., Acosta Pérez, Edna Adams, Mónica and Colón Jordán, Hector. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Each year, more than 3 million children are reported as abused or neglected in the US. The aim of this project was to conduct an effectiveness study in order to move a community-developed program towards an evidence-based practice. The components of the program examined in this study were: eight-week group parenting education sessions and the home visits provided to parents. 198 parents were randomized to either the Parent

Education Program (PEP) or a comparison group (Financial Education Program-FLE). The following measures were used: Demographics, pre-post test, the Home Observation for the Measurement of the Environment (HOME), and the Behavior Assessment System for Children, Second Edition (BASC-2). The randomized groups were compared across outcome measures at baseline, two-month, and 4-month follow up. Parents in the PEP had significantly higher scores in knowledge of child development, communication skills, problem solving and non-violent discipline at the 2-month follow up [ $p < .01$ ] and again at the 4-month follow up [ $p < .001$ ], than parents in the FLE program. Similarly, PEP parents had higher scores on the HOME measure at 2-month follow up [ $p < .05$ ] and again at the 4-month follow up [ $p < .05$ ]. Finally, children of parents in PEP scored higher on the adaptive scale of the BASC-2 than children of parents in the FLE program at the 4-month follow up [ $p < .01$ ]. PEP is an evidence-based positive parenting program. More resources should be provided to disseminate positive parenting programs such as PEP throughout the country so that all parents have access to critical parenting strategies and supportive services.

**R-046 The Use of an Excretory and Secretory Antigen of Fasciola hepatica for the Immunodiagnosis of Fascioliasis and a Potential Target for Immunoprophylaxis.** J. F. Gaudier, A. M. Espino. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

*Fasciola hepatica*, the common bile duct fluke, is a prevalent and economically important disease in the husbandry industry. Although fascioliasis is predominantly a disease of domestic animals such as sheep and cattle, it is now emerging as an important chronic disease in humans with 17 million people infected. A 17kDa protein termed Fh4.26 (Q5I5Y3) was identified by means of successive screenings of a cDNA library previously prepared from *F. hepatica* adult worms using a rabbit anti-*F. hepatica* excretion and secretion (E/S) antigens serum and a serum from rabbit with 4 week of *F. hepatica* infection. Fh4.26 preserves two DM9 Domains of unknown function. The immunodiagnostic potential of rFh4.26 was assessed by the antibody detection Enzyme-Linked Immunosorbent Assay and Western blot using a large panel of sera from animals infected with the liver fluke *F. hepatica* or the blood fluke *Schistosoma mansoni*. The assay was highly sensitive and revealed that animals infected with *F. hepatica* develop antibodies against Fh4.26 from 4 to 10wk after infection, which suggests that the antigen is expressed either at early and late stages of infection. Anti-rFh4.26 antibodies recognizes the native Fh 4.26 on a Liver Fluke Homogenate by Western blot analysis. Confocal microscopy analysis demonstrated that Fh4.26 is expressed on the tegument and vitellaria cells of the liver fluke. Fh4.26 could be one of the antigens responsible for this maintenance which make it an attractive target for immunoprophylaxis or chemotherapy. (Supported by NIH Grant # S06-GM008224).

**R-047 Acetaminophen granules prepared by spray drying: Effect of formulation composition and processing parameters on the solid phase of acetaminophen.** Yaraliz Alemán-Aponte, Evone S Ghaly PhD. Escuela de Farmacia, UPR-Recinto de Ciencias Médicas.

Spray Drying is a technology primarily used in industrial pharmacy. Is a continuous process in which drug formulations can be processed without the variability of a multi-stage process. The purpose for this experimental research was: Analyze possible phase transformation for acetaminophen. Compare the effect of different excipients in the formulation characteristics. Evaluate the effect of a solvent as a granulating liquid in the solubility and bioavailability of the active ingredient. Contrast the effect of the addition of different surfactants. The method for this research consisted in four stages: Optimization of processing parameters, Effect of Excipients, Effect of solvent and the effect of surfactants. For the first stage different parameters were optimized such as: temperature, spray pressure and flow rate. The second stage consisted in the addition of excipients to the formulation such as: lactose, mannitol and Avicel. The third stage consisted in using an organic solvent as granulating liquid (70% ethanol). The fourth stage consisted in the addition of surfactants such as: Poloxamer and Polyethylene Glycol 4000. The products obtained in all four stages were analyzed using: DSC, SEM, Optical Microscope, XRD, Dissolution, Thickness and Hardness of tablets. All the data indicates that the best formulation for the process of spray drying acetaminophen was: Avicel with PVP 2%, a temperature of 160C, a flow rate of 5 mL/min and a spray pressure of 0.10 mPa. Spray Drying is an efficient method for preparing spherical granules of acetaminophen without phase transformation.

**R-048 Studying Ambient PM2.5 Extracts from Saharan Dust collected in Puerto Rico.** Rosa I. Rodríguez-Cotto, Loyda Méndez-Torres and Braulio D. Jiménez-Vélez. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Every year million of tons of African dust are transported into the Caribbean. This input of dust coupled with other sources of particulate matter could impact air quality and intensify respiratory problems. The expression of interleukins in human bronchial epithelial cells (BEAS-2B) exposed to PM2.5 enriched with Saharan dust was evaluated. PM2.5 filters were obtained from the PR Environmental Quality Board (EQB). Satellite information of aerosol index, and EQB's data, was combined to determine Saharan dust events (SDE). Filters were extracted in hexane/acetone (1:1). BEAS-2B cells were seeded onto a 96-well plate. Attached cells were exposed at PM extract concentrations: 25, 50, 75 and 100 µg/ml. Cell viability was assessed using the Neutral Red bioassay. A direct relationship between extract concentration and cell viability was identified. Non-SDE extracts were not cytotoxic at concentrations less than 100 µg/ml. A direct dose relationship was also found be-

tween PM2.5 extract and IL-8 expression with both SDE and Non-SDE organic extracts. However the magnitude of response was significantly higher for SDE extracts. Similar findings were observed with IL-6 expression but were not highly significant. In addition, trace element analyses were obtained by means of ICP-MS. Significantly higher concentrations of Al, and Fe were present in the SDE organic extract compared to Non-SDE. The SDE aqueous extracts also exhibited higher concentrations of Al, V, and Ni as compared to Non-SDE. This research demonstrates distinct differences in chemical composition as well as biological responses between SDE and non-SDE extracts.

**R-049 Expression, Purification and Preliminary Activity of a Novel Dehydratase Domain from a Polyketide Synthase.** Delise J. Oyola-Robles, Mei-Ling Bermúdez, Suheiry Márquez, Néstor M. Carballeira, Abel Baerga-Ortiz. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Polyunsaturated fatty acids (PUFAs) are essential membrane components in higher eukaryotes and are important components of human health and nutrition. PUFAs from deep-sea bacteria are synthesized by a modular polyketide synthase, which contains several domains including two distinct dehydratase (DH) domains, DH1 and DH2, which are responsible for the introduction of cis or trans double bonds into the final product. In order to study the mechanism and substrate specificity of these DH domains, protein fragments were expressed in *Escherichia coli* containing one or both DH domains. Domain boundaries were chosen by bioinformatic analysis using the Udwardy-Merski Algorithm (UMA) for the prediction of protein linkers. The recombinant proteins were purified by nickel agarose and anion exchange chromatography. Enzyme assays were performed by monitoring the consumption of synthetic substrates by UV spectroscopy. Results from the UMA sequence analysis suggest the presence of two additional and unexpected domains immediately preceding DH1 and DH2. We have termed these putative domains as "hidden" because they were not predicted by algorithms of sequence similarity alone. Results strongly suggest that the "hidden" domains are important for protein structure and stability, since constructs that lack the "hidden" domains are insoluble. Preliminary enzyme assays show that all soluble dehydratase-containing constructs were inactive towards the short-chain thioester substrate mimic, suggesting that longer substrate mimics, such as CoA or acyl carrier protein (ACP) thioesters will be required in order to assay dehydratase activities.

**R-050 Differential Expression of Proteins in the Brain of the Freshwater Prawn in the Context of Dominance Hierarchies.** N. Vázquez-Acevedo<sup>1</sup>, J. Pérez-Laspiur<sup>1</sup>, L.M. Meléndez<sup>1</sup>, F. Duan<sup>2</sup>, E. Rodríguez<sup>1</sup>, N.M. Rivera<sup>1</sup>, E.A. Ruiz<sup>3</sup> and M.A. Sosa<sup>1</sup>. <sup>1</sup>UPR-Med Sci Campus; <sup>2</sup>Biostat, Brown U, Providence, RI; <sup>3</sup>UPR-Cayey Campus.

The freshwater prawn *M. rosenbergii* is a tropical crustacean with characteristics similar to the lobster and crayfish. Adult males develop through three morphological types (small, yellow, and blue claws). Each morphotype represents a level in the dominance hierarchy of a group, blue claws males being the most dominant. We are interested in understanding the role played by neuropeptides in the mechanisms underlying aggressive behavior in the prawn. One possibility is that neuropeptides that may act as modulators of these mechanisms are differentially expressed between morphotypes. Previous experiments using Surface-Enhanced Laser Desorption/Ionization Time-of-Flight Mass Spectrometry (SELDI-TOF MS) have suggested that a differential expression of proteins in the brain of the three male morphotypes exist, which may correlate with their characteristic differences in behavior. We have thus performed Two-Dimensional Difference Gel Electrophoresis (2D-DIGE) experiments as a first step to identify those differentially expressed proteins. Preliminary spot map analysis digitally detected 1611 spots, of which 16 protein spots were found to be differentially expressed between morphotypes. The majority of these spots were observed in the basic area of the gel, suggesting that these prospective modulators of aggression may be basic neuropeptides. At present, experiments using liquid chromatography tandem MS are being performed to identify those differentially expressed proteins, to then determine whether they play a role in modulating aggressive behavior. Supported by S06GM008224, MH48190, G12RR03051, R25-GM061838, and U54NS0430311.

**R-051 Protein-protein Interactions and Acyl Carrier Protein Recognition in the Biosynthesis of Omega-3 Fatty Acids by a Polyketide Synthase.** Uldaeliz Trujillo, María Rodríguez-Guilbe, Delise Oyola-Robles, Jennifer Santos and Abel Baerga-Ortiz. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Acyl carrier protein (ACP) is a highly conserved protein domain that participates in the biosynthesis of fatty acids and polyketides. Most enzyme complexes, which require the presence of an ACP, contain either one or many of these domains arranged in a modular fashion. However, the polyketide synthase (PKS) complex responsible for the production of omega-3 fatty acids in deep-sea bacteria contains a total of five (5) ACP domains in tandem, with no obvious reason as to why this particular arrangement has been widely selected throughout nature. One possible explanation is that different ACP domains have different binding specificities towards the enzyme domains which "service" them. In order to investigate whether ACP domains have specificity toward other enzyme domains, we have expressed ACP domains individually in *Escherichia coli* and purified them using a combination of nickel chromatography and anion exchange chromatography. Each individual ACP will be assayed for binding to the different purified enzyme domains, such as the thioesterase, Orf6,

and the dehydratase domains and well as other PKS domains. ACP domains have been expressed with and without the phosphopantetheine modification by co-expression with a phosphopantetheine transferase. The results from this work will facilitate the mechanistic understanding of marine biosynthetic machineries and will allow the harnessing of genes of marine origin for the production of new natural product with therapeutic potential.

**R-052 Class I and II anabolic steroids produce opposite hedonic and rewarding effects in pubertal and adult mice.** Brito-Vargas P., Huertas, A., Villafañe B., Ramos-Pratts K.M., Rosa D., Barreto-Estrada JL. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Anabolic androgenic steroids (AAS) are synthetic derivatives of testosterone. There are approximately 60 different AAS compounds that can be classified in three classes based upon their chemical structure and metabolism. Even short exposure to AAS can produce mood and behavioral symptoms. In previous experiments, we found that class I and II AAS induced hedonic and rewarding effects in adult mice. Recently, NIDA reported that 1.4 - 2.2% of adolescents ever tried steroids. In this study, we aimed to determine if AAS have hedonic properties in adolescent male mice. Animals received alternate androgen injections in a conditioned place preference (CPP) paradigm for 10 days. In addition, anxiety behaviors were measured. Androgens tested were testosterone propionate (TP) and 17 $\alpha$ -methyltestosterone (17 $\alpha$ -meT), class I and class III AAS, respectively. Three doses were tested (0.075, 0.75 and 7.5 mg/kg) for each drug. We have found a shift in place preference in animals treated with 17 $\alpha$ -meT in all doses tested, while TP showed no effect. In exploratory-based anxiety, using light-dark transitions, we found an increase in this parameter only with 17 $\alpha$ -meT (7.5 mg/kg). Body and gonadal weight were not affected in any of the AAS treatments. Our results suggest that developmental age, hormonal environment and AAS metabolism are important modulators of hedonia and reward.

**R-053 Estradiol modulates the motivational and rewarding effects of cocaine by distinct mechanism in the female rat Y.** M. Torres-Díaz, J. L. Agosto-Rivera, R. Menéndez-Del-mestre, R. Vázquez, A. C. Segarra. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

A number of studies have shown that there are sexual dimorphisms in the response to drugs of abuse and that estradiol, the main female sex hormone, participates in mediating these differences. For instance, animal studies show that estradiol increases the addictive properties of cocaine as measured by different behavioral models of addiction such as self-administration, conditioned place preference (CPP), and sensitization. Whether these actions are mediated by its interaction with the classical genomic estrogen receptors ER $\alpha$  and ER $\beta$  or by

its rapid non-genomic effects remains unknown. We reasoned that estrogen increases cocaine responses by altering gene expression via activation of ER $\alpha$  and ER $\beta$ . Therefore, we hypothesized that if we blocked genomic estrogen receptors in the brain, we should prevent the effects of estrogen on cocaine responses. To test this hypothesis, we administered the selective inhibitor of ER $\alpha$  and ER $\beta$  (ICI-182,780, icv) to intact female rats and assayed the stimulant and rewarding effects of cocaine using sensitization and CPP protocols, respectively. We found that ICI-182,780 treatment reduces cocaine sensitization, but it has minimum effects on CPP to cocaine. These results suggest that the sensitizing effects of cocaine are mediated by its actions on ER $\alpha$  and ER $\beta$  while its effects on reward may be due to rapid non-genomic effects. Given these findings, we propose that combining drugs that prevent both the genomic and non-genomic actions of estrogen may be a potent therapeutic treatment for addiction in women.

**R-054 Structural and Enzymatic Analysis of Orf6, a Novel Dehydratase from a Deep-Sea Polyunsaturated Fatty Acid Synthase.** María M. Rodríguez-Guilbe, Eric Schreiter and Abel Baerga-Ortiz. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

The polyketide synthases (PKS) are multifunctional enzymes responsible for the biosynthesis of omega-3 fatty acids in microbes and algae. The PKS genes responsible for eicosapentanoic acid (EPA) biosynthesis in the deep-sea bacterium, *Photobacterium profundum*, have been cloned and sequenced, being a total of five polyunsaturated fatty acid (pfa) genes (pfaA, pfaB, pfaC, pfaD and Orf6) enough for EPA production. One of these important enzymes is Orf6, a putative thioesterase (TE) domain, which is believed to perform the last step in the fatty acid biosynthesis catalyzing the hydrolysis and release of the final product from the carrier protein. The purpose of this research is to make a structure-function analysis of Orf6 TE using its three dimensional structure determined by X-ray crystallography to guide the re-engineering of the enzyme. In parallel, we are also performing in vitro enzymatic assays with its likely substrates loaded onto coenzyme A (CoA). The Orf6 structure determined at 1.0 Å resolution demonstrate a hot-dog fold which is novel for a PKS TE, and a conserved amino acid, Asp17, in the enzyme active site. Results from enzyme assays indicate that Orf6 does not hydrolyze the CoA thioesters of long-chain fatty acids including its presumed substrate, EPA. Additional efforts include in vitro assays using CoA thioesters of short-chain carboxylic acids or acyl carrier protein (ACP) thioesters as substrates for Orf6. Structural and mechanistic knowledge of this seemingly novel enzyme will be important for the design of lipid-based drugs or the development of industrial applications like biofuels.

**R-055 Biochemical Analysis of 19S Proteasome Subunits Interacting with CIITA Regulating**

**MHC II Transcription.** Yaritza Inostroza-Nieves and Zarixia Zavala-Ruiz. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Major histocompatibility complex class II (MHC II) genes are a cell-surface glycoproteins that presents antigens derived from extracellular pathogens to CD4+ T lymphocytes. The most important regulatory factor of MHC II expression is class II transactivator (CIITA), which functions as an integrator of most pathways that influence the expression of MHC II. CIITA plays a critical role in regulating MHC II transcription, even though it does not bind directly to the MHC II promoter. Therefore, we asked how is regulated the recruit of CIITA to the promoter. It was recently found a role for components of the 26S proteasome, specially the 19S complex, as mediators of the assembly of transcriptional systems. Recent biochemical studies have provided evidence that the 19S complex is involved directly in transcription. Essentially, the 19S proteasome ATPases Sug1 plays important roles in regulating CIITA activity and MHC II expression, in part by regulating promoter recruitment of CIITA. Also, Sug1 is involved in the H4 acetylation in the MHC II promoter by CREB binding protein (CBP). To understand the structural and function of Sug1 in MHC II regulation, we purified recombinant hSug1 and six CBP's domains to study the interaction of these with hSug1 in vitro. Also we expressed CIITA in insect cells planning to investigate its interaction with hSug1.

**R-056 Anabolic Steroids Modulate the NPYergic Circuitry of the Hypothalamus in Adolescent Rats: A Molecular and Behavioral Approach.** Ramos, Keyla; Roig, José Luis; Santiago, María Elisa; Parrilla, Jeffrey; Barreto, Jennifer. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

The abuse of anabolic steroids has increased at alarming rates among adolescents, however, little is known about their behavioral consequences in this population. Given that neuropeptide Y (NPY) and the androgen receptor (AR) are highly expressed in the hypothalamus, we aimed to assess the effects of 17 $\alpha$ -methyltestosterone (17 $\alpha$ -meT) in the behavioral and molecular aspects of the NPYergic circuit in this brain region. Male pubertal rats were chronically exposed to 17 $\alpha$ -meT. Animals were sacrificed and brain punches were done at the mPOA, VMN, and the extra-hypothalamic BNST. NPY protein levels and mRNA expression for NPY and its receptors were determined by RIA and Real Time-PCR, respectively. An increase in NPY was observed in the VMN, a region associated with male sexual motivation, while no changes were observed in the mPOA. Preliminary results showed a 3-fold increase of NPY mRNA in the mPOA in AAS-treated rats, and an 8-fold decrease in the VMN. This effect was accompanied by a decrease in mRNA expression of receptors NPY Y2, Y5, and AR in the VMN. In the BNST, a 3-fold decrease in NPY mRNA, and an increase in NPY Y1, Y2, and Y5 was observed. At the

behavioral level, AAS-treated rats increased the incentive sexual motivation. Our results suggest an interaction between synthetic androgens and neuropeptide systems to control behavior. NIH-NCRR (2P20RR016470-09), NIH-EARDA (G11HD046326), RCMC (G12RR030551).

**R-057 Identification of Protein-Protein Interactions in *Sporothrix schenckii* using the Yeast Two Hybrid System.** González-Velázquez, W., Rodríguez-del Valle, N. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

The presence of three heterotrimeric G alpha subunit genes in the pathogenic fungus *Sporothrix schenckii* was previously reported by us. In order to inquire into the complex signaling system that regulates the flow of information from the environment through the heterotrimeric G proteins into the cell, the yeast-two hybrid system (Y2H) was used. The purpose of the work summarized here was to identify proteins interacting with G protein alpha subunit SSG-2. The entire coding sequence of the *ssg-2* gene was used as bait in Y2H assay to identify its interacting partners using an *S.schenckii* yeast cDNA library. The complete coding sequence of *ssg-2* was expressed as a fusion to the GAL4 DNA-binding domain (DNA-BD) in plasmid pGBKT7, while the cDNA library was expressed as a fusion to the GAL4 activation domain (AD) in pGADT7-Rec plasmid. A *S.schenckii* yeast cDNA library was constructed by homologous recombination in vivo in *Saccharomyces cerevisiae* MATa (AH109) cells that were transformed with the cDNA and plasmid pGADT7-Rec. Transformants were mated with the MATa (Y187) bait strain. Yeast diploids expressing interacting proteins were selected on a synthetic dropout medium lacking four amino acids. True positive AD/library clones were sequenced. A most important protein was identified and was found to be homologous to high affinity cAMP phosphodiesterase of other filamentous fungi. Phosphodiesterases are proteins known to interact with G proteins in other systems and to have an impact in dimorphism and morphology in *S.schenckii*. (Supported by R25-GM061838-09).

**R-058 A Natural Resistance-Associated Macrophage Protein Homolog in *Sporothrix schenckii*.** L. Pérez-Sánchez and N. Rodríguez-del Valle. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

The Natural resistance-associated macrophage protein (Nramp) is a member of a family of proteins that function as metal transporters in a variety of organisms, from bacteria to higher eukaryotes. Nramp proteins transport metals such as manganese (Mn) and iron (Fe), among others. They are important in host-pathogen interactions. The availability of Mn and Fe is key for the survival of pathogens in the human host. Manganese is important in the response to oxidative stress in fungi because it directly protects from the deleterious effects of hydrogen peroxide and also because it is the cofactor of many

fungal superoxide dismutases. An Nramp homolog of *Sporothrix schenckii* was found to interact with the G protein alpha subunit, SSG-1, through a yeast two hybrid (Y2H) analysis. This is one of many proteins related to pathogenicity identified as interacting with SSG-1. The sequence of this Nramp homolog was completed through the 5' end Rapid Amplification of cDNA Ends (RACE). RACE products were cloned and sequenced. The completed cDNA sequence revealed a 2243 bp ORF encoding a 663 amino acid protein of 71.41 kDa. Online database searches and comparisons with the BLAST algorithm (BLOSUM 62 matrix) identified the protein as a Mn transporter of the Nramp family. This putative Mn transporter has 11 transmembrane domains and shares 65% homology with *S. cerevisiae* SMF1 metal ion transporter. A more detailed understanding of the metal ion uptake systems in fungi and their role in the virulence of pathogenic fungi are needed in order to develop drugs to treat fungal diseases. Support in part by R25-GM061838-09.

**R-059 Polyketide Synthase Genes in Extraintestinal Pathogenic *Escherichia coli*: Preliminary Studies on the Prevalence, Distribution and Function of a Novel Virulence Factor.** Gerardo J. Echevarría-Batista, Carmelo Orengo-Mercado, Iraida E. Robledo, Edward Avilés, Abimael D. Rodríguez and Abel Baerga-Ortiz. San Juan Bautista School of Medicine.

A novel cluster of polyketide synthase (PKS) and non-ribosomal peptide synthase (NRPS) genes has been identified in *Escherichia coli*, associated with extraintestinal pathogenicity of the bacterium. These novel PKS genes have been shown to induce double-strand breaks in the DNA of infected cells, causing a disruption of the cell cycle and megalocytosis. It is assumed that a polyketide compound produced by the gene cluster, named colibactin, is responsible for the observed phenotype, although the compound itself has not been identified in culture or in patient samples. In this work we have made preliminary attempts to (a) determine the distribution of PKS genes in *E. coli* isolates obtained from Puerto Rico hospitals and (b) characterize the unidentified polyketide compound chemically. Antibiotic resistant *E. coli* isolates were obtained from 17 hospitals in Puerto Rico in 2009 and screened for the presence of PKS genes, ClbB and ClbN by PCR. Of the 289 *E. coli* isolates in the sample collection, 89 isolates were randomly tested for the presence of PKS genes. Results show that 8 (9%) samples had the PKS genes, 7 were isolated from urinary tract infections, and the remaining one was isolated from an ulcer. In an effort towards identifying the colibactin compound, the hospital isolates were cultured. Organic extracts of the culture were analyzed by NMR and HPLC-MS, and although no new compounds have been found thus far, a known L,L-diketopiperazine, namely cyclo-(L-Pro-L-Tyr), has been identified as the main component in this extract. Some L,L-diketopiperazines have recently been identified as quorum-sensing bacterial sensors.

**R-060 Role of PKC1 and TOR Signaling Pathways in the Cell Wall Stress Response of *Saccharomyces cerevisiae*.** Glorivee Pagán-Mercado and José R. Rodríguez-Medina. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

The yeast TOR (target of rapamycin) pathway is considered a nutrient-sensing signal transduction cascade. Its inactivation by nutrient starvation or the drug rapamycin causes repression in ribosome biogenesis and down-regulation of translation initiation. Down-regulation of ribosomal protein (RP) genes was observed in myosin II null strains (*myo1D*) of the yeast *Saccharomyces cerevisiae*, which is likely to be a result of repression of the TOR pathway. We have shown the PKC1 cell wall integrity pathway (CWIP) is activated in this mutant, that Slt2p/Mpk1p is phosphorylated and its expression is essential for survival. The objective of this study was to test if there is a cross talk between the PKC1 and TOR signaling pathways in the CWIP response. ROM1, TOR1 and SIT4 genes were deleted in a *myo1D* strain and levels of phosphorylated Slt2p/Mpk1p measured by western blot in single and double mutant strains. Viability assays and growth curves were analyzed for genetic interactions. Preliminary results show that upon rapamycin treatment, *rom1Dmyo1D*, *sit4Dmyo1D*, and *tor1Dmyo1D* strains presented decreased levels of phosphorylated Slt2p relative to the treated *myo1D* single mutant. Also, synthetic growth defects occurred in *rom1Dmyo1D* and *tor1Dmyo1D* but not in *sit4Dmyo1D* strains. We concluded that ROM1, TOR1 and SIT4 gene products modulate a cross talk between the PKC1 and the TOR signaling pathways, and that Rom1p and Tor1p are important to maintain optimal activation of the PKC1/CWIP under cell wall stress conditions. NIGMS-NIAID (SSC1AI081658-02, NCRR-RCMI (G12RR03051) and MBRS-RISE (R25GM061838) supported this work.

**R-061 Transcription Factor Ascl3 as a Stem Cell Marker.** Joel Caraballo, Catherine Ovitt PhD. University of Rochester.

Ascl3 is a member of the mammalian achaete scute gene family of transcription factors. Earlier work in this laboratory has shown that Ascl3 is expressed in a subset of salivary gland cells that act as progenitor cells. Ascl3, is related to Ascl2, which recently shown to be a stem cell marker in intestine cells. The objective was to find out if Ascl3 is a stem cell marker. The method used were Immunohistochemistry (IHC) on salivary gland sections, using antibodies that are proven stem cell markers, namely Sox2 and CD133. We analyzed the expression of the ion channel protein NKCC1 in relation to Ascl3. These experiments were done using a strain of DTA mice, in which all cells expressing Ascl3 are specifically ablated. The results obtained showed that Sox 2 and CD133 are expressed in a subset of cells in the heterozygous mice, and in the knockout, this specific staining was diminished. For NKCC1, results for the IHC were very similar to those of the stem cell markers: only a subset of cells in the duct portion showed specific stain-

ing and this was lost in the knockout mice. Due to relationship between Ascl3 and Ascl2, we also tested whether Ascl3 is a marker for intestinal stem cells. IHC showed that when Ascl3-expressing cells are ablated, cells in intestine are affected. Experiments with the Ussing Chamber, to measure the activity of NKCC1, showed little changes in the voltage reading after adding different drugs. In conclusion, Ascl3 is clearly a very important component in the niche of stem cells in both the salivary glands, and intestine. However, the role of this gene in stem cells is not yet clear.

**R-062 Prevalence of Polymorphic CYP2D6 alleles in Puerto Ricans: preliminary results.** Clarymar Ortiz-Meléndez; Jorge Duconge-Soler, PhD, MS. Escuela de Farmacia, UPR-Recinto de Ciencias Médicas.

As much as, 20-25% of all drugs including therapeutics are metabolize by the CYP2D6 enzyme. The gene is highly polymorphic in the population and certain alleles can result in poor or high metabolizer phenotype, characterized by a decreased or increased ability to metabolize the enzymes substrate, accordingly. For this reason, it can give rise to ethnic variation in drug exposure and cause differences in clinical response that could potentially increase the risk of overdose and tolerance. The objective of the study is to determine the frequency of CYP2D6 \*4 allele defective variant in the Puerto Rican population. Therefore, we could generate important genetic data to develop appropriate dosing algorithm of CYP2D6 substrate drugs, of clinical interest. Frequency for the CYP2D6 \*4 allele is being evaluated in 100 DNA samples obtained from random island-wide stratified-by-region sampling, from blood spots on Guthrie cards. Also, the genotyping procedure is carried out on peripheral leukocytes DNA using the following molecular biology techniques: DNA isolation, PCR, restriction-enzyme digestion and RFLP analysis. Only 86 samples have been evaluated at this time. CYP2D6 \*4 allele resulted with a total frequency of 11.04% from the samples obtained, 15 subjects heterozygous and two homozygous to CYP2D6 \*4defective allele. The preliminary results show that the frequency of CYP2D6 \*4allele in the Puerto Rican population is very similar to other ethnic groups, particularly Caucasians. However, further investigations need to be done. The investigation was supported, in part, by a RCMI award G12RR-03051 from the NCRR-NIH.

**R-063 Characterization of *Streptococcus mutans* UA159 and MU0431 ( $\Delta$ cvfA) Exoproteins.** K. Martínez, B. Metcalf, R. Faustoferri, and R.G. Quivey, Jr., PhD. Escuela de Medicina Dental, UPR-Recinto de Ciencias Médicas.

*Streptococcus mutans* is one of the primary organisms involved in the production of dental caries and is able to withstand a number of environmental stresses that allow it to survive in the oral cavity. We have previously created a number of gene deletion mutant strains in order to identify the ability of

each mutant strain to withstand stress. Mutant strain MU0431, carrying a mutation in a gene with significant homology to a known virulence factor in *Streptococcus pyogenes* and *Staphylococcus aureus*, has previously been shown to have an acid sensitivity and a hydrogen peroxide sensitivity, as well as an altered membrane fatty acid profile, as compared to parent strain. Since the mutant strain exhibited differences in these known virulence factors, it was our interest to examine the exoprotein profiles of the MU0431 mutant strain as compared to UA159, to elucidate the role that SMu0431 may play in *S. mutans* exoprotein-mediated virulence. Both strains were grown in planktonic (or batch) conditions as well as in a batch-fed biofilm. The supernatants for each strain were TCA precipitated, and the proteins subjected to SDS-PAGE electrophoresis. Two proteins were found to be more abundant in the MU0431 secreted protein profile and were identified by mass spectrometry as GbpB and the gene product of SMu0057. The gene product of SMu0431 was determined to play a role in the secretion of exoproteins in *S. mutans*.

**R-064 Post-transcriptional control of stress response in a myo1Δ mutant of *Saccharomyces cerevisiae*.** Marielis E. Rivera-Ruiz and José R. Rodríguez-Medina. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Previous analysis of global mRNA expression in *Saccharomyces cerevisiae* myosin type II deficient strains (*myo1Δ*) revealed 547 genes that are presumed to be regulated at the transcriptional level. The objective of this study is to explore the post-transcriptional regulation of stress response in *myo1Δ* strains. To assess the mode of regulation of ribosomal protein (RP) mRNAs, we analyzed the polysomal distribution of three representative RP mRNAs in sucrose gradient fractions of *myo1Δ* and wild-type (wt) cells. Our results showed that RPS8A, RPL7B and RPL3 mRNAs were recruited from heavy to lighter polyribosome fractions in *myo1Δ*. Furthermore, western blot analysis revealed accumulation of the phosphorylated form of eukaryotic translation initiation factor 2 (eIF2α-P) in *myo1Δ* and RPS8A, RPL7B and RPL3 mRNAs were co-precipitated with immunoprecipitated eIF2α-P, suggesting a direct association between eIF2α-P and translationally regulated RP mRNAs. Repression of TOR pathway by rapamycin in *myo1Δ* did not increase the levels of eIF2α-P yet, a *gcn2Δmyo1Δ* strain exhibited a synthetic growth defect. Reduced steady state levels of the initiation factor eIF4G, were also observed in *myo1Δ* supporting regulation of translation by TOR. These findings support the conclusion that post-transcriptional control specifically by translation inhibition is a key component of the stress response in yeast. Supported by NIGMS/NIAID (5SC1AI081658-02), NCCR-RCMI (G12RR03051) and MBRS-RISE (R25GM061838).

**R-065 Exploring the Role of Feedback in a Simple Central Pattern Generator-effector Network:**

**De-efferentation Studies.** Keyla García-Crescioni<sup>1</sup>, Timothy J. Fort<sup>2</sup>, Estee Stern<sup>3</sup>, Vladimir Brezina<sup>3</sup>, and Mark W. Miller<sup>1</sup>. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Although feedback mechanisms are thought to play important roles in the operation of central pattern generator (CPG) circuits, details of such regulation are difficult to assess in complex motor systems. This study examined feedback in a simple CPG-effector system, the heart of the blue crab, *Callinectes sapidus*. Anatomical studies have shown that, in addition to their axonal projections to the myocardium, the CG motor neurons (MNs) possess dendritic projections that ramify within the muscle fiber bundles adjacent to the ganglion. We have now used several approaches to explore the participation of these local collaterals in the transduction of feedback from the myocardium back to the CG. In this study, the myocardium was systematically de-efferented by sequentially cutting the four connectives that carry the MN axons to the myocardium, leaving the dendritic collaterals intact. As contractions were progressively reduced by the de-efferentation, the CG burst rate was concomitantly accelerated and burst parameters were decreased. These observations are consistent with our previous findings in which de-afferentation, cutting or ligation of the dendrites, likewise increased the CG burst rate, as well as with findings that stretches of the myocardium alter the CG motor pattern. National Institutes of Health Grants GM-08224, GM-61838 to K. García-Crescioni, and NS-058017 to E. Stern. Additional infrastructure support originated from NIH Grant RR-03051 and NSF Grant DBI-0115825.

**R-066 Humoral Responses in mice following vaccination with Secretory DNA encoding a member of the Saposin-Like Protein of *Fasciola hepatica*.** Adelaida Morales and Ana M. Espino. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Fascioliasis caused by *Fasciola hepatica* is a disease that affects primarily sheep and cattle producing economical losses and is also a major human pathogen, with about 17 million people infected. Control of fascioliasis is based mainly on the chemotherapeutic treatment, but does not affect the transmission. The development of an effective vaccine would represent a long-term solution. We recently reported the biochemical characterization of a novel *F. hepatica* antigen termed FhSAP2, which is a lytic polypeptide of 11.5 kDa. The purpose of this work was to determine if FhSAP2 delivered as secretory DNA vaccine can be capable of produce FhSAP2 and to elicit a specific immune response in mice. cDNA encoding FhSAP2 was cloned into a DNA secretory vaccine plasmid VR1020. A group of BALB/c mice received 4-intramuscular injections with DNA vaccine, with the parental plasmid and another group non-vaccinated. Serum was collected 18 weeks after the first immunization. Our results demonstrate the cloning of the

cDNA of FhSAP2 in the plasmid and the correct insertion was confirmed. Mice vaccinated with the DNA vaccine developed higher titers of specific IgG against FhSAP2 and higher titers of the isotypes IgG1, IgG2a, IgG2b and IgG3, suggesting a mixed Th1/Th2 response. Our results indicate that FhSAP2 delivered as DNA vaccine elicited a stronger immunity response in mice confirming its functionality in vivo; and will be a good candidate to test the immunity protection role in mice fascioliasis. Supported by the MBRS-SCORE Program of the University of Puerto Rico Grant:S06-GM008224.

**R-067 The role of the Transcription Factor Engrailed in the Development and Maintenance of Neuronal Identity.** Nelson Almodóvar-Arbelo<sup>1</sup> and Bruno Marie-Bordes<sup>2</sup>. University of Puerto Rico at Cayey RISE student<sup>1</sup>, Medical Sciences Campus Institute of Neurobiology<sup>2</sup>

Transcription factors control several aspects of cellular function. Their roles in specifying development has been well characterized. Very little is known about their role in mature neurons. We have explored the role of the transcription factor Engrailed (En) by expressing En in motoneurons. En is normally expressed in a small subset of interneurons but is absent in motoneurons. We used the UAS/Gal4 system to specifically express En within the motoneuron of the flies. These transgenic animals develop throughout their larval and pupal stages but never reach adulthood. This experiment showed us that the expression of Engrailed within motoneurons had a detrimental effect leading to lethality. We hypothesized that the expression of Engrailed in motoneurons might affect some aspects of motoneuron properties that ultimately lead to death. We decided to look at the development and synaptic morphology of the neuromuscular junction (NMJ) in larvae over expressing En. To do that, we used light microscopy and counted the number of synaptic boutons at the NMJ of control animals and animals over expressing En. We also asked about the presence of synaptic markers at the NMJ. Using confocal microscopy we asked whether engrailed expression affects the presence of the vesicular marker Synapsin and the postsynaptic marker Dlg. This work showed that the expression of Engrailed within motoneurons leads to lethality. We showed that this lethality is not caused by abnormal synaptic growth. We showed the presence of Synapsin and Dlg does not differ in experimental and control flies. (Supported by MBRS - RISE)

**R-068 Prevalencia del Uso de Suplementos Herbarios y Vitaminas en Individuos con Hipertensión en Bayamón.** C. Noboa, C. Marrero, R. Ríos, y R. Torres. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

En el 2005, las enfermedades cardiovasculares causaron 29% del total de defunciones en Puerto Rico (OMS, 2008). De estas, la hipertensión arterial es una de las enfermedades cróni-

cas más comunes entre los puertorriqueños. Su tratamiento incluye modificación de estilos de vida y uso de medicamentos. En Estados Unidos, se observa una tendencia ascendente del uso de suplementos herbarios y vitaminas en individuos con hipertensión. En Puerto Rico se desconoce si esto aplica a nuestra población. Este estudio presenta una comparación de la prevalencia del uso de suplementos herbarios y vitaminas en individuos hipertensos e individuos sin ninguna enfermedad crónica. La muestra (n=110) proviene de una encuesta de comunidad representativa de Bayamón, que explora los patrones de uso de Medicina Alternativa y Complementaria (MAC). Se realizaron análisis inferenciales comparando individuos con hipertensión y aquellos sin condiciones crónicas de salud, mayores de 18 años de edad. Los resultados muestran una diferencia significativa en el uso de suplementos herbarios y vitaminas en hipertensos comparados con aquellos sin ninguna enfermedad crónica (72.5%, n=58 vs. 40.0%, n=12; p = 0.002). Además, el ser hipertenso, estar entre 41 a 63 años de edad (p=0.004) y tener más de cuarto año de escolaridad (p=0.001) se asocia con el uso de suplementos herbarios y vitaminas. Estos hallazgos evidencian la importancia de explorar patrones de uso de MAC y sus implicaciones en el desarrollo de estrategias para el mejoramiento de enfermedades crónicas considerando las características de los pacientes. Aprobado por "AHRQ" Grant R24HS014060-06.

**R-069 Activation of Group I Metabotropic Glutamate Receptors modulates anxiety in the Amygdala Complex.** De Jesús-Burgos MI, Quiñones-Laracuenta K, and Pérez-Acevedo NL. UPR School of Medicine, Anatomy and Neurobiology Department, San Juan, PR 00936-5067.

Dysfunction of glutamatergic transmission within the amygdala has been implied in the pathophysiology of anxiety. Anxiety disorders are more common in females than males. Recent studies suggest that estradiol modulates mGluR activation in female but not male rats. We therefore studied the role of group I mGluRs activation in two amygdalar nuclei; the basolateral (BLA) and the central (CeA) amygdala. We expected to find differentially activation of mGluRs within the amygdala complex in an estrogen dependent manner. Ovariectomized female rats with (OVX-EB) and without (OVX) estradiol implants were infused with DHPG (1µM), a group I mGluR agonist, or saline, in either, the BLA or the CeA. Generalized and anticipatory anxiety, were assessed using the elevated plus maze (EPM) and risk assessment behaviors (RABs), respectively. In the BLA, but not in the CeA nuclei, a Two-way ANOVA revealed that infusion of DHPG increased the percentage of time spent in the open arms in OVX-EB (p<0.05) but not OVX rats. Flat back approach (FBA) and stretch attend posture (SAP), two RABs, were distinctly modulated within the amygdala. In the BLA, DHPG decreased FBA in OVX-EB rats (p<0.05) only, without affecting the number of SAP. In the CeA, DHPG

did not affect the number of FBA. However, DHPG decreased the SAP in OVX while in OVX-EB rats increased it ( $p < 0.05$ ). These preliminary results suggest that group I mGluR activation modulates anxiety-related behaviors depending on the anxiety subtype, amygdala subregion and the presence of estradiol. (Supported by NIH-EARDA (1G11H046326) and MBRS-RISE (GM61838)).

**R-070 Biphasic flotillin-2 expression after spinal cord.** Santiago, J.M.; Torrado, A.I.; Salgado, I.K.; Silva, W.I.; and Miranda, J.D. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Receptors that block axonal regeneration after trauma are localized in membrane rafts. Membrane rafts are domains in the plasma membrane with high contents of cholesterol and glycosphingolipids that contains proteins specialized in the transduction of external signals. Flotillin-2 (Flot-2) is an essential protein associated with the formation of membrane rafts and in the clustering of signaling proteins. This study was conducted to determine the spatio-temporal pattern of Flot-2 expression in adult rats after spinal cord injury (SCI) at the T10 level. Immunoblot results showed that SCI lead to a significant decrease (40%) in the expression of Flot-2 at 2 days post-injury (DPI) until 7 DPI (37%). The decrease was followed by a return to basal levels by 14 DPI and an increase at 28 DPI (41%). Moreover, we demonstrated that Flot-2 is present in C6 astrogloma and its expression increased during differentiation to an astrocytic-like cells. Behavioral studies were conducted to assess the effect of blockade of Flot-2 expression by using antisense technology which showed to improve locomotor recovery in rats after injury. Immunohistochemical and confocal microscopy studies demonstrated that Flot-2 is present in neurons, astrocytes and oligodendrocytes of the injured spinal cord, as early as 2 DPI. These results show for the first time the spatial and temporal profile of Flot-2 in the adult spinal cord and after a contusion injury. Collectively, our data indicate that Flot-2 may play a role in the formation of lipid rafts or the clustering of receptors in these domains after trauma affecting axonal regeneration.

**R-071 Isolation and characterization of Plasminogen Activators from mammalian cells.** Marivee Borges, Natalia Cintrón-Rodríguez, Verónica Ortiz-Colón, Vibha Bansal. Universidad de Puerto Rico en Cayey.

Plasminogen activators (PAs) are used for the treatment of thromboembolic disease, a common disorder that tends to increase in severe conditions such as myocardial infarction, and cerebral apoplexy. PAs are also used for cleaning blocked catheters in hospitals. The major PAs in use include streptokinase, urokinase-type plasminogen activator (uPA) and tissue-type plasminogen activator (tPA). Each of these is however limited in its application due to one or more of the following factors: low potency, side effects (generalized bleeding), low bioavail-

ability, immunogenicity and high cost due to inadequate source materials as well as inefficient upstream and downstream processes. In this study, different mammalian cell lines are being screened for secretion of PAs. A human embryonic kidney cell line, HEK-293, has already been identified as positive and the PA has been isolated and purified. PA was detected in the broth using a chromogenic substrate and then purified using para-amino benzamidine (PAB)-Sepharose chromatography. The PA fraction was further analyzed through SDS-PAGE. The PA thus identified had a molecular mass of 53 kDa. Zymographic analysis showed both the polypeptides to be enzymatically active. The purified protein also showed a positive fibrin plate assay. Further characterization of this PA is underway.

**R-072 Synthesis of 2-Naphthamide derivatives for affinity membrane separation of plasminogen activators.** Christian Benitez, Luis De Jesús, Vibha Bansal, Ezio Fasoli. Universidad de Puerto Rico en Humacao.

Plasminogen Activators (PAs) activate plasminogen by cleaving a specific Arg-Val peptide bond located within the protease domain. The resulting plasmin dissolves clots (thrombus). PAs are used in the treatment of thrombosis and recent studies show their role as key mediators of cellular invasion and metastasis of tumor cells. The goal of this project is to synthesize highly selective ligands for PAs and attach them to membrane filters in order to develop an efficient method for the purification of PAs from culture broth. A search in literature revealed that 2-naphthamide shows high selectivity for the urokinase type PA. Derivatives of 2-naphthamide were thus synthesized in the laboratory starting from the commercially available 2,6-naphthalenedicarboxylate. Parallel to the synthesis of the target molecule, a method was developed for the attachment of the amidine derivatives to regenerated cellulose membranes through an appropriate linker using the model compound p-amino benzamidine as ligand. Functionalization of the cellulose membrane was done by linking epichlorohydrin to the hydroxyl group of cellulose. Para-amino benzamidine was then attached by reaction of the amino group with the epoxide moiety of the spacer. The membranes so prepared were successfully used for high fold purification of plasminogen activator from human cell culture broth.

**R-073 Screening of Metagenomic Libraries From Halophilic Environment for Biocatalytic Application.** Brian Rosselo-Benitez, Rey Dieppa-Rios, Carlos Rio-Velázquez, Ezio Fasoli. Universidad de Puerto Rico en Humacao.

The preliminary data from the screening of a metagenomic library constructed from the extreme environment of the salines of Caborojo in Puerto Rico are presented. The goal of the project is to find new enzymes (protease, lipase and esterase) with high operational activities in extreme conditions and new catalytic activities for the synthesis of chiral alcohols. The interest

in the metagenomic library from salines is due to the properties of high stability in organic solvents found in enzymes from microorganisms that live in such highly saline environment (halophiles). The metagenomic library was constructed by extracting total DNA from the microbial population of the salines. DNA was further digested with restriction enzymes and fragments were inserted in pEpFOS-5 fosmids. *E. coli* EP300 cells were transformed with the fosmids carrying the inserts. Different clones of *E. coli* containing the fosmids were grown in Luria bertani medium, and after appropriate dilution, were put in a 96 well plates in order to perform the screening. The screening was performed with different paranitro derivatives characterized by their high specificity for the desired enzymes. For the screening of proteases N-succinyl-L-Ala-Ala-Pro-Phe 4-nitrophenyl anilide was used while lipases and esterases were assayed with 4-nitrophenyl dodecanoate and para-nitrophenyl acetate respectively. The positive clones were identified by the release of para-nitro derivative, which gives a yellow color in the solution.

**R-074 Isolating and Characterizing Plasminogen Activators From Microorganisms.** Edmarie Martínez, Belinda Román, Vibha Bansal. Universidad de Puerto Rico en Cayey.

A variety of bacteria secrete plasminogen activators (PAs) which facilitate their migration through the extra cellular matrix of host cells. For example, streptokinase and staphylokinase are PAs secreted by bacteria. These bacteria capture and activate the host (human) plasminogen and thus find application as thrombolytic agents. The goal of this study was to screen microbes for secretion of molecules with plasminogen activating/fibrinolytic potential with high fibrin specificity and stability. Microorganisms were randomly selected and cultured in chemically defined media in shake flasks. The pH of the culture was maintained above 7.0 as according to reports in literature, the production of microbial PAs is optimal when the pH of the growth medium is maintained between 7.0 and 8.0. The cultures were then centrifuged at 4,000 rpm for 20 minutes at 4°C. The supernatant was assayed for PA activity. To check if PA being produced was being retained inside the cell and not secreted out, the cells were broken and the lysates tested for PA activity by fibrin plate assay. Further characterization of PA thus identified is underway.

**R-075 Cocaine sensitization produces region-specific changes in expression of hyperpolarization activated cation current (I<sub>h</sub>) channel subunits in the Mesocorticolimbic System.** B. Santos-Vera<sup>1</sup>, M. E. Vélez<sup>1</sup>, R. Vázquez-Torres<sup>1</sup>, M. Serrano<sup>1</sup>, J. D. Miranda<sup>1</sup>, \*C. A. Jiménez-Rivera<sup>1</sup>. <sup>1</sup>University of Puerto Rico Medical Sciences Campus.

Cocaine sensitization refers to an increase in motor-stimulant response that occurs with repeated exposure to psychostimu-

lants. The process of sensitization is associated with neuronal adaptations in the mesocorticolimbic area, arising in the ventral tegmental area (VTA) and innervates mainly the nucleus accumbens (nAcc) and the prefrontal cortex (PFC). The Hyperpolarization-activated Cyclic-Nucleotide current (I<sub>h</sub>) is an ubiquitous voltage dependent current generated by nonselective cation channels (HCN). I<sub>h</sub> plays an important role in maintaining neuronal excitability thus, contributing to various physiological functions in the brain. Its biophysical properties depend on the expression profiles of the underlying channel's subunits (HCN1-4). Previous studies suggest an important role of I<sub>h</sub> reinforcing actions of drugs of abuse. Here we investigated whether cocaine sensitization induces region-specific changes in expression of the I<sub>h</sub> channel subunit HCN2. Sensitized rats were anesthetized, decapitated and brains removed 24hrs after last injection and placed in ice-cold PBS. Coronal sections at the level of the VTA, PFC, nAcc and Hippocampus were dissected. Micropunches were obtained and tissue was homogenized and resolved in 8% SDS-PAGE. Proteins were then transferred to a nitrocellulose membrane. HCN2 detection was performed using anti-mouse monoclonal HCN1 and HCN2 antibodies. Our results demonstrate that HCN2 subunit in the nAcc and has a tendency to increase after cocaine sensitization (p<0.05). These changes in HCN subunits may contribute to the modulation of excitability induced during drug addictive processes.

**R-076 Stability and activity of esterase and lipases in organic solvent.** Hildamarie Cáceres, Karla Esquilín, Liliam Casillias, Ezio Fasoli. Universidad de Puerto Rico en Humacao.

Esterase and lipase are used as biocatalyst for the hydrolytic resolution of important pharmaceutical intermediates such as acetate of primary and secondary alcohols, dicarboxylic diesters and mixtures of chiral esters to produce optically active alcohols and carboxylic acids with excellent stereoselectivity. With the aim of increasing this enzyme platform, and finding new lipases and esterases with high stability in organic solvent a library composed of 71 microorganisms isolated from salt ponds and microbial mats in the solar salterns at Cabo Rojo (Puerto Rico) were cultivated in marine broth and screened. The screening was conducted in 96 well plates using paranitro phenol derivatives. The nine positives microbes, identified by the release of a yellow (410 nm) para-nitrophenol, were assayed for activity at increasing concentration selected organic solvents, acetonitrile (AcCN) and dimethylsulfoxide (DMSO). The long term stability ( 24 hours) to organic solvent was also studied. Protein from positives microorganisms were precipitated in acetone, lyophilized and the enzymatic activity, substrate specificity and enantioselectivity at different salt and organic solvent concentration was tested.

**R-077 New Highly Stable Proteases from Halophilic Microorganisms Isolated from the Cabo**

**Rojo Salterns.** Karla Esquilin, Hildamarie Caceres, Liliam Casillias, Ezio Fasoli. Universidad de Puerto Rico en Humacao.

The urge for the use green biotechnological alternatives as biocatalysis requests stable and adequate enzymes that can be exposed to a vast range of chemical reactions as well as applications. Proteases are one of the most useful and demanding biocatalysts for their high operational stability and stereoselectivity. In this work more than hundred microorganisms from the saline of Cabo Rojo in Puerto Rico were cultivated and screened for specific activity towards proteases. The goal of the screening is to find new enzymes with high stability in organic solvents and new catalytic activities for the synthesis of pharmaceutically useful chiral intermediates. Microorganism isolated from salt ponds and microbial mats in the solar salterns at Cabo Rojo (Puerto Rico) were cultivated in marine broth and screened in 96 well plate using N-succinyl-L-Ala-Ala-Pro-Phe 4-nitrophenyl anilide as colorimetric substrate. The positive clones were identified by the release of para-nitro phenyl amine. The positive microorganism were treated with cold acetone for protein precipitation and lyophilized. The dry powder was the tested for activity toward increasing concentration of organic solvent (acetonitrile and DMSO) and stability after increasing time of incubation.

**R-078 Prevalencia de síntomas de esquizofrenia en pacientes de una clínica de epilepsia en Puerto Rico.** C. Morales-Rodríguez, R. Ríos-Motta, M. Ríos-Motta. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Estudios previos han encontrado que la prevalencia de síntomas de esquizofrenia en personas con epilepsia es mayor que la población en general. Esta posible asociación podría representar complicaciones en el tratamiento de ambas condiciones, tales como, interferencia de fármacos. En Puerto Rico no se han realizado estudios que exploren si los pacientes con epilepsia muestran síntomas de esquizofrenia. Este estudio determinó la prevalencia de síntomas de esquizofrenia en pacientes con epilepsia en Puerto Rico. Se realizó una encuesta a pacientes adultos (n= 78) de una clínica ambulatoria de epilepsia seleccionados por disponibilidad. La entrevista incluyó el "Composite International Diagnostic Interview" para auscultar síntomas de esquizofrenia, además de preguntas sobre su tratamiento, estado de salud y características demográficas. Se examinó la relación entre síntomas de esquizofrenia con el haber experimentado creencias o pensamientos extraños (auras) antes de una convulsión epiléptica. Los resultados muestran que 55% informaron síntomas de esquizofrenia (26% delirios bizarros, 18% delirios no bizarros y 40% alucinaciones prominentes). De los que tuvieron creencias o pensamientos extraños justo antes de una convulsión, 58% informaron delirios bizarros, 42% delirios no bizarros y 50% alucinaciones prominentes. Estos hallazgos sugieren alta prevalencia de síntomas de esquizofrenia en la muestra de pacientes con epilepsia.

sin embargo, estos síntomas pueden confundirse con las auras de las convulsiones por lo que es esencial explorar estas posibles relaciones más a fondo para un mejor manejo de la condición.

**R-079 Evaluation of emergency and disaster preparedness of Head Start and Child Care Centers in Puerto Rico, 2008.** Rodríguez-Figueroa L, Rivera-Gutiérrez R, Marín-Centeno HA, Oliver-Vázquez M, Norat-Ramírez JA, Molina-De Jesús VD. UPR Graduate School of Public Health and Center for Public Health Preparedness.

Many disaster preparedness plans do not contemplate the needs of children <5 y/o, the most vulnerable group. This study's objective was to evaluate the preparedness level and response capability of 2 types of preschool facilities: Head Start and Child Care Centers. A representative sample (n=132) was selected using a stratified sampling design (99.2% participation). Interviewers conducted a survey (>100 questions). Center's location was used to assess risk of flooding, tsunamis, landslides, and liquefaction due to earthquakes. Proportions were compared using chi-square/Fisher's tests. Centers had an acceptable level of preparedness, but do not know their real risks, thus over or underestimate their risks. Most had a routinely evaluated, available, and fairly complete written emergency plan, which children/personnel knew through routine drills. However, these plans do not include all the centers' real risks. Personnel mostly knew routine emergency procedures, and prepared parents/ children on evacuation procedures. Most exits but few emergency routes are labeled, and few have formally evaluated potential obstacles in them. Most have not identified shelters, and use staff cars for evacuation. Few have formal arrangements with emergency agencies. Most have enough supplies, hygiene products, and cleaning supplies for an emergency, but only some have construction equipment/materials, supply restocking plans, and water/food rationing procedures. Centers have smoke detectors and fire extinguishers, but rarely fire alarms and sprinklers. Centers must evaluate their particular risks, and improve their emergency plans accordingly.

**R-080 Atypical Presentation of Basilar Artery Stroke due to Hypercoagulable State and Incidental Patent Foramen Ovale – A Case Report.** M Hidalgo MD<sup>1</sup>, E Rodríguez MD<sup>2</sup>, and V Wojna MD<sup>3</sup>. Hospital Episcopal San Lucas Ponce.

A 31 year-old woman G2P2A0 with aspirin allergy, who three days after an uncomplicated cesarean delivery developed dizziness, nausea, slurred speech, headache, and loss of vision that progressed to aphasia, inability to walk, or follow commands, and eventually become stuporous. At exam presented with right oculomotor (III) nerve palsy, and horizontal nystagmus, generalized decrease tone, resting tremors, and an extensor re-

sponse to corticospinal stimuli bilaterally. A diagnosis of vertebrubasilar insufficiency was considered. Brain imaging showed ischemic strokes at cerebellum, bilateral midbrain, and pons areas. Magnetic Resonance Angiography (MRA) showed basilar artery tip thrombosis. Transesophageal Echocardiogram (TEE) was performed showing Patent Foramen Ovale (PFO) with right to left shunt. There was a gradual neurological improvement over four weeks and continued on anticoagulation therapy for about six months. The purpose of this case is to emphasize the importance of recognizing risk factors of ischemic stroke in young pregnant woman. The hypercoagulable state of normal pregnancy is a common complication associated with ischemic strokes and venous thromboembolism. The presence of PFO in pregnancy increases the risk for ischemic stroke due to paradoxical embolism without diagnosis of DVT. It is imperative to consider PFO as risk factors of stroke in young postpartum woman. Maternal mortality is high and survivors may face long term neurologic sequelae. For these reasons, early recognition and diagnosis is crucial to prevent long term complications.

**R-081 Mecanismos de Comunicación como Estrategias para la Preparación ante Emergencias en Organizaciones que Sirven a Adultos con Retardación Mental en Puerto Rico.** V. Molina, T. Meléndez, N. Jordán, R. Rivera, M. Peña, P. Monserrate, N. Padilla, S. Rodríguez, M. Rosario. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

El estudio Evaluación del nivel de preparación y capacidad de respuesta a emergencias y desastres de las organizaciones que sirven a adultos con retardación mental en Puerto Rico, realizado por el Centro de Preparación en Salud Pública (CPSP-UPR), fue una investigación exploratoria que constituye una línea base de información dirigida a describir el nivel de preparación y respuesta a emergencias de las organizaciones estudiadas. El instrumento diseñado fue completado por medio de una entrevista a representantes de cada organización. Los datos fueron analizados descriptivamente. Los resultados destacan que la filosofía de "trato amable", que modela la prestación de servicios comunitarios a adultos con retardación mental, está en conflicto con algunos elementos de comunicación que representan tácticas efectivas de preparación ante emergencias, como por ejemplo, la rotulación de las salidas de emergencia y la identificación de las necesidades específicas de salud de los participantes. El estudio evidenció incongruencias entre los requerimientos que varias agencias gubernamentales le imponen a las organizaciones. Las organizaciones cuentan con múltiples medios para notificar sobre una emergencia a empleados, familiares y agencias pertinentes. Sin embargo, se requiere mayor exploración sobre la comunicación efectiva con participantes sordos o con problemas de audición en situaciones de emergencia. (Realizado bajo contrato 2009-DS0413 con el Departamento de Salud y aprobado por IRB.)

**R-082 Trabajadores de la Salud Pública: Nueva era de destrezas, conocimientos y retos.** L. Estremera, I. García. Escuela Graduada de Salud Pública, UPR-Recinto de Ciencias Médicas.

La sociedad del conocimiento implica un cambio en todos los procesos de las sociedades afectados por la comunicación tecnológica y el movimiento impetuoso del conocimiento atravesando fronteras. Reducir la brecha distancia-tiempo conlleva cambios en funciones y modos de realizar las acciones de salud, por lo que el rumbo del desarrollo profesional los trabajadores de la salud pública (TSP) se encamina hacia "saber hacer" en un mundo donde el cambio y nuevas situaciones emergentes son la orden del día. Objetivo: Identificar las necesidades de capacitación de los TSP utilizando las competencias de SP del Council on Linkages between Academia and Public Health Practice. Estrategia: Administración de encuesta al universo de TSP (n=114) utilizando dos modalidades de acceso; electrónica y presencial. Resultados: El grupo identificó cuatro áreas de necesidad de capacitación en el desarrollo de destrezas en: gerencia, análisis y evaluación, comunicación y desarrollo de políticas y programas. Los encuestados prefieren participar en cursos presenciales, seguido de cursos en línea. Conclusión: Es necesario capacitar a los TSP en servicio para cumplir con su función en el campo salubrista. Se propone propiciar acuerdos colaborativos entre la academia y las entidades implicadas en la SP para la renovación del conocimiento y potencialización de las destrezas necesarias con el propósito de mejorar la gestión en el entorno del servicio salud, la calidad de vida y la seguridad de la población.

**R-083 Functional characterization of a putative Tyramine/Octopamine receptor.** SH Jezzini<sup>1,3</sup>, D Reyes<sup>1,3</sup>, N Vázquez<sup>1,3</sup>, NM Rivera<sup>1,3</sup>, JJC Rosenthal<sup>2,3</sup>, AB Kohn<sup>4</sup>, & MA Sosa<sup>1,3</sup>. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

The freshwater prawn *M. rosenbergii* is a crustacean that serves as a model to study the neural basis of aggression. Adult males develop through three morphotypes (small [SC], yellow [YC] and blue claws [BC]), each representing a level in the dominance hierarchy of a group, BC being the most dominant. We are interested in understanding the role played by biogenic amines in the mechanisms underlying aggressive behavior. Injection of octopamine (OA) in lobsters produces postural changes associated with submission. In the prawn, injection of OA makes a BC more submissive than a YC. Thus, OA may be involved in modulation of aggressive behavior. Possible mechanisms include up- or downregulation of neurotransmitter release or of receptor expression. We previously reported the cloning, localization, and expression of the first putative Tyr/OctMac receptor from crustaceans. We are now interested in determining if the expression or modulation of Tyr/OctMac function underlies the effects of octopamine on aggression. Here we report the functional characterization of this receptor.

Our initial data indicates that Tyr/OctMac is a G-protein coupled receptor that acts primarily through a cAMP-mediated pathway. The receptor is preferentially activated by octopamine over tyramine, and it can also be activated by high concentrations of dopamine. The identification and characterization of antagonists for this receptor in a heterologous system will provide pharmacological tools to help examine its function in the native system. (NIH/MBRS-SCORE S06GM008224, NIH/MRISP MH48190, NIH/RCMI G12RR03051, NIH/MBRS-RISE 2R25-GM061838-05)

**R-084 Prevalence and correlates of diabetes and prediabetes among adults in the San Juan Metropolitan Area of Puerto Rico.** Soto-Salgado M., Ortiz A.P., Suárez E., Guzmán M., Pérez C.M. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Although type 2 diabetes is the third leading cause of mortality in Puerto Rico, the prevalence of diabetes and prediabetes and their risk factors have not been well characterized in this population. We estimated the prevalence of diabetes and prediabetes and examined correlates of these conditions in the adult population aged 21-79 years living in the San Juan Metropolitan Area. This cross-sectional study conducted between 2005 and 2007 recruited a representative sample of 862 non-institutionalized adults. Diabetes status was defined by the 2009 American Diabetes Association updated criteria as: diabetes if FPG  $\geq$  126 mg/dL or receiving insulin or oral hyperglycemic treatment; prediabetes if FPG was between 100 mg/dL and 125 mg/dL; and normal fasting glucose if FPG < 100 mg/dL. Overall prevalence of diabetes and prediabetes was 17.1% (males 21.7%; females 14.6%) and 31.4% (males 37.6%; females 28.2%), respectively, figures higher than those reported for US adults aged  $\geq$  20 years (9.3% and 26.0%, respectively). In polytomous logistic regression models, increasing age, elevated waist-to-hip ratio, hypertension, low HDL-C, elevated CRP and family history of diabetes were significantly ( $p < 0.05$ ) associated with diabetes. However, only hypertension and low HDL-C were significantly ( $p < 0.05$ ) associated to prediabetes. These data underscore the need to strengthen interventions to reduce modifiable risk factors, especially obesity, and improve early detection of undiagnosed diabetes among high risk Puerto Rican adults (Approved by IRB; Supported by MSD, G12RR03051, 5P20RR011126, and U54CA96297).

**R-085 Burden of hypertension and prehypertension among adults in the San Juan metropolitan area.** Nieves-Plaza, M., Suárez, E., Soto-Salgado, M., Ortiz, A.P., Guzmán, M., Pérez, C.M. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Hypertension is an increasingly important medical and public health issue. Current data regarding the burden of hypertension and prehypertension are scant in Puerto Rico. We estimated

the prevalence of hypertension and prehypertension and examined correlates of these conditions in the adult population aged 21-79 years living in the San Juan Metropolitan Area among a population-based sample of 864 non-institutionalized adults. Hypertension was defined as a systolic blood pressure (SBP)  $\geq$  140 mm Hg, diastolic blood pressure (DBP)  $\geq$  90 mm Hg, or current use of antihypertensive medication; pre-hypertension if SBP was 120 to 139 mm Hg and DBP was 80 to 89 mm Hg; and normal blood pressure if SBP was < 120 mm Hg and DBP was < 80 mm Hg. Prevalence of hypertension and prehypertension was 38.1% and 22.3%, respectively. Polytomous logistic regression models showed that older age, diabetes, hypertriglyceridemia, microalbuminuria (30-299 mg/g), and family history of hypertension were significantly ( $p < 0.05$ ) associated with hypertension; whereas male gender and high BMI were marginally associated ( $0.05 \leq p < 0.10$ ). Meanwhile, male gender, older age, and hypertriglyceridemia were significantly ( $p < 0.05$ ) associated with prehypertension; however, microalbuminuria reached marginal significance. Efforts to increase awareness, early detection and lifestyle modifications among high-risk individuals are needed in order to reduce their risk of developing hypertension and related morbidities (Approved by IRB; Supported by MSD, G12RR03051, 5P20RR011126, and U54CA966297).

**R-086 Differentiation of Monocyte-Derived Microglia-Like Cells from HIV+ Hispanic Women.** Dianedis Toro<sup>1</sup>, Aliana Bofill<sup>1</sup>, Gabriel Gras<sup>2</sup>, Valerie Wojna<sup>1</sup>. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Microglia are one of the brain reservoirs for HIV infection and influence development of HIV-associated neurocognitive disorders (HAND) through inflammation, oxidative stress, and neuronal damage in brain of infected persons. Based on hypothesis of a myeloid-monocytic microglia origin and on the uninfected monocyte-derived-microglia (MDMi) model established by Leone et al., we tested the capacity of HIV infected macrophages to differentiate into MDMi when cultured in astrocytes-conditioned media (ACM) containing astrocytic soluble factors. PBMC from healthy donors and from HIV+ women were isolated by Ficoll. Cells were cultured in monocyte media for 8 days. Half of the cells were differentiated into monocyte-derived macrophages (MDM) cultured in monocyte media until day 12. The other half was differentiated into MDMi, cultured in ACM until day 12. Cells were monitored every 3 days by microscopic examination for morphologic changes. Cellular differentiation was determined by Immunocytochemistry measuring Iba1 expression in MDM and MDMi. Between 8-12 days in culture, MDMi exhibit a more amoeboid and ramified morphology than MDM. Higher Iba1 intensity levels were observed in MDMi than in MDM. Results demonstrate that HIV infected macrophages differentiate into MDMi achieving microglia-like morphology when treated with ACM. MDMi may model a path from monocyte to perivascular macrophage and then to parenchymal micro-

glia offering an opportunity to study effects of chronic HIV infection on microglia-like cells and relations with HAND in Hispanic HIV+ women. Study supported by S11NS046278, U54NS43011, P20RR11126 and ME:200.701.

**R-087 Anesthetic Management of a Child with Partial Trisomy 3: a case report.** V Osusa-Figueroa MD<sup>1</sup>, J Ortiz-Cardona MD<sup>2</sup>. UPR School of Medicine, Department of Anesthesiology, San Juan, PR.

Trisomy 3 is a rare chromosomal disease with not well documented incidence. We report a 9-year-old boy with past medical history of partial trisomy 3, seizures and bronchial asthma who was admitted to the Pediatric Intensive Care Unit due to pneumonia and respiratory distress. Upon admission, he presented hypoactive, pale, with nasal flaring, wheezing, intercostal suprasternal retractions, tachycardia, heart murmur grade III, and spastic extremities. Patient developed ARDS, pulmonary hypertension, and septic shock requiring mechanical ventilation due to worsening respiratory distress. Anesthesia service was called for intubation. Intubation was very difficult, with a Cormack and Lehane view grade IV. Intubation was successful at third attempt using MAC 0 blade. Two weeks later, accidental self-extubation occurred and anesthesia service was consulted emergently. Patient was found on cardiac arrest undergoing ACLS protocol. A different anesthesia staff member had a difficult intubation with a grade IV view. It took three attempts to finally secure the airway. Patient recovered from cardiac arrest. Due to prolonged mechanical ventilation patient was eventually scheduled for tracheostomy. At operating room, patient arrived intubated. Premedicated with Versed and Fentanyl. Nimbex used as muscle relaxant and maintained through procedure with a Fentanyl drip. Procedure done uneventfully. We report this case due to the low incidence of Trisomy 3 and the difficult airway management.

**R-088 Baclofen Withdrawal: When Pain Management Becomes ICU.** Ricardo Taboada, MD; Dorian López, MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

This case presentation involves an intrathecal baclofen pump that was used to control a patient's severe spasticity which had developed as a result of a gunshot wound that transected the thoracic (T6) vertebrae. The pump became infected and had to be removed upon admission. The patient was unable to tolerate removal of intrathecal baclofen despite attempt to provide high doses of oral baclofen. Baclofen withdrawal syndrome is a rare, but documented syndrome that can involve changes in mental status, severe spasticity, rhabdomyolysis, and can lead to death. Endotracheal intubation and intensive care was required to rescue our patient. The case discusses the proper methods for withdrawing an intrathecal baclofen pump, the distinguishing features of the syndrome, and how to treat it appropriately as per current guidelines.

**R-089 The Role of Multidetector Computer Tomography (MDCT) in the Evaluation and Treatment of Traumatic Injury to the Acetabulum.** Zayas J., Badillo K., Feliciano-Rivera Y., Vidal J. UPR School of Medicine, Department of Radiology.

The need for an appropriate, standardized radiological descriptions and terminology to guide treatment planning of traumatized patient in the Emergency Department provides the rationale for studying the importance of MDCT images with Multiplanar Reformations (MPR) and 3D reconstructions. Objectives: (1) Review the relevant anatomy in MDCT of the acetabulum. (2) Discuss the anatomical and radiological descriptors/terminology used in radiological reporting of acetabular trauma. (3) Discuss the importance of MPR and 3D reconstructions for surgery planning and patient management. Activities: The developing a pictorial review illustrating relevant acetabular and pelvic anatomy and pathogenesis of traumatic acetabular injuries to provide an in-depth view that is valuable to both radiologists and clinicians. The importance of MPR and 3D reconstructions for treatment planning were discussed using proper anatomical and radiological descriptors and terminology in radiological reporting. There is inclusion of an important acetabular fracture classification used for patient management and treatment. Outcomes/Observations: MDCT scan is helpful in detecting intra-articular bone fragments that may be otherwise undetectable and help with operative planning. In addition, the use of MDCT scan requires less manipulation of the patient than the standard radiographic views; a fact especially important in patients with multiple injuries. Projections: The proper use of radiological terms when describing acetabular fractures coupled with the use of MPR and 3D reconstructions will guide better patient care when planning surgical management.

**R-090 Prevalence of Infectious Disease Markers Among Organ and Tissue Donors in Puerto Rico.** Esther A. Torres, MD; Tania M. González-Santiago, MD; Juan Carlos Almodóvar, MD; José J. Vicens, MD; Edmir Marrero-Estrada, MPH; Rose Casanova, MD and Marien Saadé, BSN. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Infectious diseases (ID) such as human immunodeficiency virus (HIV), human T-lymphotropic virus (HTLV), Hepatitis B (HBV), and Hepatitis C (HCV) have been transmitted by organ and tissue transplantation. Limited epidemiological information of these is available in Puerto Rico (PR). This investigation focuses on the prevalence of serologic markers of ID among potential donors in PR. Records for 2005-2007 from LifeLink of Puerto Rico were reviewed for demographics, risk factors, health conditions, and serology results. Data from the American Red Cross in PR for 2004-2006 was obtained to assess the prevalence of serologic markers in volunteer blood

donors. 296 donors from LifeLink of Puerto Rico were mostly white (68.58), males (59.12), over 45 years old (55.74), and married (67.31). Risk factors included: drug use, blood transfusions, serving jail time, body piercings, tattoos, and previous transplants/implants. The percent of donors positive for HBsAg was 2.70; for HCV was 4.05; for HIV was 1.35; HTLV 1+2 was 0.68. A significant association ( $p=0.041$ ) was found only for HCV infection and drug use. The percent of 184,659 blood donors positive for HIV ranged from 0.0162-0.0292; HBsAg ranged from 0.0277-0.0324; HCV from 0.1222-0.1704 and HTLV from 0.0146-0.0292. A significant association between risk behaviors and ID, other than HCV, cannot be made from this data. This study supports that drug use is contributing to HCV infection in potential organ and tissue donors in PR. HCV was also the most prevalent transmissible viral disease detected in volunteer blood donors.

**R-091 Gaucher Disease, Type I. Case Report and Review of Literature.** María Almira, MD; Román Vélez, MD; Alejandro Cambara, MD; Ramiro Pérez, MD. UPR Medical Science Campus, Department of Pathology and Laboratory Medicine and Department of Pediatrics, Hematology-Oncology Section.

Lysosomal storage disorders are relatively rare inborn errors of metabolism. Among them, Gaucher Disease (GD) is the most prevalent, with estimates between 1/57 000 - 1/75 000 newborns, and higher in people with Ashkenazi Jewish heritage. It occurs clinically in three forms according to neurologic involvement: Type I (adult or chronic type), Type II (acute neuronopathic) and Type III (juvenile or sub-acute). Type I account for almost 99 % of cases with some patients having minimal evidence of disease and some presenting with a combination of symptoms that include: hepato-splenomegaly, thrombocytopenia, anemia, lung and skeletal pathology. Skeletal and splenic involvements are the ones that dominate the clinico-pathological pattern. In Puerto Rico, there is no clear data regarding the incidence of Gaucher Disease. We present an 11 year old male patient with history of easy bruising and bleeding, persistent thrombocytopenia and splenomegaly since 9 years old. In May 2009 he was admitted due to left knee swelling with "bone infiltration" according to a scan. A lymphoproliferative disorder was suspected and a bone marrow biopsy and aspirate were performed. The presence of abundant large macrophages with characteristic wrinkled-paper appearance was compatible with Gaucher Disease. This was confirmed by a laboratory test showing deficiency of acid b-glucosidase enzyme [0 nmol/(mg x h)], [RR= 3.6-18 nmol/(mg x h)]. This disease is rarely considered when evaluating a sick newborn and given the mixed symptomatology, it can be very difficult to assess in adult patients if this diagnostic possibility is not in our mind.

**R-092 No Child Left Behind in Puerto Rico: How Does the No Child Left Behind Act Affect**

**Teachers' Attitudes Toward Students From Low-income Communities.** Emely Medina-Rodríguez. Universidad de Puerto Rico, Recinto de Mayagüez.

The No Child Left Behind Act (NCLB) was created in 2001 to close the achievement gap between middle class white students and low-income minority students in the U.S. NCLB is also mandated in Puerto Rico and affects Puerto Rican educational institutions. Although this law has been studied in the U.S, its impact on territories distant from the mainland is less understood. Little is known, for example, about how NCLB affects Puerto Rican teachers' attitudes, especially those working with students from low-income communities. Qualitative research methods were chosen to encourage teachers from an intermediate school in Mayagüez, Puerto Rico, to express their perspectives from their own point of view regarding the NCLB Law and related themes. The school serves students from five surrounding public housing projects, and ninety-two percent of the student body came from households with an income below the poverty level. Statistics from Puerto Rico's Department of Education also showed that this school had not met NCLB's Adequate Yearly Progress requirement for the past five years. A snowball sample identified seven teacher participants, and they were interviewed using an instrument containing 26 open-ended questions. To fully understand the implications of the implementation of NCLB in Puerto Rico we should consider the various factors that may affect the relationship between teachers and students. We must also examine options that reinforce the strengths of teachers and students taking into account the special needs of students and the challenges that confront teachers.

**R-093 First Unprovoked Seizure: Correlation between Clinical Presentation and Findings on Brain MRI and EEG.** B. González, MD; J. González, MD; M. Ríos, MD and M. Dávila, MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Seizures are a common neurological disorders in pediatric patients. An estimate of 40,000 children experience their first unprovoked seizure episode in the United States. The University Pediatric Hospital (UPH) is the only supratertiary center in the island receiving most of the neurological cases. Objective: Compare the clinical presentation of children with a first unprovoked seizure episode with findings in EEG and brain MRI. Methods: A retrospective review of medical records of patients between one and 18 years old with a first unprovoked seizure episode from July 2006 to June 2008 seen at ER-UPH. Results: The study had a total of 106 patients; 49% male and 51% female. The mean age of patients was 8.5 years. Fifty eight percent of patients had a generalized seizure episode and 42% had a focal seizure episode. A total of 98 EEG were evaluated; 53% were normal and 47% were abnormal. Epileptiform activity was found in 35% of patients and 11% had slowing.

Sixty six brain MRI were evaluated; 83% were normal and 17% had nonspecific abnormalities. All patients had a normal neurological examination. Conclusion: From these findings we can infer that patients with a first unprovoked seizure episode without focal neurological deficits will most likely have a normal brain MRI, however a significant percent of patients will have an abnormal EEG. These findings are in accordance with the American Academy of Neurology recommendations that an EEG should be done as part of the initial evaluation in these patients but an emergent neuroimaging should only be done in patients with prolonged postictal focal neurological deficits.

**R-094 De la academia a la comunidad: Voces estudiantiles para el desarrollo de experiencias en salud pública.** Yiselly M. Vázquez-Guzmán, BA, Verónica Santiago-Beauchamp, BA. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Las comunidades son la razón de ser de la salud pública. Las organizaciones de base comunitaria resultan esenciales en los esfuerzos de salud pública, ya que trabajan directamente con las comunidades y sus asuntos de salud particulares. El objetivo de este trabajo es describir el proceso de vincular estudiantes de salud pública con organizaciones comunitarias para lograr un intercambio de conocimiento y experiencias. Este esfuerzo surge como parte de una iniciativa de un grupo de estudiantes de la Escuela Graduada de Salud Pública. El mismo consta de tres etapas. En primer lugar, se seleccionó la organización. Dentro de las diferentes opciones, se seleccionó Iniciativa Comunitaria, Inc. (ICI), por su abarcador trabajo desde un enfoque salubrista. La segunda etapa incluyó el reclutamiento de estudiantes y el adiestramiento como voluntarios/as por parte de la organización. Finalmente, los/as estudiantes han tenido la oportunidad de participar en el proyecto de Rondas Nocturnas dentro del Programa Operación Compasión de ICI. La experiencia ha sido muy enriquecedora para todos/as los/as voluntarios/as y también para la organización. Actualmente alrededor de 15 estudiantes participan activamente del programa. Todos/as coinciden al señalar que trabajar con personas sin hogar, desde una perspectiva salubrista, le da sentido a la teoría que aprenden. Se espera establecer un vínculo formal para colaborar en otros programas de ICI, así como otras organizaciones en la comunidad.

**R-095 Diabetes Management Practices and Risk Factor Control of Puerto Rican Adults.** Febo-Vázquez I.<sup>1</sup>, Pérez C.M.<sup>1</sup>, Ortiz A.P.<sup>1</sup>, Guzmán M.<sup>2</sup>, Suárez E.<sup>1</sup>. <sup>1</sup>Department of Biostatistics and Epidemiology, Graduate School of Public Health, <sup>2</sup>School of Medicine, UPR MSC.

Puerto Ricans are disproportionately affected by diabetes compared to other ethnic groups in the US. This study assessed measures of diabetes management and risk factor control among participants with diabetes in PR. A probability

cluster design was used to select a sample of households in the San Juan Metropolitan Area. A total of 859 persons aged 21-79 years completed blood pressure and anthropometric measurements, blood sampling and a face-to-face interview. Summary statistics were computed to describe the study group. A total of 136 (15.8%) adults self-reported diabetes, of whom, 61.8% were aged 60-79 years, and 94.1% were overweight or obese. Nearly 87.2% had at least one visit last year to their diabetes provider, 37.8% of participants performed daily self-monitoring of blood glucose, 72.8% self-monitored for foot sores on a weekly basis, and 29.1% had participated in diabetes education. During the last year, participants' physicians checked their feet for sores (45.2%) and performed an examination for retinopathy (52.5%) and at least two glycated hemoglobin tests (60.4%). Clinical examination showed that 28.9% had a glycated hemoglobin below 7%, 41.9% had blood pressure < 130/80 mm Hg, 44.1% had LDL-C < 100 mg/dL, 57.4% had triglycerides < 150 mg/dl, and 56.4% had HDL-C > 40 mg/dl in men and > 50 mg/dl in women. Only 2.2% achieved recommended goals of glycated hemoglobin, blood pressure, and lipids. Increased public health efforts to prevent cardiovascular disease and other diabetes complications are warranted (Partially supported by RCM1 G12RR03051 and NCCR P20RR011126 NIH grants). Approved by IRB.

**R-096 Prevalence of Internet Addiction in Latino Adolescents with Psychiatric Diagnosis.** Kattia A. Liberatore, MD; Katyna Rosario, MD; Luz N. Colón-De Martí, MD; Karen Martínez, MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Objective: Internet Addiction (IA) is becoming an alarming problem in the adolescent population. The aim of this study was to describe the prevalence of IA in a clinical sample of Latino adolescents receiving ambulatory psychiatric treatment. The correlation between their pattern of Internet use and their respective psychiatric diagnosis was also studied. Method: Adolescent patients from the Psychiatric Ambulatory Clinic at the Pediatric University Hospital (N=71) completed the Internet Addiction Test (IAT) and a questionnaire about Internet use. Information regarding demographic and diagnostic data was retrieved from their clinical records. Results: 71.8 % (n=51) of the adolescents obtained scores reflecting no problem related to IA. Only 11.6% (n=5) of subjects have discussed Internet use with their therapist. Mood disorders showed statistically significant (p = 0.044) correlation with higher score in IAT. Conclusions: Mental health care practitioners must consider questions on Internet use as an essential part of the patients' evaluation given its significant correlation with diagnosis of a Mood Disorder.

**R-097 Efficacy, safety, and cost-efficiency, of using an alternative technique for automated exchange transfusion in pediatric patients**

**with sickle cell disease.** María B. Villar-Pra-  
dos, MD; Ricardo García-De Jesús, MD; Alicia  
Fernández-Sein, MD; Manuel Iglesias-García,  
MD. Escuela de Medicina, UPR-Recinto de  
Ciencias Médicas.

**Introduction:** Sickle cell disease (SCD) is a common congenital hemoglobinopathy. Patients suffer complications requiring immediate treatment with simple or exchange transfusion. In 1999 we developed an automated red cell exchange technique for exchange transfusion using infusion pumps and vascular catheters (IV Pump Method), effectively reducing circulating HbS% in SCD patients. **Objective:** Prove that the IV Pump Method will be more cost-efficient, and as safe and effective as automated blood cell separators in reducing HgS%. **Methods:** Retrospective chart review of SCD patients requiring exchange transfusion admitted to PICU of tertiary Children's Hospital from July 2003 to June 2009. Evaluated the method used for exchange transfusion, complications, and change in Hg S%, and compared costs of IV pump method vs. automated blood cell separator. **Exclusion criteria** were SCD patients admitted to the PICU not requiring exchange transfusion. **Results:** Identified 14 PICU admissions. We found a cost-reduction of at least \$1000 with IV Pump Method compared to Blood Cell Separator Method. Average reduction in HgS% with IV Pump Method was 30.3 vs. 28.8 with Blood Cell Separator ( $p = 0.84$ ). No complications or mortalities in either group. We had 3 females and 11 males that underwent exchange transfusion ( $p = 0.03$ ). The majority of the patients were on the 11-19 y/o group for both methods. **Conclusion:** Data suggests that the IV Pump Method is a safe, effective, and cost-efficient alternative to perform exchange transfusion in patients suffering SCD complications. Further data collection is warranted to increase our study population.

**R-098 Management of Ankyloglossia on the Infant Patient: Case Series.** Dr. Erica Barba, Elaine Pagán, DMD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Ankyloglossia in the infant can be detrimental to breastfeeding and its success. Breastfeeding is without a doubt the gold standard. Extensive evidence based research shows its undeniable advantages. However, controversy exists among professionals. Major accredited healthcare associations recommend exclusive breastfeeding for the first six months, which has resulted in a steady increase of lactating infants. The objective of our project is to familiarize infant care associated professionals with the management of ankyloglossia and breastfeeding. Five cases of infants with ankyloglossia are reported. These patients were referred to the Maternal Infant Oral Health Center Clinic of the UPR School of Dental Medicine, underwent a comprehensive evaluation and were considered candidates for a frenuloplasty procedure. These cases demonstrated that a frenuloplasty is a simple procedure that can significantly contribute to a prosperous breastfeeding experience with adequate evaluation, case selection and treatment.

**R-099 Pharmacogenetic-driven Warfarin Dosing Algorithm in Puerto Ricans.** Vázquez J; Valentín I; Rivera G; Seip R; Renta J; Korchela M; Bogaard K; Cruz I; Cadilla CL and Duconge J. Escuela de Farmacia, UPR-Recinto de Ciencias Médicas.

Warfarin is a widely used anticoagulant with a narrow therapeutic index. Polymorphisms in the cytochrome P450 2C9 (CYP2C9) and Vitamin K epoxide reductase (VKORC1) genes are recognized to significantly influence warfarin dose, accounting for 40-50% of warfarin response in various populations. A gap exists with respect to DNA-typing of persons of Hispanic ancestry related to warfarin sensitivity. The objective is to determine whether combinatorial CYP2C9-VKORC1 variants may explain variability in warfarin dose among Puerto Ricans. This is an open label multi-center pilot study conducted in 67 eligible patients, receiving warfarin at the VACHS or Hartford Hospital. Consented patients gave 5mL blood sample for DNA-typing using LUMINEX® x-MAP technology. Non-genetic data were retrospectively obtained from computerized patient record system. Five DNA-guided dosing algorithms (regression models) were used to test for dose predictability. Most of patients (66%) were carriers of at least one variant in either CYP2C9 or VKORC. Dosing algorithms derived from other population all performed poorly when applied to this learning sample, showing more scatter than in previous reports, and suggesting either a need for separate dosing algorithm or considering admixture as a covariate. The actual group mean differs significantly from the predicted for 4 out of 5 algorithms tested. Current algorithms explain only 9-39% of the total dose variance in our population. We concluded there is a need for developing a Puerto Rican-oriented model to more effectively treat patients from this population. (Supported by G12RR-03051 and HH Grant #123260).

**R-100 Nivel de actividad física de los estudiantes de terapia física en Puerto Rico.** Giselle A. Rodríguez, Orysia R. Mojica, Joseph I. Santiago, Ana L. Mulero, Carmen Buxó. Escuela de Profesiones de la Salud, UPR-Recinto de Ciencias Médicas.

**Propósito:** Describir el nivel de actividad física de los estudiantes del Programa de Terapia Física de la Universidad de Puerto Rico (UPR), Recinto de Ciencias Médicas (RCM). El propósito secundario es identificar posibles factores de riesgo para esta población. **Sujetos:** Un total de 37 estudiantes del Programa de Terapia Física de la UPR-RCM. **Métodos:** Se recopilaron los datos demográficos (edad, género) y medidas antropométricas (peso, estatura, circunferencia cintura y cadera) de los sujetos. Se le proveyó un podómetro a los sujetos el cual utilizaron por un periodo de 5 días consecutivos. Cada sujeto documentó la cantidad de pasos diarios caminados, medidos por el podómetro. Se obtuvo un promedio de los valores obtenidos y se compararon con los valores esperados

para esta población. Resultados: El promedio de pasos por día de la muestra fue 7,228.75, clasificado como poco activo. El promedio de Índice de Masa Corporal (IMC) para la muestra fue 25.09 kg/m<sup>2</sup>, clasificado como sobrepeso. El promedio de la razón cintura-cadera de los hombres fue 0.91 y el de las mujeres 0.84, lo cual no es indicativo de un factor de riesgo para desarrollar enfermedades crónicas. Conclusión: Según los hallazgos, los estudiantes del Programa de Terapia Física de la UPR-RCM no están suficientemente activos. Además según el valor promedio de IMC obtenido, los estudiantes se encuentran en mayor riesgo de desarrollar enfermedades crónicas.

**R-101 Dengue Virus Associated Hemophagocytic Syndrome in Children: A Case Report.** Y. Soler-Rosario, MD; R. García, MD; A. Fernández-Sein, MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Hemophagocytic Syndrome is a clinico-pathologic entity characterized by activation and uncontrolled proliferation of T lymphocytes and macrophages, leading to cytokine overproduction. HLH may be diagnosed in association with malignant, genetic, or autoimmune diseases, but is most linked with Epstein-Barr (EBV) virus infection. There are few reports of association between HLH and Dengue virus in pediatrics. Dengue fever, caused by dengue virus, a flavivirus, is an important mosquito-transmitted disease. Dengue Fever can cause increased vascular permeability that leads to a bleeding diathesis or disseminated intravascular coagulation known as dengue hemorrhagic fever (DHF). Hemophagocytosis is an uncommon presentation of dengue fever infection. We present the case of a 10 month old female patient who developed DHF, manifested with upper GI bleeding and pancytopenia. She then developed dengue shock syndrome, requiring admission to intensive care unit for aggressive respiratory, cardiovascular and hematologic support. Upon further management and the course of illness, she developed hemophagocytosis diagnosed by bone marrow aspiration. She also developed atypical skin changes in distal upper extremities that have not been previously described in association with dengue fever. This is an unusual case of dengue related hemophagocytic syndrome, requiring intensive care unit admission and management, that adds to the limited pediatric cases, especially in infants, reported in existing literature.

**R-102 Zafirlukast Granules Prepared by Spray Drying: Effect of Processing Parameters and Type of Diluent on Phase Transformation of the Solid.** Glorybelle Laureano, Evone S. Ghaly, PhD. Escuela de Farmacia, UPR-Recinto de Ciencias Médicas.

Spray drying finds great utility in pharmaceutical industry because of rapidity of drying and the unique form of the final product. The purpose of this investigation is to obtain an optimal dissolution and none crystalline phase transition that

assure that the drug is stable and available for adequate absorption. The method was divided in four stages. Stages are, Processing Parameters Optimization, Effect of Excipient, Effect of Solvent and Effect of Surfactant. Optimal processing parameters were selected based on the rate of dissolution, Zafirlukast amorphous content (XRD and DSC), and the morphology of the particles produced after spray drying (SEM). After determining the best processing parameters, these were used in the subsequent stages of this investigation. The excipients used were Lactose, Mannitol, Dibasic Calcium Phosphate and Microcrystalline Cellulose. The results established that the formulation with the best physicochemical characteristics was the formulation composed of Lactose as diluent, 1%w/v Sodium Dodecyl Sulfate as surfactant and Zafirlukast as active ingredient, processed at a flow rate of 10mL/min, at an inlet temperature of 160°C and a spray pressure of 0.1MPa. As a conclusion, it was demonstrated that spray drying was effective in reducing the particle size and enhancing the morphology of the particles without inducing transformation of the active ingredient from amorphous to crystalline.

**R-103 Madelung's Disease: Fiberoptic Intubation and the Need for Aerosolized Xylocaine in a Patient with Inaccessible Anatomical Landmarks.** Serafin López, Ivette Hernández, Ricardo Taboada, Victor Cardona. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Madelung's disease or Launois-Bensaude Syndrome, is a rare disorder of unknown etiology, and is characterized by symmetrical fatty accumulations involving the upper trunk, neck, and head. The major occurrence to watch for in the anesthetic management is difficult airway management. A 54-year-old man was scheduled for an elective excision of a grotesque enlargement in the neck that caused a distortion of the tracheal landmarks. Airway showed a Mallampati class 3, a markedly reduced thyromental distance, and mild limitation of the neck movements. In order to provide general anesthesia we planned to approach the airway by fiberoptic intubation. To block the airway in this patient with inaccessible anatomical landmarks, we started him on aerosolized 4 % xylocaine-4 mL. We also placed cotton-tipped applicators soaked in 2% xylocaine through both nostrils until the posterior wall of the nasopharynx was reached, and in the palatoglossal folds against the inferior-most aspect of them. Cotton swabs were slid over the lateral aspect of the tongue and into the pyriform sinuses to block the superior laryngeal nerve. Then a flexible fiberoptic bronchoscope was advanced into the airway through the right nostril. When the carina was seen, a 7.0-id endotracheal tube was advanced into the trachea. Surgery proceeded and finished uneventfully. We conclude that in patients with Madelung's Disease with inaccessible anatomical landmarks, a feasible technique for awake fiberoptic intubation is the use of aerosolized 4% xylocaine as well as cotton tipped swabs soaked in 2% xylocaine to provide adequately blockade of the airway.

**R-104 Genetic translocation t(6,16) associated to a difficult airway.** Lismary Jiménez MD, Hector Torres MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

We present a case of a nine year old girl with a rare genetic translocation t(6,16). This translocation has not been previously described in the literature, and was associated in this patient with a difficult airway, craniocervical stenosis and instability. The patient presented to the operating room with an anticipated difficult airway: micrognathia, protruded teeth, poor mouth opening, and cervical instability. The airway was secured successfully via oral fiberoptic intubation, utilizing intravenous ketamine (25mg), glycopyrrolate (0.2 mg), and a transtracheal block (4 mL of Xylocaine 4%). We conclude that an anticipated pediatric difficult airway in patients with the genetic translocation t(6,16) may be managed utilizing dissociative anesthesia and fiberoptic intubation.

**R-105 Rescue of a difficult airway using LMA Supreme in a Case in prone position.** Carlos Lassalle MD, Victor Cardona MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

The management of patients with a strong history of allergy to local anesthetics poses significant challenges to the anesthesiologist. When such patients presents for surgical procedure and local anesthetics need to be use, they should undergo provocative challenge testing with preservative-free local anesthetic. Adverse reactions are usually because of the paraben or sulfite preservatives in them. The following case report illustrates some of the problems. Case 70 y/o male patient 80 kg, 5' 5" feet with past medical hx of HTN, DM, CAD who was schedule for kyphoplasty due to T12 compression fracture. Patient has allergies hx to local anesthetic ( esters and amides) Airway evaluation shows micrognathia, mallampati IV, and 2 fingers mouth opening. Procedure can be done using general anesthesia or monitored anesthesia care. If monitored anesthesia care ( MAC ) is used, the surgeon must apply generous amounts of the local anesthetic agent, especially onto the periosteum, where much nociception occurs. Due to previous hx of local anesthetic allergy MAC could not be use. Patient with anticipated difficult airway seen at preoperative evaluation. Awake fiberoptic intubation was consider but unable to use local anesthesia for proper airway anesthesia. Fast track LMA was use with standard endotracheal tube Using fiberoptic intubation to guide endotracheal tube, tube was unable to pass throw fast track mask after several attempts. Using an LMA Supreme patient was able to secure the airway, stomach suction and patient place in the prone position for procedure.

**R-106 Neuropsychological tests as predictors of fear learning.** Martínez KG, Franco JA, Ojeda B, Segura G, Castro-Couch M, Milad M, Quirk GJ. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

People with anxiety disorders show altered fear learning and extinction. It would be useful to predict fear learning and extinction for diagnosis and treatment purposes. Using cognitive interference tests that rely on the same cerebral regions implicated in fear expression, we sought to determine if these neuropsychological tests could predict fear learning and extinction. 35 healthy adults (19 F, 16 M) were administered a series of tests including the NEO, STAI, Multi-Source Interference Task, WCST and Emotional Stroop Task (EST). They were trained in a fear conditioning and extinction paradigm (Milad et al., 2005). Fear was measured as the skin conductance response (SCR). Peak SCR during conditioning phase (COND) was negatively correlated with conscientiousness scale of the NEO. This association was stronger in men ( $r = -0.52, p = 0.03$ ) than in women ( $r = -0.41, p = 0.08$ ). In the EST, the difference in reaction time between the threat words and neutral words was positively correlated with peak COND in women ( $r = 0.54, p = 0.01$ ), but not in men ( $r = -0.33, p = 0.21$ ). No association was observed between peak COND and the MSIT ( $r = -0.18, p = 0.28$ ) or the WCST ( $r = 0.05, p = 0.77$ ). Our analysis show that we could predict peak COND using the STAI, Beck, psychiatric treatment history, EST and the conscientiousness scale of the NEO, for both men ( $R^2 = 0.76, p = 0.01$ ) and women ( $R^2 = 0.64, p = 0.02$ ). These results suggest that psychological tests could be used to predict fear acquisition. Therefore, a simple battery of computer tests could function as a cost-effective tool for screening at risk populations and guiding therapy.

**R-107 Sociodemographic, Lifestyle and Metabolic Correlates of Overweight and Obesity in Puerto Rican Adults.** H. Sánchez<sup>1</sup>, M. Soto<sup>1</sup>, A.P. Ortiz<sup>1</sup>, E. Suárez<sup>1</sup>, M. Guzmán<sup>2</sup>, C.M. Pérez<sup>1</sup>. <sup>1</sup>Department of Biostatistics and Epidemiology, School of Public Health, <sup>2</sup>School of Medicine, MSC, UPR.

Considering that Puerto Ricans bear a disproportionate burden of type 2 DM and that cardiovascular disease, cancer and type 2 DM are the leading causes of death in the island, it is essential to understand the burden of obesity and its correlates. This study assessed the prevalence of overweight and obesity and examined correlates of these conditions in the adult population aged 21-79 years living in the San Juan Metropolitan Area. We analyzed data from a household survey conducted between 2005 and 2007 that used a representative sample of 859 non-institutionalized adults. Body mass index (BMI) categories were classified as normal weight (18.5-24.9 kg/m<sup>2</sup>), overweight (25.0-29.9 kg/m<sup>2</sup>) and obese ( $\geq 30.0$  kg/m<sup>2</sup>). Overall prevalence of overweight and obesity was 36.8% and 40.9%, respectively, exceeding the prevalence reported for U.S. adults aged  $\geq 18$  years (32.8% and 34.2%, respectively). In polytomous logistic regression models, diabetes, low HDL-C, and elevated levels of PAI-1 were significantly ( $p < 0.05$ ) associated with overweight. However, diabetes, low HDL-C, and elevated levels of hs-CRP and PAI-1 were significantly ( $p < 0.05$ )

associated to obesity. Comprehensive efforts to address obesity and its health consequences in Puerto Rico are urgently needed. Additional studies examining the role of both genetic and environmental factors in the onset of this condition will be essential to design and implement public health initiatives to prevent and control obesity (Approved by IRB; Supported by MSD, G12RR03051, 5P20RR011126, and U54CA96297).

**R-108 SorLA is a membrane raft protein in glial cells.** Iris K. Salgado<sup>1</sup>, Melissa Serrano<sup>1</sup>, José García<sup>1</sup>, Namyrt Martínez<sup>2</sup>, Héctor M. Maldonado<sup>2</sup>, Carlos A. Báez Pagán<sup>3</sup>, José A. Lalsalde Dominici<sup>3</sup>, Walter Silva<sup>3</sup>, UPR. <sup>1</sup>School of Medicine, UCC and <sup>3</sup>UPR Río Piedras.

SorLA is an established sorting and trafficking protein in neurons with demonstrated relevance to Alzheimer's disease (AD). It shares these roles with the caveolins, markers of cholesterol/sphingolipid-rich membrane rafts. We studied sorLA expression in various cultured glia and its relation to the caveolar microdomain marker, caveolin-1 (cav1). RT-PCR and Western Blots demonstrated sorLA expression in rat C6 glioma, primary cultures rat astrocytes (PCRA), and 1321N1 human astrocytoma cells. Induction of C6 cells differentiation to an astrocyte phenotype led to a significant decrease in sorLA's mRNA and protein expression. Detergent-free conditions sucrose density gradient revealed co-fractionation of sorLA with cav1 in membrane raft fractions of undifferentiated C6, differentiated C6, and 1321N1 cells. Laser scanning confocal microscopy of C6 and PCRA revealed a subcellular distribution reminiscent of the staining pattern of sorLA in neurons. In C6 and PCRA cells a significant percent of sorLA co-localized with cav1, predominantly in large vesicular perinuclear compartments, suggestive of its endosomal and Golgi distribution. Additional co-labeling was also seen in cytoplasmic vesicles and plasmalemma. These findings definitely establish that sorLA is expressed in glia and is a membrane raft protein involved with cav1 in glial intracellular membrane microdomains trafficking. This study supports a role for glia and its caveolar membrane raft microdomains to the sorting functions of sorLA in the neurodegenerative cascade of AD, whilst unveiling new venues for disease treatment and modification. (Supported by GM08224, G61838)

**R-109 Parasuicidal Behavior in Puerto Rican Youth One Year Follow Up.** Sylvia Berrios, MD; Analicia Vargas, MD; Raquel Herrero, MD; Gloria Suau, MD; Karen Martinez, MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Objective: To identify parasuicidal behavior (PSB) documented in the medical records of a group of Hispanic adolescents, one year after being discharged from a psychiatric intensive ambulatory program (IAP). This study also evaluates treatment adherence and the factors associated with re-appearance

of PSB. Methods: A review of medical records obtained from 50 adolescent patients between the ages of 13 and 17 years was examined, one year after IAP treatment due to PSB. These adolescents were evaluated in terms of continuing psychiatric treatment and re-appearance of PSB. Initial symptoms at the time of admission to IAP, sex, history of abuse, and history of parental PSB were considered as factors that could be associated to more severe types of PSB, treatment adherence, and re-appearance of PSB. Results: Adolescents that required IAP treatment for PSB in 2008 mostly presented with depressive and disruptive symptoms. Only 40% of adolescents with previous history of PSB continued mental health treatment at a 1-year follow-up. Of these, 45% re-attempted suicide; and 35% required hospitalization. Adolescents with parental history of PSB had more severe PSB and more frequently reported abuse as a stressor for IAP treatment. Conclusions: PSB is an important act associated to severe symptomatology and psychosocial stressors in this sample of adolescents. Even with this high grade of dysfunction, most of the adolescents did not continue treatment.

**R-110 NICU personnel's knowledge about the clinical practice of oxygen administration in very low birth weight infants.** Abymael Frontanes, Lourdes García, Marta Valcárcel. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

In recent years, there has been an increase in the number of very low birth weight (VLBW) infants and an improvement in their survival. Many of them require oxygen administration as part of their treatment. The use of oxygen in VLBW infants has been associated with an increase in the incidence of retinopathy of prematurity and bronchopulmonary dysplasia. Objective: To assess Neonatal Intensive Care Unit (NICU) personnel's knowledge about the clinical practice of oxygen administration in VLBW infants. Methods: A survey was administered to nurses and respiratory therapists working at the University Pediatric Hospital and the San Juan City Hospital NICUs. Results: The study included 49 subjects. Their mean age was 42 years, 96% were females, and 96% were nurses. Eighty five percent felt confident with oxygen administration. Confidence was associated to more years in the profession (15 years vs 8 years,  $p < 0.05$ ), but not with the number of years working in the NICU or with having taken previous courses about oxygen administration in VLBW infants. Fifty four percent of the participants could identify correctly the alarm limits of oxygenation for VLBW infants and there was no association with the years in the profession or with the number of years working in the NICU. Conclusions: NICU personnel's knowledge in the clinical practice of oxygen administration in very low birth weight infants was scant. An educational intervention for the personnel was developed and conducted with these results. They will be followed up to assess the change in their practice.

**R-111 Probabilidad de Agrandamiento de Familia como Indicador de Preferencia de Género, Encuesta de Salud Reproductiva, Puerto Rico 1995-1996.** Muñoz-Ortiz, Marlene; Dávila-Román, Ana Luisa; Colón-Warren, Alice. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

La preferencia de género hacia un determinado género esta asociada al comportamiento reproductivo. Si la composición de género en la descendencia es un determinante del comportamiento reproductivo de las mujeres puertorriqueñas aún se desconoce. El objetivo de este estudio es analizar la probabilidad de agrandamiento de familia como un indicador de la preferencia de género en los nacimientos en Puerto Rico para el periodo del 1946 al 1995. La metodología de análisis fue el cálculo de probabilidades de agrandamiento de familia con respecto al género utilizando el orden de nacimiento de las mujeres entre 35-49 años de la encuesta de Salud Reproductiva de Puerto Rico del periodo 1995 al 1996. La encuesta de Salud Reproductiva es representativa de la población femenina de 15 a 49 años. Se entrevistaron 5,944 mujeres de las cuales 2,501 eran mujeres de 35 a 49 años. Se observó que la probabilidad de agrandamiento de familia disminuye a medida que aumentan los rangos de nacimiento. Los datos demostraron que la probabilidad de que las mujeres con un hijo(a) tengan un segundo hijo(a) es de .87 mientras que las mujeres que tengan dos hijo(a)s de tener un tercero es de .62. Con respecto al género, la probabilidad de que las mujeres con dos niñas tenga un tercer hijo(a) es de .90 mientras que la probabilidad de que las mujeres con dos niños tengan un tercer hijo(a) es de .83. Se concluye que la probabilidad de agrandamiento de familia disminuye cuando la composición de género en los nacimientos es masculino.

**R-112 The potential role of Gtfs on *Candida albicans* and *Streptococcus mutans* Interaction in Early Childhood Caries: a new Gtf connection?** Isadora Z. González-Rosario, Hyun Koo PhD. Escuela de Medicina Dental, UPR-Recinto de Ciencias Médicas.

It is well known that mutans streptococci, primarily *S. mutans*, are strongly associated with dental caries disease. *S. mutans* utilizes dietary sucrose to synthesize large amounts of extracellular polysaccharides, which are essential for cariogenic biofilm formation on tooth surfaces, and is also highly acidogenic and acid-tolerant. Furthermore, *Candida albicans* have been found on saliva and plaque of children with caries. Some species of *Candida* can produce both extracellular polysaccharides and organic acids, and can tolerate acidic environment. Therefore, we hypothesize that the presence of *Candida albicans* acting in concert with *S. mutans* enhances the pathogenicity of dental plaque-biofilm by increasing overall microbial acid and exopolysaccharide production. Our data indicates that *C. albicans* and *S. mutans* bind and interact to each other and may

enhance *S. mutans* accumulation on tooth surface, thereby contributing to the pathogenesis of dental caries.

**R-113 Awake craniotomy in pediatric patient using dexmedetomidine without need of airway instrumentation: case report.** D. Báez, MD; M. Morales, MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Awake craniotomy is a key tool in resection of brain lesions near critical functional regions, particularly the speech area. A number of different regimens may be used for sedation and anesthesia in these cases. There are only a limited number of reports describing anesthetic care of an awake pediatric patient. We report the case of a 13-year-old girl with a history of seizures and a left temporal tumor. Prior to surgery, the neurosurgeon and anesthesiologist extensively counseled the patient and family. Patient received midazolam as preoperative medication in holding area. At OR, standard ASA monitors were placed and dexmedetomidine drip started. Arterial line was placed and bilateral scalp block performed. The infiltration with local anesthetic was sufficient to block pain from the surgical field and the use of opioids was minimal throughout the case. Craniotomy was started and the girl's cooperation during the mapping procedure and subsequent tumor resection was excellent. During the procedure, the brain surface was stimulated by the neurosurgeon to identify areas of functional relevance, while the girl performed different tasks such as talking, answering questions and moving her extremities. We believe this is the youngest patient reported to have undergone this procedure under dexmedetomidine sedation completely awake without need of airway instrumentation. The challenges of sedation and care throughout the procedure are discussed as well as the benefits of an awake technique in reducing the side effects of general anesthesia, facilitate neurological evaluation and shorten hospital stay.

**R-114 Characterization of Motor Vehicle Collision Fatalities in Puerto Rico: 2000-2005.** Bello MI<sup>1</sup>, Pérez CM<sup>1</sup>, García R<sup>2</sup>, Rodríguez-Orenego J<sup>3</sup>. <sup>1</sup>Dpt Biostatistics and Epidemiology, School of Public Health; <sup>2</sup>School of Pharmacy; <sup>3</sup>School of Medicine, MSC, UPR.

Motor vehicle collision (MVC) fatalities in PR, one of the leading causes of death in young people, represent a public health concern. MVC fatalities were characterized over a six-year period in PR according to human, chemical, environmental, vehicular and highway characteristics. Fatalities were identified from the database of the Institute of Forensic Sciences. All fatalities that occurred within a 24-hour period of the MVC between 2000 and 2005 were included for analyses. A total of 2,482 fatalities within 24 hours of the event were identified, representing 73.3% of all MVC deaths. Mortality rates significantly ( $p=0.003$ ) decreased from 12.3/100,000 in 2000 to 9.9/100,000 in 2005. Fatalities were more common among males (79.6%), age

group 15-29 (36.6%), night time (59.2%), weekends/holidays (55.0%), drivers (34.9%) and pedestrians (31.5%). A Poisson regression model showed that mortality risks were significantly higher among people aged 15-29 years (RR=8.0, 95% CI: 6.6-9.7), males (RR=4.2, 95% CI: 3.8-4.6), and MVC in the Arecibo region (RR=1.4, 95% CI: 1.2-1.6). Toxicology results showed that ethanol present in 35.5%, illicit drugs in 8.8%, and the combination in 7.8%. Among individuals with positive toxicology for at least one drug, cocaine was the most frequently detected (83.5%). In spite of the reduction of MVC fatalities in PR, increased traffic safety education and improved prevention and control programs to avoid risky behaviors while driving, especially among young males, should be intensified. Continuing efforts to improve data collection would enhance the monitoring and evaluation of prevailing public policy.

**R-115 A literature systematic review about barriers to access and utilization of reproductive health services in IDU and/or HIV positive women.** M Reyes-Robles<sup>1</sup>, R Dávila-Torres<sup>1</sup>, V Reyes-Ortiz<sup>2</sup>. <sup>1</sup>Maternal & Child Health Program; <sup>2</sup>Environmental Health Program & Walden University.

Objective: Female IDUs and HIV positive require special reproductive health care services. The reproductive, and sexual, rights and needs of this population are usually not recognized nor respected. This study provides a literature systematic review about barriers to access and utilization of reproductive health services in IDU and/or HIV positive women. Design: Relevant articles from 2000-2009 were identified by searching the databases Sciences Direct, PubMed and MEDLINE and a web-page: Scholar Google. Studies based on probabilistic and non-probabilistic samples with all kind of study design were selected. Results: 35 studies were identified; 26 of the studies compliance with the inclusion criteria and were the study sample (74.0%). The most frequent barriers identify in the literature are: a) lack of reproductive health and HIV treatment and drug rehab (18/26); b) attitudes and knowledge of health providers (5/26); c) stigma and discrimination (6/26); d) lack of health intervention program (6/26); e) lack of peers support program (1/26), among others. Conclusion: Lack of a comprehensive health services was identified as the principal barrier in our study. Reproductive and sexual health care services are essential for the prevention of unwanted pregnancies, unsecured abortion, maternal-infant mortality, poverty reduction, and empowerment of the women over their health and rights.

**R-116 Plaque and saliva urease activity levels in children.** Brignoni-Nazario\*, E. Suárez-Pérez, R. Billings, R. A. Burne, A. Elias-Boneta and E. Morou-Bermude. Escuela de Medicina Dental, UPR-Recinto de Ciencias Médicas.

The objective of this study was to evaluate the distribution of urease activity in the dental plaque and in the saliva of children

3 to 6 years of age, and to determine which clinical factors may influence these levels. Methods: Urease activity was measured in dental plaque and saliva from 80 children 3 to 6 years from Puerto Rico. Urease activity was expressed as  $\mu\text{moles urea min}^{-1}\text{mg}^{-1}$ . Sugar consumption was measured using a 24-hour diet recall. Mutans streptococci in saliva were determined by plating on selective media. The data represent baseline data from an ongoing prospective study. Results: Urease activity in plaque ranged between 0.26 to 36.5 units (mean  $4.26 \pm 5.53$ , median 2.8) and in saliva between 0 to 1.17 units (mean  $0.15 \pm 0.26$ , median 0.05). Children with high levels of salivary mutans streptococci (= 105 CFU/ml) had significantly lower levels of urease activity in their plaque compared to children with low salivary mutans levels (t-test:  $P=0.009$ ), but higher levels of urease in their saliva (Mann-Whitney  $P=0.006$ ). Children who had eaten prior to sample collection had lower urease activity levels in their saliva compared to those who had not (Mann-Whitney  $P=0.002$ ). Conclusions: Urease activity in the dental plaque of small children is negatively associated with the levels of mutans streptococci in their saliva, while urease levels in saliva are positively associated with mutans levels. Saliva urease activity can be influenced by whether it is measured under fasting or non-fasting conditions.

**R-117 Teacher's Knowledge: Identification of Risk of Suicide Behaviors in Adolescents.** G Delgado<sup>1</sup>, R Dávila-Torres<sup>1</sup>, A Alonso<sup>1</sup>, C Parrilla<sup>2</sup>. <sup>1</sup>Maternal & Child Health Program; <sup>2</sup>Prevention of Suicide Commission.

Background: The suicide in adolescents is a serious public health problem in Puerto Rico. Objective: To identify the knowledge of identification of risk of suicide behaviors in a sample of intermediate and high school teachers. Method: The study was based in the Bio-psychosocial Conceptual Model. One hundred-seven teachers participated in the study. A self-administered questionnaire was designed to collect information about socio-demographic information and knowledge about biological, psychological and social aspects of the suicide behaviors in the adolescents. Descriptive and Inferential statistics (Chi-square test) were performance to the data analysis. Results: 53% of the participants believe that when an adolescent indicates to want to be killed, him/her won't make it. 55.8% of the participant affirms that some teachers use verbal insults in the class room. 36.2% of the participant affirms that some teachers make fun of the students. Participant's gender, age, civil status, and religion were associated to the knowledge about biological, psychological and social aspects of the suicide behaviors in the adolescents. Conclusion: In general the participants have considerable gaps in the knowledge that would interfere with an adequate early identification of risk of suicide behaviors in adolescents.

**R-118 Knowledge and Attitudes toward Anabolic Steroids in Adults participant in a Gym Fit-**

**ness Program.** Morales-Santiago E<sup>1</sup>, L Troche-Flores<sup>1</sup>, R Dávila-Torres<sup>2</sup>, F Ramírez<sup>3</sup>. <sup>1</sup>Health Education Program; <sup>2</sup>Maternal & Child Health Program; <sup>3</sup>Physical Education Program.

Objective: To identify the Knowledge and the Attitudes toward Anabolic Steroids in Adults that participated in a Gym Fitness Program. Method: Two-hundred fifty adults (>21 years) participated in the study. A self administered instrument was used in the study. Socio-demographic variables, as well as, Knowledge about Anabolic Steroid and Attitudes toward Anabolic Steroids Scales were surveyed between participants. Results: 79.6% of the participants obtained an inadequate knowledge. However, 90% of the participants had a positive attitude toward non use of anabolic steroids. A significant correlation was observed between the Knowledge and Attitudes variables. To higher knowledge more negative attitude toward the non use of anabolic steroids. Conclusion: It is important to develop health education interventions that improve the knowledge in the participants. Additionally, it is necessary to awareness about the health consequences of the anabolic steroids.

**R-119 Comparison in Spirituality and Religion definitions and its effects on health related outcomes: A literature systematic review.** L Martell-Martínez<sup>1</sup>, R Dávila-Torres<sup>1</sup>; VE Reyes-Ortiz<sup>2</sup>. <sup>1</sup>Maternal & Child Health Program, Escuela de Salud Pública Recinto de Ciencias Médicas; <sup>2</sup>Environmental Health and Walden University.

Objective: The lack of clarity in the religion and spirituality definitions can influence in the interpretation of the research results related to health outcomes. Literature has shown that religious orientations are significantly associated to health outcomes. However, peer review articles have not standard definition for any of these concepts. This study provides a literature systematic review to compare the spirituality and religion definitions and how variations could impact health disparities and health promotion in populations. Design: Relevant articles from 2000-2009 were identified by searching the databases ProQuest, PubMed, EBSCO Host, Sciences Direct and MEDLINE. Studies based on probabilistic and non-probabilistic samples with all kind of study design were selected. Additional articles that not included spirituality and/or religion definitions were discharge. Results: 104 full text studies were identified containing a definition of at least one of the terms. Similar but not standardize definition for neither religion nor spirituality was found in most of the articles. Indeed, definitions could increase health disparities as many could not be extrapolated to different faith communities. Conclusion: Although literature shows association between positive spiritual/religious support and improve health outcomes, the way the terms are defined and apply to public health research could cause a results' bias affecting future health promotion strategies and community health outcomes.

**R-120 Mechanistic interplay between HIV-1 Vpr and Tat for enhancing cell survival and viral production in dividing cells.** Miranda-Bucio P., Rivera-Pabón O., Kim B. Escuela de Medicina Dental, UPR-Recinto de Ciencias Médicas.

Human Immunodeficiency Virus type 1 has two main infection target cells. It infects dividing CD4+ T cells, causing premature cell death and contributing to the pathogenesis of the immune deficiency syndrome (AIDS). The other target is macrophages. Unlike CD4+ T cells, HIV-1 infected macrophages do not undergo cell death, for they become a long-living viral reservoir. Infected microglia are believed to secrete toxic viral proteins that damage surrounding neurons, leading to the progression of HIV-1 associated neurocognitive disease. We recently reported that the HIV-1 accessory Tat protein is responsible for this cytoprotective phenotype of the HIV-1 infected macrophages, through the activation of the PI3K/Akt pro-survival pathway. We tested a possible mechanistic interplay between Tat and another HIV-1 accessory protein, Vpr, which induces cell cycle arrest and cell death of the dividing cells in activated CD4+ T cells. For this test we employed a dividing microglia cell line expressing endogenous Tat and transfected this cell with a Vpr-expressing plasmid. A live/dead viability assay was performed to calculate cell death rate. Our study shows that under toxic stress stimuli, cells expressing Tat and Vpr proteins have lower death rates than those expressing Vpr alone. Our preliminary data provides evidence of a possible coordinated mechanism between Tat and Vpr to enhance cell survival and viral replication in dividing cells such as T cells. We postulate that this cytoprotective function of Tat enables HIV-1 to delay T cell death and achieve optimal viral burst size necessary for in vivo HIV-1 spreading and pathogenesis.

**R-121 Parent's perception about environmental and personal barriers toward physical activity promotion in their children.** E Rivera<sup>1</sup>, R Dávila<sup>1</sup>, I García<sup>2</sup>. <sup>1</sup>Maternal & Child Health Program; <sup>2</sup>Health Education Program. School of Public Health.

Objective: To identify the Parent's perception about environmental and personal barriers toward physical activity promotion in their children. Method: The study was based in the Health Belief Model. One hundred seventeen parents participated in the study and parents of children in early and head start. A questionnaire of seven parts was designed to collect the data. T-test, Chi-square, Spearman Correlation and Multivariate Regression were used to data analysis. Results: The participant median age was 32 years old. 57.9% of the participants have bachelor. 67% of the participants reported the weather as a barrier to promote the physical activity in their children. Another barriers identified by the participants were: a) lack of safety places to made physical activity; b) the crime rate; c) the vehicle traffic, among others. The participants with a marital status of divorce perceived significantly more barriers toward

physical activity promotion than the married group. Also, to less cues to action more barriers perceptions was observed toward physical activity promotion in the participants. Conclusion: It is important to attend the barriers identified in the study that interfere with an adequate promotion of the physical activity in the children population.

**R-122 A Case Report to Describe and Illustrate Radiologic Findings of a Rare Pathology: Falciform Ligamentitis.** C. Cortés-Cardona MD, W. Rodríguez-Mojica MD, I. Ojeda-Boscana MD, W. Rivera-Hernández MS IV. University of Puerto Rico School of Medicine, Diagnostic Radiology Department, San Juan, Puerto Rico.

The falciform ligament of the liver is a crescent-shaped fold of the peritoneum extending to the surface of the liver from the diaphragm and the anterior abdominal wall. It contains obliterated umbilical vein. There are few reports in the literature regarding inflammation of the falciform ligament, most which are related to infection. We present a rather unique case of falciform ligamentitis after physical exertion. To our knowledge, it is the first reported of its kind. We will describe specific information of patient's history and physical examination that lead to a suspicion of falciform ligament pathology. Also, we will describe ultrasound and computed tomography findings of this condition. We hope that in the near future this information may aid in diagnosis and in selection of conservative management, as was our case.

**R-123 Access barriers related to healthcare services in Homeless Women: A literature systematic review.** Y Galarza-Pacheco<sup>1</sup>, R Dávila-Torres<sup>2</sup>, V Reyes-Ortiz<sup>2</sup>. <sup>1</sup>Maternal & Child Health Program; <sup>2</sup>Environmental Health Program & Walden University; School of Public Health.

Objective: Health Disparities status is exacerbated by decreased access to healthcare services. This study provides a literature systematic review about barriers relate to the access to use the healthcare services in homeless women. Design: Relevant article from 2000-2009 were identified by searching the databases Science Direct and EBSCO. Studies based on probabilistic and non-probabilistic samples with all kind of study were selected. Adequacy of studies and evidence of access barriers were determined. Results: 5,645 studies were identified; of them, only 173 articles (3%) compliance the inclusion criteria. Nineteen of the 173 studies (11%) identified common barriers of access to healthcare services in the target population. The barriers more common identified in literature were: a) lack of money for pay a bus or transportation; b) a long travel distance between shelters and health clinics; c) limitation in the services hours of the health clinic; d) long waiting line time in the health clinics; e) lack of social support; f) the homeless unaware where they should go for receive health care; g) high cost

of health service; and h) the homeless priority if to satisfy their basic and primary needs than their healthcare services necessity. Conclusions: Multiple barriers were identified. However, the quality of the research design should be improved.

**R-124 Risk Factors of Methamphetamine Utilization in Hispanic Population: A systematic literature review.** E López Toro<sup>1</sup>; R Dávila Torres<sup>2</sup>; VE Reyes Ortiz<sup>3</sup>. <sup>1</sup>General Public Health Program; <sup>2</sup>Maternal & Child Health Program; <sup>3</sup>Environmental Health Program, School of Public Health & Walden University.

Methamphetamine [MA] has been vastly related as an intermediary of illicit drug and as an indicator unhealthy sexual behavior among population. However Hispanic population has lack information to appropriately tailor health prevention programs. The purpose of this study was to identify risk factors for Hispanic methamphetamine abuser after systematic review of literature. DESIGN: Relevant full text articles from 2000-2009 were identified by searching the databases PubMed and Scisearch Direct. Studies based on probabilistic and non-probabilistic samples with all kind of study design were selected. Results: A total of 19 articles were found but only 17 complied with the inclusion criteria defined above. 8 out of 17 articles used MA as the subject of investigation, all others focus rather in other drugs or did not included MA in the analysis. All articles were done at USA, lacking information of Hispanic in their native countries or studying Hispanic as their target population. However, Hispanic risk factors for MA abuse included (a) to be GLBT (b) adolescent or young adult (c) non-safety sexual practices (d) previous use of injecting drugs (e) polydrug use behaviors or history (f) HCV/HIV diagnosis (g) alcohol bingeing (i) homelessness. Conclusion: Hispanics are underestimated population lacking cultural competent programs that help prevent MA abuse. However the literature points are the second most important population, preceded only by whites in the USA. There is an increased need for research among Hispanics in their native countries, which help identify risk factors and epidemiological profiles.

**R-125 Congenital Syphilis as a Consequence of No Prenatal Care: Two Case Reports.** Ingrid Ancalle MD, Arianne Vicens MD, Norma Claudio MD, Pedro Juan Santiago Borrero MD, and Marta Valcárcel MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Congenital syphilis (CS) occurs by vertical transmission to the fetus. Untreated syphilis during pregnancy can lead to stillbirth, neonatal death, deafness, neurologic impairment and bone deformities. Syphilis screening and treatment can be provided at a relatively low cost. Despite its cost effectiveness, the rates of CS increased in the last years. In 2007, Puerto Rico reported 15.6 cases per 100,000 live births. The national total rate was 10.5 cases per 100,000. Case Reports: We report 2 newborns with

clinical findings of congenital syphilis born to women without prenatal care (PNC). In the first case, the mother sought PNC but the obstetrician refused to give the service due to advanced gestational age; she was referred to other public services. The newborn presented bullous skin lesions, hepatosplenomegaly, jaundice, liver dysfunction, thrombocytopenia, anemia and serologic evidence of syphilis. He was treated with penicillin G for 14 days. In case # 2 the mother did not receive PNC, the cause is unknown. The newborn presented palmar and plantar skin lesions, hepatosplenomegaly, thrombocytopenia, serologic evidence of syphilis and neurosyphilis. He was treated with penicillin G, but died at 13 days old after clinical deterioration and seizures. Conclusion: Congenital syphilis is a well known and easily preventable perinatal infection. The rate of CS can be reduced by increasing access to and quality of maternal health services. We report these cases to emphasize that congenital syphilis has a high incidence in PR and cases like these could be prevented by a more accessible prenatal care service.

**R-126 Knowledge and Misconceptions about Immunizations among Medical Students, Pediatric and Family Medicine Residents.** Tañon V<sup>1</sup>, Borrero C, MD<sup>2</sup>, Pedrego Y, MD<sup>2</sup>. University of Puerto Rico, School of Medicine<sup>1</sup>, Department of Pediatrics<sup>2</sup>, San Juan, Puerto Rico.

Background: Previous research has indicated that, despite being the most trusted source of health information for parents, medical students, residents and other health related professionals lack accurate and current knowledge regarding immunization practices. Objective: To evaluate the medical students and primary care residents' knowledge about immunizations. Methods: A self-administered survey was administered to students from 3 medical schools, Pediatrics residents (2 training programs) and Family Medicine residents (2 programs). The data was analyzed using Statistix 8.0. Results: Participants (N=313) included 3rd (59%) and 4th (19%) year medical students and a homogenous distribution of 1st, 2nd, and 3rd year residents. The mean percent of correct answers about immunizations was 62%. The participants showed poor knowledge about indications (61% correct answers), contraindications (46% correct answers) and myths (70% correct answers). Knowledge about immunizations correlated with higher levels of education ( $p < 0.01$ ). Most participants identified conferences (72%) as their primary source to learn about immunizations followed by books (45%) and the internet (31%). They referred to have poor exposure to immunizations in clinical settings. Conclusions: Most medical students as well as Pediatrics and Family Medicine residents do not have the expected knowledge about immunizations including indications, contraindications, and myths. Efforts towards ensuring adequate exposure to immunizations education during the training years is needed in order to eliminate one of the barriers to adequate immunizations of all children.

**R-127 Respiratory illnesses in late preterm infants during the first 6 months of life.** L Pérez<sup>1</sup>, Z Corchado<sup>1</sup>, M Rodríguez<sup>1</sup>, D García<sup>1</sup>, L Medina<sup>2</sup>, A Vicens<sup>2</sup>, N Ortiz<sup>2</sup>, L García<sup>3</sup>, Y Pedrego<sup>2</sup>. UPR School of Medicine<sup>1</sup>, Department of Pediatrics<sup>2</sup>, Neonatology section<sup>3</sup>, San Juan, PR.

Late preterm infants (born 33-35 weeks of gestation) are physiologically immature and at risk for respiratory complications. Despite the preventive measures, respiratory infections continue to be one of the leading causes of infant hospitalizations. Objective: To determine the incidence of respiratory illnesses in a group of late preterm infants during the first 6 months of life. Methods: Parents of late preterm infants born in the University District Hospital from October 2007 through October 2008 were contacted by phone in the six months period after participating in an educational program about prevention of second hand smoking. A short survey was performed including questions about infants' respiratory illnesses. The study was approved by the IRB. Results: Subjects included 32 parents. The mean gestational age of the newborns was 34 weeks (33-35). None of the infants required admission to the intensive care unit in the newborn period. The parents reported that after being home, 71% of the babies had a common cold, 9% bronchiolitis, and 3% pneumonia. Twenty one percent (21%) of the babies visited the emergency room due to respiratory illnesses and twelve percent (12%) required admission. Conclusions: Late preterm infants present respiratory associated illnesses during the first months of life which result in medical expenditures, emergency room visits, and hospital admissions. Educational interventions for parents about preventive measures, including proper hand washing, palivizumab prophylaxis, and second hand smoke avoidance are needed in order to decrease the morbidity associated to these illnesses.

**R-128 Characterization of Body Composition, Physical Fitness and Lipid Profile among Patients with HIV Participating in a Fitness Training Program.** García-Ortega G., Flores-Lopez A.E., Ortiz-Rodríguez A., Ramírez-Marrero F.A., Venegas H.L, La Puerta M. Escuela de Profesiones de la Salud, UPR-Recinto de Ciencias Médicas.

Advances in the control of HIV have given way to a new collection of health problems and functional impairments. Use of highly active anti-retroviral therapy increases the probability of chronic illnesses. Specific and individualized exercises might have a positive impact for improving bodily function and quality of life. The purpose of this project was to assess the effectiveness of exercises in improving metabolic profile, viral profile, body composition, and fitness profile in adults living with HIV who participated in a regular exercise program. Methods: This was a secondary analysis of a database including adults living with HIV who participated in an exercise program at a non-profit organization for nine months. Results: Twenty-eight re-

cords met eligibility criteria. The main changes with exercise within the nine months period were a reduction in cardiovascular risk factors. Varied results were found in strength and endurance variables. No significant changes were found for immunologic variables. Conclusion: Our results showed that the exercise program improves metabolic profile and muscular measures. In addition, it is safe by not affecting the immune system. Supported in part by NIH grant R25RR017589.

**R-129 Factores Sociodemográficos Asociados a la Prevalencia de Pobreza en la Población Menor de 18 Años que Vive en Puerto Rico para el Año 2000.** Morales-González, J., Torres-Degró, A. Ph.D. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

En todos los países el bienestar de los niños está determinado por tres factores, estos son: demográficos, el mercado laboral y las políticas del gobierno; la familia, el mercado y el estado. Este estudio analizará los factores sociodemográficos asociados a la prevalencia de pobreza en la población menor de 18 años que vive en Puerto Rico para el año 2000. Esta es una investigación de tipo descriptiva y correlacional. La población de estudio son los menores de 18 años emparentados con el jefe del hogar y las características del jefe del hogar. Como fuente de datos se utilizó la muestra del 5% de los datos para uso público PUMs, del Censo de Población y Vivienda de 2000. Se encontró que el 58.7% de las personas menores de 18 años vivían bajo el nivel de pobreza para el 2000. Estos se concentran en los municipios del centro de la isla. El 52.6% de los jefes del hogar con menores de 18 años viven bajo el nivel de pobreza. A medida que aumentan en edad disminuye su condición de pobreza. El 70.5% de las mujeres jefas de familia con menores se encuentran bajo el nivel de pobreza. Según aumenta la educación del jefe del hogar disminuye el nivel de pobreza. El 80.2% de jefes del hogar desempleado se encuentra viviendo en pobreza. Además, los jefes del hogar que trabajan en la Agricultura tienen el mayor porcentaje de personas viviendo en condiciones de pobreza. El 90.9% de los jefes del hogar bajo el nivel de pobreza reciben asistencia pública. Se puede concluir que factores sociodemográficos como el tipo de familia, la edad y la educación del jefe del hogar están asociados con la pobreza de las personas menores de 18 años.

**R-130 Análisis de Contraste y Asociación entre las Características Sociodemográficas de los participantes del Programa de Planificación Familiar Título X del Recinto de Ciencias Médicas de la Universidad de Puerto Rico y el patrón de uso de Métodos Anticonceptivos para el año 2007-2008.** Moraima Y. Ríos, Ramón Sánchez, PhD MD, Bethzaida Díaz. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

En Puerto Rico (PR) la planificación familiar, ha sido parte de nuestra historia desde principios de siglo 20. Analizar estos da-

tos contribuye a la creación y seguimientos de Políticas Públicas. Este estudio describió las características sociodemográficas de los participantes del Programa de Planificación Familiar Título X del Recinto de Ciencias Médicas de la Universidad de Puerto Rico (PPFTX-RCM/UPR), asociado al patrón de uso de los métodos anticonceptivos (MA). De igual forma analizó mediante análisis de contraste de medias, análisis de asociación y de significancia las características sociodemográficas de los participantes, y los patrones de uso de los MA durante los años 2007-2008. Se encontró que la mediana de edad fue de 24 años, el 92.1% eran mujeres, el 59.6% cursaron estudios post secundario, el 51.3% reportó ser soltero, mientras que el 65% reportó no tener ingreso y el 50% vivía solo. Se descubrió una asociación entre los MA utilizados y las variables sociodemográficas; aunque el nivel de asociación en dicha relación resultó ser débil. Finalmente se encontró diferencias entre las medias de las variables de ingreso edad y grupo familiar cuando se tomaba en consideración el MA seleccionado. Se logró presentar una perspectiva que aunque no se puede generalizar a la población de PR recoge el comportamiento de las mujeres no casadas y su patrón de uso de MA. En contraste con previas investigaciones se encontró que la esterilización femenina no fue el principal MA utilizado y los anticonceptivos orales resultaron ser el método de mayor uso.

**R-131 Child Vaccination: An Investigative Approach toward Public Knowledge.** N Rivera<sup>1</sup>, L Aviles<sup>1</sup>, E Basora<sup>1</sup>, H López<sup>1</sup>, L García<sup>2</sup>, Y Pedrogo<sup>2</sup>. University of Puerto Rico, School of Medicine<sup>1</sup>, Department of Pediatrics<sup>2</sup>, San Juan, Puerto Rico.

Background: In the United States only 26% of the children receive all immunizations at the recommended age in spite that vaccination has proven to be one of the most effective tools in preventive medicine. The factors that influence compliance have yet to be determined. Objective: To determine immunization practices in caretakers of small children and assess misconceptions about vaccines. Methods: An anonymous survey was answered by caretakers of children 0 to 5 years-old who received services at Women Infant Children (WIC) clinics in the Mayaguez, Arecibo, and San Juan regions. Results: Subjects included 162 caretakers (93% females, 7% males) with a mean age of 28 years (range 15-70). Ninety-three percent had an education of high school or more. Thirty-one percent (31%) had the government health insurance, 65% a private insurance, and 4% did not have medical coverage. The children are being vaccinated at the immunization clinics (71%), the pediatrician office (29%), or health fairs (1%). Although 95% of the caretakers referred having vaccinated their children, 12% missed appointments mainly due to the child being sick. These caretakers could only identify (>70% correct) 6 out of 15 vaccine preventable diseases. Twenty-five percent (25%) of the caretakers thought that vaccines may cause autism and 78% that children cannot get their immunizations if they have low grade fever or a cold.

Conclusions: Caretakers do not have the expected knowledge about immunizations. Efforts towards ensuring adequate education to caretakers are needed in order to eliminate one of the barriers to adequate immunizations of all children.

**R-132 Factores que influyen en la intención de donar órganos en estudiantes de medicina.** Sánchez-Gómez María C, Rios-Mota Ruth. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

El trasplante de órganos es considerado como un tratamiento para salvar vidas. Sin embargo, las tasas de donación de órganos continúan extremadamente bajas. Es importante hallar factores que favorezcan el incremento de donantes. El objetivo general fue determinar los factores que influyen en la intención de donar órganos en estudiantes de medicina de una institución académica en Puerto Rico. El marco conceptual que guió el estudio fue el modelo transteórico de la conducta. El modelo clasificó a los estudiantes en 4 etapas Precontemplación, contemplación, preparación y acción. Esta investigación se llevó a cabo con análisis de datos secundarios. La muestra incluyó 230 estudiantes de medicina, incluidos en la base de datos del estudio "Knowledge and attitudes toward organ donation: A survey among medical students in Puerto Rico. Los resultados indicaron que: El género femenino reportó mayor intención en donar sus órganos, los estudiantes que profesan la religión protestante, son más dados a donar sus órganos. El conocimiento resultó asociado a pertenecer a la etapa de precontemplación. La donación de sangre, la actitud, el abordar el tema acerca de la donación de órganos con familiares y amigos tiene asociación con pertenecer a la etapa de preparación. El conocer a alguien que haya donado sus órganos resultó estar asociada a la etapa de acción. Se recomendó: Alentar la discusión de la donación de órganos con familiares y amigos. Incrementar la información acerca de la donación.

**R-133 The Puerto Rico Biomedical Research Program.** Fernández-Repollet, E; García, O; Schwartz, A. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Studies in science education highlight the importance of informal learning to stimulate the interest of students in science. The Puerto Rico Biomedical Research Education Program (PR-BREP) was initiated in 2003 through a grant of the National Center for Research Resources (NCRR) with the goal to expose Hispanic/Puerto Rican children to biomedical research. The program focuses on two initiatives: a Comic Book Series and a Summer Internship Program. Special emphasis is given to health conditions such as diabetes, heart diseases, hypertension, and HIV, which are the leading causes of death in Hispanic/Latino groups. Since 2004, over 64 public and private middle schools and over 2,000 students have been impacted by the program. The Summer Internships provides hands-on experiences in biomedical research, and introduces

local translational scientists. Eight Summer Internships have been held since 2003 with applications tripling the enrollment capacity. Two hundred students from 38 schools, representing six of the seven School Regions across the Island have participated in the Internships. Advisors include researchers, science teachers, pharmaceutical representatives, non-profit organizations, and government agencies. Professional surveys and evaluations confirmed the positive impact of these informal tools in developing interest in science.

**R-134 Inconsistency Between Video Games Use Patterns and Parental Supervision in a Clinical Sample of Hispanic Adolescents.** Luz N. Colón-de Martí, MD, Roberto Gutiérrez, MD, Alexis González, MD, Linnette Rodríguez, MSc PhD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Video games have become a popular, appealing, and accessible entertainment among adolescents. Some parents consider them games, which may lead to some believing that there is no need for supervision. Although some video games are educational, there are others with a high content of violence. Lack of appropriate supervision during adolescence, a crucial stage of development, and exposure to violence may lead to serious behavioral consequences. There is also concern about time spent playing video games and the subsequent neglect of more developmentally-appropriate activities, such as academically enriching activities. Self-administered questionnaires were used to assess video game use patterns and parental supervision among 55 adolescent patients 13-17 years old (mean age 14.4 years; 56.4% males) from a psychiatry clinic and their parents. Inconsistencies were found between the reported parental supervision of video game use and the actual patterns of use among adolescents, particularly regarding amount of time permitted to play and allowed video game rating. Inconsistencies were greater when comparisons by gender were performed. In addition, 40% of the participants reported video game playing had interfered with their academic performance. This study underscores the need for parental monitoring and consistent enforcement of rules about adolescent's video games use. It also supports the relevance for clinicians to address gender-based parental supervisory styles in the evaluation and treatment of adolescents.

**R-135 Outcomes of Glycemic Control in Hispanic Geriatric Patients with Diabetic Admitted to a General Ward in a Community Hospital in Puerto Rico.** Pérez-López, S., MD<sup>2</sup>, Maldonado-Rodríguez, M., MD, MPH<sup>1</sup>, Torres-Sempritt, E., MD<sup>2</sup>, Millán, I., MD<sup>2</sup>, Torres-Torres, N., MD<sup>1</sup>. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Diabetes Mellitus (DM) is one of the most prevalent medical conditions among Hispanics, and one of the most common

comorbid conditions in hospitalized patients. Although previous studies have shown poorer outcomes among hospitalized patients with uncontrolled glucose, more recent data have shown increased mortality associated with tighter glucose control. Most of these studies have under representation of Hispanics, have been done with critically ill/surgical patients, and do not emphasize in geriatric population. This study is a secondary data analysis of a yet unpublished study in which we evaluated the effect of glucose control in geriatric patients with diabetes who were admitted to a general ward in a community hospital in Puerto Rico. A total of 502 (57.3%) geriatric patients were identified and evaluated from the original databank (N=875). Sample was stratified by age as follows: 65-74 y/o (45.6%), 75-84 y/o (35.9%) and  $\geq 85$  y/o (18.5%), and primary and secondary outcomes were evaluated as a function of glucose control. Uncontrolled glucose was present in 56% of the patients but no association with poorer outcomes was found, except for a non statistically significant tendency for Acute Coronary Syndrome as a complication, more marked in the 75-84 y/o group, and a decreased probability of having hypoglycemia (OR 0.6, 95%CI 0.3-0.9). In conclusion, poor glucose control seems to be associated with a tendency for decreased risk of hypoglycemia and for higher risk of ACS as complications among geriatric patients with diabetes admitted to a general ward.

**R-136**     **La institucionalización de las personas de edad mayor en Puerto Rico, Proyecto PREHCO 2002 al 2008.** AL Dávila, M Bustillo, E Ruiz-Cora, L Santiago-Andujar, A García, M Larriuz. Escuela de Salud Pública, Universidad de Puerto Rico; A Palloni, Universidad de Wisconsin Madison.

El envejecimiento de la población ha sido uno de los cambios demográficos más significativos que ha experimentado la sociedad puertorriqueña en las últimas décadas. El Proyecto Condiciones de Salud de los Adultos Mayores en Puerto Rico, PREHCO por sus siglas en inglés (Puerto Rican Elderly Health Conditions), es un estudio longitudinal representativo de la población de 60 años o más llevado a cabo entre 2002-2008. La base de datos de PREHCO provee la oportunidad de examinar y puntualizar la evolución de los participantes entre 2002-2008. En 2002 se entrevistaron 5333 personas en sus hogares para una tasa de respuesta de 90.7% en la segunda ronda. En 2008 el 84.1% vivía en hogares en ambas fechas. Menos de uno por ciento pasó a vivir en una institución y 15.1% pereció entre las fechas señaladas. De los fallecidos o las fallecidas 1.2% estuvo institucionalizado o institucionalizada antes de morir. Este trabajo tiene como objetivo elaborar un perfil de los institucionalizados y las institucionalizadas y descifrar las razones más importantes para la institucionalización además de describir las características del proceso. Pretende comparar los perfiles de los y las que estuvieron institucionalizados o institucionalizadas con los y las que permanecieron en sus

hogares. Aún cuando la institucionalización parece aumentar con la edad, ser ligeramente más frecuente en las mujeres y en muchos casos ser recomendada por el personal médico o sanitario, ésta no es una práctica expandida en Puerto Rico ya que varias fuentes de datos evidencian que cerca de dos por ciento de la población de 60 años o se encuentra fuera de los hogares.

**R-137**     **Evaluación del Conocimiento acerca del Programa de Cernimiento Neonatal en madres participando del Programa de Enfermeras Visitantes bajo Título V del Departamento de Salud de Puerto Rico.** A. Alonso, M. H. Rodríguez, V. Díaz, Y. Lozano, T. Taboas. Instituto de Deficiencias en el Desarrollo, Escuela Graduada de Salud Pública, UPR-Recinto de Ciencias Médicas.

Las malformaciones congénitas en Puerto Rico se monitorean antes de que el neonato deje el hospital a través de un Programa de Cernimiento Neonatal creado bajo la ley # 84 de 1987. Esta investigación consistió en evaluar el conocimiento y las actitudes hacia el proceso de cernimiento neonatal de una muestra por disponibilidad de 517 madres participando en el Programa de Enfermeras Visitantes de Título V de la División de Madres, Niños y Adolescentes del Dpto. de Salud de PR. Un diseño de tipo transversal observacional fue utilizado. Información de las madres fue obtenida a través de un cuestionario autoadministrado durante las visitas de rutina de las enfermeras. El personal de enfermeras visitantes fue previamente adiestrado en la administración del cuestionario. Los resultados demuestran que la mayoría de las participantes (69.7%) fueron de 21 años ó menos, con una edad promedio de 20.92 (+/- 5.52). El 21.7% de las madres participantes señalaron no haber recibido información del cernimiento neonatal durante el nacimiento de su primer hijo/a. La mitad de las participantes aseguró conocer acerca del Programa de Cernimiento Neonatal en Puerto Rico. Esta información fue ofrecida a las madres por enfermeras (55.9%) ó por un médico (26.1%) después del nacimiento. Los resultados también mostraron que 22.4% de los participantes tienen conocimiento de las condiciones incluidas en el Programa de Cernimiento Neonatal. Estos datos sugieren la necesidad de fortalecer la divulgación del programa y el conocimiento de las condiciones cernidas en el Programa de Cernimiento Neonatal en todo Puerto Rico.

**R-138**     **HLA Matching and Heart Transplant: Effect in Rejection and Survival.** Consuelo Climent, Héctor Banch, Cruz María Nazario, Velda J. González, Sara Gorbea, Jeamarie Pascual. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

HLA matching is rarely considered for heart transplant. Studies suggested that rejection and survival after heart transplant is influenced by the HLA mismatch. We evaluate the effects of

HLA-A,B and DR mismatch in transplant rejection and survival in 80 heart transplants performed at the Cardiovascular Center of Puerto Rico and Caribbean. A total of 67 consecutive recipients were analyzed for rejection and survival with at least twelve months follow-up. Of 67 transplants, there was no recipient with zero HLA-A, B mismatch and one had one, 17 (25%) had two and 22 has three (33%) HLA-A, B mismatch. Twenty-seven (40%) recipients had 4 HLA-A,B mismatch. There were five recipients with zero HLA-DR mismatch, 30 (46%) had one and 31 (47%) had two HLA-DR mismatch. Twenty seven (40%) recipients had rejection. Twenty five rejection episodes occurred in the first three months after transplant (89%). There were neither statistically significant association between HLA-A,B mismatch and rejection ( $p=0.36$ ), nor for HLA-DR mismatch and rejection ( $p=0.37$ ). There was a borderline statistically significant ( $p=0.07$ ) difference between HLA-DR mismatch and female recipient. Rejection was more frequent in female recipients ( $OR=1.66$ ,  $p=0.35$ ). Nine recipients died (14%). There was no statistical association between HLA mismatch distribution and mortality for HLA-A,B ( $p=21$ ) and HLA-DR ( $p=0.71$ ). Our results indicate that the probability of rejection or death after heart transplantation is not influenced by the extent of HLA mismatch. However, although not statistically significant, female recipients had a greater possibility of rejection.

**R-139 The Use of the High Fidelity Simulator in the Evaluation of Medical Students Clinical Skills.** Nerian Ortiz MD, Belinda Beauchamp MD, Yasmin Pedrego MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

**Background:** Simulation in medicine is a useful tool for assessing clinical competencies. The Liaison Committee on Medical Education expects students to have simulation experiences in the curriculum. Integration of simulators has been encouraged to be used early in the medical career. The Clinical Skills courses have incorporated the human simulators to strengthen clinical skills such as history and physical exam. **Description:** From 2008-10 a formative activity using the simulator was implemented in The Introduction to Clinical Skills and Fundamentals of Clinical Diagnosis courses. First year medical students review cardiac and pulmonary sounds. This skill is reinforced during the second year when students are exposed to designed clinical scenarios with cardiac and respiratory pathologies. After students interventions, case discussions with faculty members were performed. **Evaluation:** 107 students participated in the activity each year. A hundred percent agreed that the use of the simulator allowed a better understanding of clinical skills and concepts studied during first and second year basic sciences courses. A ninety percent of the students agree that formative activities using the human simulator should be used in clinical correlations in the basic sciences courses. **Conclusions:** The use of the simulator early in the medical career with longitudinal evaluations has been an excellent tool to strengthen

clinical skills before entering the clinical years. More formative activities using the human simulator will serve to reinforce skills without any harm to the patient.

**R-140 Wolbachia and Oogenesis in *Dirofilaria immitis*.** W. J. Kozek<sup>1,2</sup>, C. C. Cangani<sup>2</sup> and N. Santiago<sup>3</sup>. School of Medicine, RCM<sup>1</sup>, <sup>1</sup>Department of Microbiology and Medical Zoology, <sup>2</sup>Central Electron Microscopy Unit, <sup>3</sup>Department of Pathology.

Many filariae of human and veterinary importance harbour Wolbachia endosymbionts which are essential for normal development of microfilariae, provoke inflammatory responses in the vertebrate host and offer a strategy for treatment and control of filariasis. In our ongoing studies on Wolbachia, we are trying to determine if the rachis is the source of Wolbachia for oocytes, as it is in other filariae. The ovaries of adult *D. immitis* females were dissected and examined by light and transmission electron microscopy to define the Wolbachia-rachis-oocyte relationship. The ovary of filariae consists of three zones: the germinative zone, the maturation zone containing multi-branched rachis and the growth zone where the oocytes detach from the rachis and mature. In many nematodes, the rachis is a cytoplasmic trunk to which oocytes are attached. In *D. immitis*, the rachis is a delicate cytoplasmic reticulum that extends into the germinative zone, apparently contacting each oocyte, but these processes lack Wolbachia. In contrast, the primary germinal cells and the primary oocytes were heavily infected with Wolbachia. During maturation, the number of oocytic Wolbachia decreases with concomitant proliferation of ribosomes and mitochondria. These observations suggest that: (i) in *D. immitis*, vertical transmission of Wolbachia is principally from the primordial germinal cells; the transmission from the rachis may be insignificant; (ii) Wolbachia in primary germ cells should be the principal target for chemotherapy and (iii) in the oocytes, the initial metabolic role of Wolbachia may be replaced by the mitochondria.

**R-141 Infantile Spasms: Case Series Review.** J. González MD, and M. Vázquez MD. UPR-MS, School of Medicine, Department of Neurology, Child Neurology Section, San Juan, P.R.

Infantile spasm, a catastrophic form of epilepsy, constitutes 2% of childhood epilepsies but 25% of epilepsy with onset in the first year of life. They can be classified as symptomatic, cryptogenic, or idiopathic. **Objective:** Determine the incidence, prenatal factors, neurological exam, and neuroimaging of patients with infantile spasms and classify them according to these findings. **Methods:** A retrospective medical records review of patients diagnosed with infantile spasms in our institution from July 2007 through July 2009. **Results:** Ten patients were diagnosed with infantile spasms, 3 were female and 7 were male. Mean age at diagnosis was 6.5 months. Seventy percent of patients were preterm. Fifty percent of mothers had some

prenatal complication. Fifty percent of patients had a previous diagnosis of epilepsy before onset of spasms. Abnormal neurological examination including hypotonia and developmental delay was found in 70% of patients. Sixty percent of patients had an abnormal brain MRI. All EEG were abnormal, hypsarhythmia was found in 70% of patients, and none of them responded to pyridoxine. Eighty percent of cases were symptomatic, and 20% were idiopathic. All patients received either oral steroids or adrenocorticotrophic hormone (ACTH) as initial treatment. ACTH was used in 7 patients, steroids in 6 patients, and clonazepam in 8 patients. Conclusion: The incidence of infantile spasms in our institution was higher among premature male patients with prenatal complications. Symptomatic infantile spasms were the most common etiology, with most patients having an abnormal neurological examination and neuroimaging.

**R-142 Amplification and Direct Sequencing of UPR-Cayey Library Fungal rRNA Genes Utilizing Previously Identified Markers.** Román-Avilés, B., Lugos-Robles, R., Pérez-Gracia, D., Cruz-González, M., Maldonado-Rivera, B., Bernard-Flores, M.A., and Negrón-Santini, S. Universidad de Puerto Rico en Cayey.

The activity of different environmental factors may cause some changes in physical and chemical properties of library collections which in turn will affect our health. In this study we intend to discuss one of the biological factors as a main external group of factors that influence library materials. Of interest here is the biological deterioration of library materials due to the activity of fungi and their control. Our objective is to sample the UPR-Cayey library for the presence of fungi in the surrounding environment. Samples were taken from library areas where books are stored and managed and are frequently visited by students. Data such as relative humidity and temperature was collected. Samples were plated using potato dextrose agar and other nutritive media for further evaluation of fungi and characterization. During the August to December sampling we isolated and purify over 80 different samples corresponding to Circulation, Family, and the Reserve/ Reference Rooms of the Victor M. Pons UPR-Cayey library. Results have shown a predominance of the genera *Aspergillus* spp., *Rhizopus* spp., and *Penicillium* spp the principal organisms that promote and develop allergies in libraries. Pathogens identified will be included in a plasminogen activator (PA) screening for secretion of novel potent and fibrin-specific PAs. PAs are proteases of immense clinical importance as they convert plasminogen into plasmin which dissolves fibrin clots (thrombus). The PAs so detected will be purified and characterized as part of an NIH-INBRE proposal. (Supported by PR-LSAMP, BioMINDS and NIH-INBRE-091043216)

**R-143 Inhibition of Arginase alters the response of rat airway smooth muscle to Electrical Field**

**Stimulation but not to Acetylcholine Stimuli.** Rivera, R., Arbelo, F., Torres, I., Dexter, D., Santacana, G. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Arginase (Arg) regulates the metabolism of L-arginine (L-arg) in smooth muscle. L-arg catabolism by arginase into ornithine is more significant than its catabolism by Nitric Oxide Synthase (NOS) into citrulline and Nitric Oxide (NO). The regulation of Arg activity may be directly involved in the availability of L-arg for the synthesis of NO a major endogenous relaxant of smooth muscle. Arg inhibition is known to increase nitric oxide production in endothelial cells. To ascertain the involvement of Arg in the regulation of airway smooth muscle contractility we have investigated the contractile response of the rat trachea (RT) to acetylcholine (ACh) and electrical field stimulation (EFS) using the Arg inhibitor 5uM N-Hydroxynor-L-Arginine (norNOHA). Seven RTs were isolated from 300g male Sprague Dawley rats. The RTs were attached to a force transducer in an organ chamber containing Krebs Ringer. RTs were stimulated using incremental doses of acetylcholine or EFS (2Hz at 40VDC). The RTs were then incubated with nor-NOHA for 1 hour and a second set of stimulations was done. The results show that nor-NOHA has no effect on the sensitivity or maximal response of RT to ACh. nor-NOHA reduced the maximal contractile response to EFS by 50%. The results strongly suggest that inhibition of arginase reduces the response of RT to EFS but not to direct ACh stimulation. EFS stimulates RT contraction by releasing ACh from the intramural nerve plexus, the experiments indicate that a neural source of NO may be one of the main regulators of airway smooth muscle relaxation.

**R-144 Differences by Gender in the association between Labor Market Factors and Health Insurance Status for the 18 to 64 age group in Puerto Rico for the year 2008.** Heriberto Marín, PhD. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Background: In the case of Puerto Rico, little is known about how factors related to the labor market play a role in explaining the health insurance status of individuals and how they may interact with gender. Objective: To measure the association between labor market participation, employment status, type of occupation, and labor income with health insurance status and how this association may differ between genders for the 18 to 64 age group in Puerto Rico. Methods: This is cross-sectional and observational study in were a secondary data analysis was performed using the Public Use Microdata Sample (PUMS) file of the Puerto Rico Community Survey (PRCS) for the year 2008 provided. Then, logistic multivariate regressions were performed stratified by gender. Preliminary findings: In general, men have a larger risk of been uninsured than women (RR=2.3; p<.001). But, risk differs depending on the labor market characteristics of the individ-

ual. For example, people self-employed and working in private companies have a higher probability of been uninsured compared to those in the public sector and out of the labor market. But, men that are self-employed (RR=5.0;  $p<.001$ ) or work in a private company (RR=4.2;  $p<.001$ ) have higher risks of been uninsured than women self-employed (RR=1.4;  $p<.001$ ) or working in a private companies (RR=1.5;  $p<.001$ ) compared to those out of the labor market. Conclusion and Recommendations: In implementing policies directed to cover the uninsured population in Puerto Rico it is important to take into account the labor market characteristics and gender of the individuals.

**R-145 The Impact of Susceptibility Testing in the Indicated Use of Caspofungin in a Puerto Rico Tertiary Hospital: a Pre and Post Study.** E. Negrón, A. Rodríguez, M. Pagán, W. Maldonado, N. Morales, J.J. Hernández. Escuela de Farmacia, UPR-Recinto de Ciencias Médicas.

Background: Echinocandins such as caspofungin, are the best alternatives for fungal infections in critically ill patients, only when used as indicated and as a second line agent for susceptible *Candida* spp. The purpose of this study is to evaluate the impact of antifungal susceptibility Vitek-2 Compact® technology (started at Jan, 2008), for the use of caspofungin. Objectives: The primary objective is to evaluate if there are differences in hospital adherence to caspofungin labeled indications after the intervention. Also, this study compares the effects in patients' length of stay and therapy duration. Methods: This retrospective, pre-and-post intervention study was conducted at a 200 beds and 6 ICU beds tertiary hospital in San Juan, PR. The study sample was all 51 patients that received caspofungin between January 1st, 2007 and December 31st, 2008. Results: Of 51 patients treated with caspofungin in the past two years, 48 medical records were reviewed, (pre-25, post-23) which resulted in a 36% and 31% of labeled indication use, respectively. In the post intervention group, the non-labeled indication was less supported by prior antifungal therapy (88% vs. 74%), but a longer duration of prior fluconazole was noted (7 vs. 12 days). No reduction in length of stay, but shorter caspofungin therapy duration was noted post-intervention. Conclusion: This study showed that prescription pattern for caspofungin were similar in both periods, before and after the implementation of a susceptibility testing technology. Approved by IRB on 3/3/09 protocol number: A7610109

**R-146 El Uso de Tamiflu en Recién Nacidos de Madres Con Influenza A: Reporte de Dos Casos.** Inés García, M.D. FAAP, Lourdes García, MS-CCC SLP & Zilkia Rivera, PhD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

La OMS declaró al virus H1N1 como una pandemia. Ésta es una cepa del virus no reportada en humanos ante la cual la po-

blación ha presentado poca inmunidad. Mitigar sus efectos se ha convertido en prioridad para la salud pública. Tamiflu es el principal medicamento utilizado para síntomas asociados al H1N1. Investigaciones señalaron que niños que recibieron el medicamento para la gripe aviar sufrieron efectos secundarios (náusea, insomnio, pesadillas). Otros estudios reportaron presencia de síntomas neuropsiquiátrico (pobre concentración, inhabilidad para pensar claramente, problemas de sueño). Usualmente, no se recomienda el Tamiflu para mujeres embarazadas ya que se desconocen los efectos en el feto. En PR, se han reportado varias muertes, entre éstas, 2 mujeres embarazadas que recibieron el Tamiflu. Por su cuadro médico, ambas tuvieron bebés prematuros quienes requirieron la continuación del tratamiento y su ingreso al NICU. En follow-up clinics, los neonatos fueron evaluados en áreas del desarrollo. En patología de habla-lenguaje se administró la prueba Bzoch-League Receptive-Expressive Emergent Language Scale, II- Ed., obteniendo ambos casos un 100% de ejecución a nivel receptivo y expresivo para su edad corregida. En psicología, ambos pacientes fueron evaluados con la Bayley Developmental Scale, II-Ed. obteniendo un Mental Developmental Index que establece su desarrollo dentro de los límites normales. La ausencia de datos sobre los efectos del Tamiflu para los neonatos requiere de investigación para conocer su impacto en el desarrollo de los niños expuestos a este medicamento durante el periodo pre y postnatal.

**R-147 Efectos en el Embarazo de la Preparación y Manejo Inadecuado de los Alimentos: Claves para la Acción y Prevención de Daños a la Salud de la Embarazada.** Durán-Santini I., Reyes-Roble M., Mojica-Hernández L.B., Otero-Cordero C., Reyes-Ortiz V.E. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Durante la última década, la seguridad de los alimentos ha cobrado importancia como un problema de salud pública. La incidencia de enfermedades transmitidas por alimentos está aumentando mundialmente. Existe evidencia que indica que muchos casos ocurren como resultado del manejo y preparación inadecuado de los alimentos. Las poblaciones de más alto riesgo incluyen a las mujeres embarazadas. A pesar de que la mujer embarazada no está inmunosuprimida en el sentido tradicional, los cambios inmunológicos del embarazo la pueden inducir a un estado de susceptibilidad aumentada a ciertos patógenos intracelulares incluyendo virus, bacterias y parásitos. El buen manejo de los alimentos es esencial para prevenir que éstas puedan contraer infecciones transmitidas por alimentos, tales como, salmonelosis, toxoplasmosis, infecciones por *Echerichia coli*, Hepatitis A, y listeriosis. El Departamento de Salud de Puerto Rico adopta en el Reglamento General de Salud Ambiental #6090 las recomendaciones de la Administración de Drogas y Alimentos incluidas en el Código de Alimentos. Sin embargo, se descubre una brecha pues éste no promueve las prácticas seguras de preparación

de alimentos en el hogar. Muchas de las enfermedades transmitidas por alimentos se pueden prevenir por lo tanto la estrategia ambiental propuesta contiene las claves para la acción dentro de la población de mujeres embarazadas. Como parte de las estrategias para lograr la seguridad alimentaria, se propone el informar a los consumidores acerca de los principios básicos de manejo de alimentos en el hogar entre otros.

**R-148 Simultaneous determination of xylazine, morphine, codeine, 6-monoacetylmorphine, cocaine and benzoylecgonine in postmortem blood by Ultra Performance Liquid Chromatography/tandem mass spectrometry.** Kazandra Ruiz-Colón<sup>1</sup>, Margarita Meléndez<sup>2</sup>, Francisco Dávila<sup>2</sup> and Joseph Bloom-Oquendo<sup>1</sup>. Medical Sciences Campus-University of Puerto Rico<sup>1</sup>, Institute of Forensic Sciences of Puerto Rico<sup>2</sup>.

Xylazine commonly call “the anesthetic horse” has been found in combination with morphine and 6-monoacetylmorphine (heroin metabolites), codeine, cocaine and benzoylecgonine (cocaine metabolite) in 9 postmortem cases between 2003 and 2007 in the Toxicology Laboratory at Instituted of Forensic Sciences. In all those cases xylazine was determined to be the cause of death. The analytical results of these cases were obtained from separate analysis for each class of drugs. The results obtained were labor-intensive, time-consuming and consumed a lot of sample. In order to determine simultaneously all these drugs, a selective, rapid and sensitive ultra-performance liquid chromatography-tandem mass spectrometry (UPLC-MS/MS) method was developed using a small sample volume of postmortem blood. Postmortem blood was pretreated for protein precipitation with acetonitrile. The separation was performed on an Acquity UPLC HSS T3 1.8  $\mu$ m 2.1 x 50 mm column with a mobile phase consisting of 0.1% formic acid in water and acetonitrile at a flow rate of 0.5 mL/min. The total run time was 2.5 min. The detection was performed on a triple-quadrupole tandem mass spectrometer by multiple reaction monitoring (MRM) mode via electrospray ionization (ESI). This methodology is appropriate for application in clinical and forensic toxicology laboratories for the determination of these compounds in situations where the sample is scarce.

**R-149 Ephexin interaction with EphA receptors and its phosphorylation after Spinal Cord Trauma in adult rats.** Odrick R. Rosas-Virella, Aranza I. Torrado, and Jorge D. Miranda. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Failure of axon regeneration after traumatic spinal cord injury (SCI) is attributable in part to the presence of inhibitory molecular interactions. Recent evidence demonstrates that activation of Eph signaling pathways leads to modulation of

growth cone dynamics and repulsion through the activation of ephexin, a novel guanine nucleotide exchange factor (GEF). In this study, we determine the expression profile of ephexin after a moderate spinal cord contusion at thoracic level (T10) in young adult rats. Western Blot studies showed increase protein expression in injured rats at 2, 4, and 7 DPI when compared to control animals. The protein levels returned to normal levels at 14 and 28 DPI. Expression of ephexin was noticeable in neurons, axons, and reactive astrocytes. Also, co-localization between ephexin and EphA3, A4 and A7 receptors in the injured spinal cord was observed. These results demonstrate the presence of ephexin in the adult spinal cord and a potential modulation of actin-myosin cytoskeleton through the interaction of EphA-ephexin. Moreover, we show for the first time the activation pattern of ephexin after contusive SCI, with preliminary results that suggest an increase in phosphorylation at 2 and 14 DPI. Collectively, our data supports our previous findings on the putative non-permissive roles of Eph receptors after SCI.

**R-150 Retos del Apresto para la Evaluación bajo el Contexto Político, Social y Económico.** M. Gleason, C. Noboa, E. Rivera y M. Sanchez. Centro de Investigación y Evaluación Sociomédica, Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Actualmente, el mundo atraviesa por una crisis económica. Las limitaciones en los recursos disponibles han impactado la política pública en cuanto a la asignación de fondos a organizaciones que ofrecen servicios de salud. Puerto Rico se encuentra ante el reto para desarrollar intervenciones exitosas con la menor cantidad de recursos posibles. Por esta razón, la evaluación es una herramienta para proveer información útil sobre la efectividad de programas. Según la fundación Robert W. Johnson, involucrar a las organizaciones incrementa la probabilidad que los resultados serán utilizados para el aprendizaje, la toma de decisiones y desarrollo organizacional. Actividades: A través del Centro de Investigación y Evaluación Sociomédica, colaboramos con programas en el desarrollo de su apresto para la evaluación. Los servicios que ofrecemos incluyen: desarrollo de un “assessment” inicial, desarrollo de estrategias para motivar e involucrar a la organización en el proceso evaluativo y asistencia técnica. Los programas con que actualmente colaboramos son: Jóvenes de P.R. en Riesgo; Oficina de Desarrollo Académico, RCM; y Programa Educativo sobre Abstinencia en P.R. Resultados: A partir de esta colaboración se han desarrollado para estos programas: Modelo Lógico, Plan de Evaluación, instrumentos de evaluación y la capacitación del personal. Impacto: En términos generales, hemos incrementado el apresto de la organización hacia la evaluación. Se ha aumentado la utilidad, relevancia y credibilidad de resultados evaluativos que ayudan en la toma de decisiones, dirigidas al uso de programas científicamente válidos en la organización.

## • Oral Presentations •

**R-151 Combined grape polyphenols as breast cancer preventives.** Castillo-Pichardo, L.<sup>1</sup>, Martínez-Montemayor, MM.<sup>2</sup>, Schlachterman, A.<sup>2</sup>, Otero-Franqui, E.<sup>2</sup>, Martínez, JE.<sup>2</sup>, Wall, KM.<sup>2</sup>, Dharmawardhane, S.<sup>1,2</sup>. Escuela de Medicina, Recinto de Ciencias Médicas.

Grape polyphenols have been widely studied due to their cancer preventive properties. However, much of these studies have focused on individual polyphenols at high concentrations. We show that combined grape polyphenols are more effective than individual resveratrol, quercetin, or catechin at inhibition of cell proliferation, cell cycle progression, and cell migration in the low metastatic ER $\alpha$ (-), ER $\beta$ (+) MDA-MB-231 and the highly metastatic ER(-) MDA-MB-435 human breast cancer cell lines. Combined grape polyphenols also induced apoptosis by increasing caspase 3 activity and inhibiting survival signaling. The combined effect of dietary grape polyphenols was also tested on progression of mammary tumors in nude mice created from green fluorescent protein (GFP)-tagged MDA-MB-231 and MDA-MB-435 cells. Fluorescence image analysis of primary tumor growth demonstrated a statistically significant decrease in tumor area by dietary grape polyphenols. Molecular analysis of excised MDA-MB-435 tumors demonstrated that reduced mammary tumor growth may be due to upregulation of FOXO1 (forkhead box O1) and NFKBIA (IkappaB $\alpha$ ), thus activating apoptosis and potentially inhibiting Nf $\kappa$ B (nuclear factor kappaB) activity. Image analysis of distant organs for metastases demonstrated that grape polyphenols reduced metastasis especially to liver and bone. Overall, these results indicate that combined dietary grape polyphenols are effective at inhibition of mammary tumor growth and site-specific metastasis.

**R-152 Identification and Characterization of RNA Binding Proteins that Bind to the hIL-3 ARE in Jurkat Leukemic T Cells.** J. A. González<sup>1</sup>, A. López<sup>1</sup>, L.A. Estrella<sup>1</sup>, M. Hernández<sup>2</sup>, M. Martínez<sup>2</sup>, and C. I. González<sup>1,2</sup>, PhD. <sup>1</sup>Department of Biology, UPR-RP, SJ, PR; <sup>2</sup>Department of Biochemistry, UPR-MSD, SJ, PR.

Human Interleukin-3 (hIL-3) is a lymphokine that supports a broad range of hematopoietic cells. Deregulation of hIL-3 expression has been implicated in chronic inflammation and cancer. Previously, we documented the translational role of hIL-3 Adenosine/Uridine Rich Elements (ARE). AREs are RNA motifs found in the 3'-UTR and its regulatory effects are mediated by specific ARE-binding proteins (ARE-BPs). To identify the ARE-BPs that bind to the hIL-3 ARE, an electrophoretic mobility shift assay (EMSA) using cytoplasmic Jurkat extracts was performed. EMSA results showed that the hIL-3 ARE is recognized by various protein complexes. UV cross-

linking was used to estimate the molecular masses of the ARE-BPs (88, 67, 54, 40 and 34 KDa) that bind to the hIL-3 ARE. An EMSA super shift assay showed that HuR and hnRNP C ARE-BPs are components of the protein complexes that bind to the hIL-3 ARE. Since hIL-3 is expressed during T cell activation, similar experiments were conducted with Jurkat cells activated with 12-myristate 13-acetate /Ionomycin. These studies demonstrated that ARE-BPs binding to the hIL-3 ARE is modulated during T cell activation. In addition, EMSA super-shift results showed that HuR binding to the hIL-3 ARE is modulated during T cell activation. Western blot analyses suggest that HuR binding to the hIL-3 ARE could be influenced by changes in the HuR protein sub-cellular localization upon T cell activation. Together, these results suggest that HuR is involved in the post-transcriptional regulation of human IL-3 mRNA. Supported by grants to C.I.G. (KO1 HL-04355, U54 CA96297, PR-LSAMP, RISE 2R25GM61151 and FIPI).

**R-153 Understanding the role of phosphorylation of UPF1 in the NMD pathway.** C. Lasalde, A.V. Rivera, E.N. Rodríguez, A. León, I.E. Vega, M.F. Wilkinson & C.I. González. Dept. Biology, UPR-RP, Dept. Biochemistry, UPR-MSD, Dept. Reproductive Medicine, U. California, San Diego.

One third of inherited genetic diseases are caused by mRNAs with premature termination codons (PTC). Our goal is to understand the mechanisms by which PTC-containing mRNAs influence the etiology of cancer. Aberrant mRNAs are degraded by the Nonsense-Mediated mRNA Decay (NMD) pathway. The genes involved in NMD (UPF1, UPF2, and UPF3) were first identified in *S. cerevisiae*. Orthologues have been identified in *C. elegans*, *D. melanogaster*, and humans. While there is evidence for the physiological relevance of NMD in cancer, the mechanism and regulation of NMD remains poorly understood. Previous studies have suggested that phosphorylation of UPF1 plays a role in NMD. However, the functional residues phosphorylated in UPF1 and the biochemical relevance of UPF1 phosphorylation has not been elucidated. We have mapped eleven phosphorylation sites in yeast UPF1 using mass spectrometry, some of which are conserved in higher eukaryotes. Mutations in several sites located in the Upf1 NH2-terminal domain reduced the activity of NMD. Bioinformatics analyses have identified TOR1 and TOR2 as potential yeast orthologues of SMG-1, a phosphatidylinositol 3-protein kinase that phosphorylates UPF1 in higher eukaryotes. In vivo phosphorylation assays suggest that Upf1 is hypo-phosphorylated in a *tor1 $\Delta$*  strain. A better understanding of NMD may permit the discovery of approaches to modulate the stability of aberrant mRNAs as a means to combat cancer caused by nonsense mutations. Supported by: KO1 HL-04355, U54 CA96297, RISE and FIPI.

**R-154 On the Possible Carcinogenic Effects of Cosmic Rays on Airplane's Crew.** De La Rosa-Rosario, V. and Esteban-Avila, E. UPR Humacao.

The possible carcinogenic effects of cosmic rays on airplane's crew are investigated. To mimic a carcinogenesis process, we have modified the mathematical Jones model of radiation-induced myelopoiesis by adding new compartments corresponding to mutated and cancerous cells populations. This new biomathematical model can be written in terms of a set of  $n+4$  non-linear differential equations, where  $n$  is the number of mutations. At different Earth's altitudes and latitudes, we assume  $n=2$  mutations and a given cosmic ray dose rate, to estimate airplane crew's survival curves and cells killed and cancerous populations. Two applications are considered. First, we found that regardless of latitude there is no cosmic rays carcinogenic effects on the airplane's crew, when flying during 20 years (100 hours/month) at altitudes less than 60000 ft. However, if the altitude increases and the flight is nearer Earth's poles, a carcinogenesis process could be initiated. Second, we considered an actual flight from New York to Athens, and found that the evolving cancer cell population can be quantified at any given time  $t$  by a linear quadratic and quartic relationship. Pilots flying in this route 40 years (100 hours/month) could be at cancer risk at the end of their careers. (Supported by MBRS-RISE and PR-SLAMP).

**R-155 Association between Socioeconomic Disparities and Cancer Mortality in Puerto Rico.** M Torres-Cintrón<sup>1</sup>, NR Figueroa-Vallés<sup>1</sup>, KJ Ortiz-Ortiz<sup>1</sup>. <sup>1</sup>Puerto Rico Central Cancer Registry, Puerto Rico Comprehensive Cancer Center at the University of Puerto Rico.

Background: Cancer mortality rates vary by socioeconomic characteristics of the population. Evaluation of the extent of socioeconomic (SE) inequalities in cancer mortality is essential for the generation of hypotheses in population health research and provides evidence for population-based strategies for comprehensive cancer control. Objective: To create an area-based socioeconomic status index (SES) to analyze socioeconomic disparities in mortality rates for selected cancers in Puerto Rico. Methods: Cancer mortality (2000-2004) data were obtained from the Puerto Rico Mortality File provided by the Puerto Rico Department of Health. Puerto Rico SE data were obtained from the US Census Bureau 2000. Factor and principal component analysis methods were used to select the variables and construct the SES index at county level. A five level scale was constructed using quintile categories to set the scale boundaries. Age-adjusted mortality rates were calculated for each SES area and rates ratios were measured to evaluate the differences between the SES categories. The differences were tested for statistical significance at the 0.05 level. Conclusions: Cancer mortality in PR varied by SES level for the study period. Stomach, esophagus, larynx, corpus and uterus, and vulva cancer mortality rates were higher for areas with the low-

est (SES=1) socioeconomic status. Breast, colorectal, pancreas and liver and intrahepatic bile duct cancer mortality rates were higher in areas with the highest (SES=5) socioeconomic status. SES index could serve as a surveillance tool for monitoring health disparities in cancer outcomes.

**R-156 Arsenic concentrations in tap water in Puerto Rico.** Eva M. Hernández-Cintrón, Kristian O. Quiles-Molina, Pedro L. Hernández-Cott, DMD, MS, MSc. Universidad de Puerto Rico, Recinto de Mayagüez.

Arsenic, a carcinogen, is a natural element found in soil and rocks. It is found in our tap water. Purpose: to examine maximum arsenic levels in tap water in PR as reported by the "Autoridad de Acueductos y Alcantarillados de Puerto Rico" (AAA) water treatment plants (WTP) for the years 2001 through 2008, and use GIS to create island-wide probability maps of arsenic water concentrations. Methods: Data on arsenic water concentration levels was retrieved from AAA web page and analyzed with SPSSv16 for frequencies and percentages. Kriging, a GIS statistical interpolation method, used georeferenced points of WTP to illustrate probability maps of arsenic levels in PR. Results: As many as 181 WTP ( $n=254$ ) have reported arsenic contamination. Maximum, yearly non-compliant, reported arsenic levels were (in ppb) for 2001: 26 (average 2.2, SD 4.47); 2002: 23.2 (average 1.93, SD 4.55); 2004: 25.3 (average 2.26, SD 5.38); 2005: 43 (average 3.37, SD 10.58); 2007: 26.8 (average 2.2, SD 4.22); 2008: 12.4 (average 1.2, SD 1.84). Max permissible level by EPA is 10ppb. Arsenic sampling for 2003 and 2006 was not reported by AAA. Probability maps show a descending trend in water arsenic levels, but its presence in San Juan Metro area remains constant. Conclusion: Average values do not reach max permissible levels but some WTP in PR still reports levels over 10ppb. Maps show hot-spots in yearly island-wide concentrations. Discussion: Arsenic in water cannot be detected by taste, sight or smell. Efforts should be directed to prevent arsenic from reaching our tap water as chronic low level exposures may still cause harmful effects.

**R-157 Unusual Histologies, Presentations and Locations of Salivary Cancers: Adenoid Cystic Carcinoma.** Lebrón S.L.<sup>1</sup>, Chambers M.S.<sup>2</sup> and Rosenthal D.I.<sup>2</sup>. <sup>1</sup>UPR Medical Sciences Campus and <sup>2</sup>UT MD Anderson Cancer Center.

This study was to determine incidence, natural history and impact of therapeutic modalities on unusual histology, presentations and location of salivary cancers. The cancer studied was Adenoid Cystic Carcinoma. A retrospective chart review from MDACC and data extracted from the institutional specimen bank from Jan1984 to Dec2004 was made. The relationship between tumor location vs treatment modality and outcomes was assessed in order to determine: natural history, survival, patterns of failure and results of specific treatments. Selection criteria included patients diagnosed and treated to completion

at MDACC ; of 300 cases , 88 met this criteria. The palate was primary site of tumor. Surgery and radiation therapy was the first mode of treatment. Overall survival rate (OSR): 68% at 5 yrs; 50.9% at 10 yrs. Disease free interval rate (DFI): 58.10% (5, 10 yrs). Disease specific survival rate: 81.8% (5 yrs), 73.7% (10 yrs). Significant OSR (10 yrs,  $p < .05$ ) were found for patients with persistent disease after previous treatment vs newly diagnosed patients; patients with primary tumors in the oral cavity vs oropharynx, eye/ orbit; nasal cavity vs oropharynx. T staging (10 yrs) was significant for T1 & 2 and N staging (10 yrs) for N0. A 10 yr significance was found for solid tumors <20% solid and for the presence of vascular invasion. Disease free interval rates  $p < .05$  at 10 years were also found. (Protocol RCR06-0808 MDACC)

**R-158 Biological Significance of Chemokine Receptor-4 and Focal Adhesion Kinase Silencing in Ovarian Carcinoma.** Mora, E.M.<sup>1,2</sup>, Mangala L.S.<sup>2</sup>, Stone R.L.<sup>2</sup>, Nick A.<sup>2</sup>, Vivas P.<sup>1,2</sup>, López-Berestein G.<sup>2</sup>, Sood A.K.<sup>2</sup>. Escuela de Medicina, Recinto de Ciencias Médicas.

Ovarian cancer has the highest mortality among gynecologic malignancies. Effective treatment of the disease is hampered by its aggressive clinical progression, even after successful initial resection and adjuvant therapy. Therefore, new drugs are needed to effectively treat the disease. RNAi is an emerging technology that is highly efficient in regulating protein targets in vitro and in vivo. Among the many potential targets responsible for ovarian cancer growth and progression, chemokine receptor-4 (CXCR4) and its downstream signaling through the FAK axis is being recognized as an important target. CXCR4 is a receptor that, upon ligand (CXCL12) binding, activates growth, adhesion, and migration in several cell types. To explore the mechanisms and biological significance of CXCR4/FAK mediated signaling in ovarian carcinoma, we performed in vitro experiments using single and dual inhibition of these proteins using chemically synthesized siRNA. We found that CXCL12 induced activation and internalization of CXCR4. Upon stimulation, CXCR4 rapidly forms a complex with FAK leading to increased phosphorylation of FAK. Inhibition of CXCR4 or FAK resulted in significantly decreased migration ( $p = 0.01$ ), invasion ( $p = 0.03$ ) and adhesion ( $p = 0.001$ ) of ovarian cancer cells. Dual inhibition of these targets resulted in at least additive decreases in these functional effects. We are now conducting in vivo experiments to determine the effect of liposomal siRNA on tumor growth, angiogenesis and metastasis. Our data suggest that concurrent inhibition of CXCR4 and FAK may be a potential strategy for the treatment of ovarian carcinoma.

**R-159 Stable isotope labeling with amino acids in cell culture (SILAC) of drug-sensitive and drug-resistant acute promyelocytic leukemia cells.** Pablo E. Vivas-Mejía, Juliana Pérez

Laspiur, Bulent Ozpolat, Gabriel López-Berestein. Escuela de Medicina, Recinto de Ciencias Médicas.

Acute promyelocytic leukemia (APL) is characterized by the fusion of the promyelocytic leukemia (PML) gene and the retinoic acid receptor alpha (RAR- $\alpha$ ) gene. This fusion inhibits differentiation of myeloid cells. APL patients respond to all-trans retinoic acid (ATRA) and arsenic trioxide (As<sub>2</sub>O<sub>3</sub>; ATO). These agents induce degradation of the PML-RAR $\alpha$  causing differentiation, and apoptosis of the differentiated granulocyte. ATRA-induced remissions are transient and relapsed APL is often ATRA-resistant. The mechanisms of ATRA resistance are largely unknown. In this study, we used stable isotope coding quantitative proteomics approach to determine differences in the protein expression levels in ATRA-sensitive NB4 versus ATRA-resistant APL cells. While NB4-R1 cells were grown in normal RPMI medium, NB4 cells were grown in RPMI medium in which normal leucine was replaced with deuterium labeled leucine. Protein extracts were mixed 1:1 ratio and then separated by SDS-PAGE. Selected bands were excised and trypsin digested and later separated and identified using a high performance quadrupole time-of-flight (QqTOF) mass spectrometer. Proteomics profile revealed that several proteins, in particular transcription factors, were differentially regulated in NB4 vs. NB4-R1 cells. Western blot and RT-PCR experiments showed that Eif4E, 14-3-3-zeta are increased in NB4 resistant cells. Small interference RNA (siRNA) will further confirm whether silencing of these proteins will sensitize NB4 resistant cells to ATRA or ATO treatment.

**R-160 Development of Rac inhibitors as anti breast cancer metastasis compounds.** Alina De La Mota, Eliud Hernández, Cornelis Vlaar, Suranganie Dharmawardhane. Escuela de Medicina, Recinto de Ciencias Médicas.

Death from breast cancer is usually due to metastasis to more vital body sites. The Rho family GTPases Rac and Cdc42 have been implicated in regulating cancer cell invasion during metastasis. Unlike the related protein Ras, Rac and Cdc42 are not mutated in breast cancer but activated only in aggressive breast cancer. We developed novel inhibitors to Rac and Cdc42 based on the structure of a Rac inhibitor NSC23766 that specifically inhibits Rac activation. However, this compound is limited in therapeutic potential because of the high effective concentrations. By screening about 40 NSC23766 derivatives, we have isolated two promising compounds that are more efficient Rac inhibitors in breast cancer cells. These compounds reduce metastatic breast cancer cell viability without affecting normal mammary epithelial cells. Interestingly, the novel compounds also inhibited Cdc42 and drastically reduced extension of actin structures associated with migration and invasion of metastatic breast cancer cells. Preliminary data in a nude mouse model show that the compound E-Hop023 reduces primary mammary tumor growth and metastasis. These compounds

hold promise as specific, non-toxic therapeutics against breast cancer, the most deadly aspect of the disease.

**R-161 Silencing of Mannosylphospho Dolichol Synthase Expression by siRNA: An Excellent Anti-angiogenic Tool for Breast Cancer Treatment.** Z. Zhang<sup>1</sup>, A. Banerjee<sup>1</sup>, J. Santiago<sup>1</sup>, I. Frontany<sup>1</sup>, K. Baksi<sup>2</sup>, D. K. Banerjee<sup>1</sup>. <sup>1</sup>Dept Biochem, Univ Puerto Rico, San Juan, PR and <sup>2</sup>Dept Cell Biol & Anat, Univ Central del Caribe, Bayamon, PR, USA.

Mannosylphospho dolichol synthase (DPMS), a 31kDa phosphoprotein is essential for the synthesis of lipid-linked oligosaccharide (LLO), a pre-requisite for asparagine-linked protein glycosylation. Accumulated observations have suggested up-regulation of DPMS activity plays an important role in angiogenesis. We have hypothesized that suppression of DPMS gene would down regulate angiogenesis and inhibit breast tumor growth. To test this hypothesis, we have cloned the DPMS gene (GenBank #GQ367549) and isolated a DPMS siRNA and a DPMS overexpression stable clone. DPMS expression has been confirmed by fluorescence microscopy, western blotting, QRT-PCR as well as by its catalytic activity. All detected elevated DPMS level in overexpressing clone but down-regulated in cells silenced with siRNA. In addition, DPMS overexpressing clone exhibited high expression of complex glycans on the cell surface but they were down regulated considerably in cells silenced with DPMS siRNA. Overexpressing DPMS clone also has higher proliferation rate and when tested for angiogenesis by scratch assay it demonstrated increased angiogenesis compared to cells whose DPMS has been silenced with siRNA. Thus, DPMS exerts influence on capillary endothelial cell proliferation and serves as a modulator for angiogenesis. We, therefore, conclude that DPMS is an excellent target for developing a new generation anti-angiogenic therapeutics treating breast cancer. Supported by grants from Susan G. Komen for the Cure BCTR0600582 (DKB) and NIH/NCRR/RCMI G12-RR03035 (KB).

**R-162 Global DNA methylation is associated to meditation: The epigenomics of Complementary Therapies for Cancer prevention.** Rafael Guerrero-Preston, Avni Vyas, Pamela Leal-Rojas, Patricia Dauelsberg, Priscilla Brebi-Mieville, Carmen Ili-Gangas, David Sidransky. School of Medicine, John Hopkins University.

Nocturnal melatonin inhibition is associated to cancer initiation and growth. Melatonin has been proposed to be a DNA Methyl Transferase (DNMT) inhibitor that may lead to gene-specific hypomethylation. Meditation has been shown to increase melatonin levels and to reduce the cortisol stress response in healthy volunteers. We hypothesize that meditation will lead a reduction in DNA methylation and an increased

glucocorticoid receptor (GR) expression. Our objective was to examine the association between participation in an intensive meditation program with changes in DNA methylation and expression of GR gene in saliva. Participants were consecutively enrolled in a seven-day long meditation intervention, which consisted of daily 60 minutes-long meditation sessions. DNA and RNA were extracted from saliva samples. Global DNA methylation levels were measured in using an ELISA based kit (MDQ1, Sigma). RNA levels of the glucocorticoid receptor (GR) gene were measured using Quantitative Real Time-PCR. Participants in the meditation intervention had a statistically significant decrease ( $p < 0.01$ ) in global DNA methylation in day seven (mean = 28.1) when compared to baseline (13.0) levels and a decrease in fold change induction of the glucocorticoid receptor gene: baseline (15.76) and day seven (2.37) The observed decrease in global DNA methylation after the meditation intervention was the expected response, which may be associated to maintenance of an epigenomic homeostasis that protects the cells from tumor formation and progression. The results of this proof-of principle study should be validated in a larger cohort.

**R-163 Determination of mitochondrial DNA repair capacity in human peripheral blood mononuclear cells using quantitative PCR.** Sharon Fonseca-Williams, Sylvette Ayala-Torres, Randa El-Zein, and Carlos A. Torres-Ramos. Escuela de Medicina, Recinto de Ciencias Médicas.

Mutations in mitochondrial DNA (mtDNA) have been described in many cancer types. Whether increased mtDNA mutagenesis is due to decreased mtDNA repair capacity is not know. The goal of this work is to apply a gene-specific PCR-based assay that can detect the presence of a variety of DNA lesions as a tool to determine the mtDNA repair capacity of peripheral blood mononuclear cells (PBMCs). The rationale of the QPCR assay is that lesions that stall the thermostable DNA polymerase on the DNA template during the PCR reaction will lead to a decrease in amplification of the fragment of interest. We performed dose-response and time-course experiments using the oxidizing agent H<sub>2</sub>O<sub>2</sub> to define the optimal conditions of the QPCR assay. Our experiments show a dose-dependent reduction in the amplification of the mtDNA amplicon. In these experiments, exposure of PBMCs to 0.1 mM H<sub>2</sub>O<sub>2</sub> for 1-hour resulted in a 50% decrease in the amplification of the mtDNA fragment. Time course experiments showed that 24 hours after treatment there was still a 50% reduction in the amplification of the mtDNA amplicon, suggesting that mtDNA lesions were still present. However, we observed that 48 hours after treatment, the amplification of the mtDNA amplicon reached levels similar to those from untreated control cells. These results indicate that human PBMCs take 48 hours to repair the mtDNA damage induced by 1-hour exposure to 0.1 mM H<sub>2</sub>O<sub>2</sub>. These results define the conditions to com-

pare mtDNA repair capacity in PBMCs from cancer patients and healthy subjects. Sponsored by SU54CA096297-07.

**R-164 Características de pacientes con diagnóstico de Cáncer de Piel (no melanoma) registrados en el Departamento de Patología del Hospital Oncológico Dr. Isaac González Martínez años 2006-2008.** F Franceschini MD, A Colón-de Jiménez MD, H Rivera-Tubèns MD, MPH. Escuela de Medicina, Recinto de Ciencias Médicas.

Carcinoma de célula basal y carcinoma de célula escamosa, son los dos tipos de cáncer de piel más comunes en todo el mundo. Ellos no hacen metástasis con frecuencia, pero pueden ser agresivos, destructivos de la piel y del tejido alrededor. La Sociedad Americana del Cáncer sugiere un total de 1.3 millones de casos para el año 2000 de los cuales el 75% es carcinoma de célula basal. Estos tipos histológicos de cáncer de piel no requieren que sean reportados al Registro Central de Cáncer de Puerto Rico. Es nuestro interés analizar la información disponible en el Departamento de Patología del Hospital Oncológico y cuantificar número de casos, distribución por género, edad y área anatómica. Para los tres años bajo estudio se encontraron un total de 189 casos (48.6% femenino y 51.3% masculino). El 61.5% de los casos fueron cáncer de célula basal, 29.1% cáncer de células escamosas y 5.8% de los casos presentaron ambos tipos de cáncer. El 75% de los casos ocurrieron en los grupos de 61 a 90 años de edad. El 85% de los cánceres de células basal ocurrieron en la cara. Para el cáncer de célula escamosa el 46% ocurrió en la cara y el 31.7% en la extremidad superior. El número de casos documentados para tres años sugiere que en Puerto Rico el cáncer de piel (no melanoma) afecta a un número considerable de personas mayores de 60 años y del género masculino. El cáncer de piel no melanoma amerita que se registre y que se analicen sus tendencias. Se debe informar a los médicos, a la población sobre la magnitud del problema, sus consecuencias a la salud, a la calidad de vida, y costos económicos. En el trópico la población está a riesgo.

**R-165 Cancer Detection in Ulcerative Colitis Patients Using DNA Damage and Senescence Markers.** E. Latorre-Esteves<sup>1</sup>, N. Patil<sup>2</sup>, C. Ngo<sup>2</sup>, R. Risques<sup>2</sup>, and P. Rabinovitch<sup>2</sup>. <sup>1</sup>University of Puerto Rico, Mayagüez, PR, <sup>2</sup>University of Washington School of Medicine, Seattle, WA.

Ulcerative colitis (UC) is a chronic inflammatory disease that affects around half a million Americans. About 10% of these will develop colorectal cancer (CRC). Current CRC colonoscopy protocols are time consuming, expensive, and have relatively low sensitivity. These issues suggest a different approach to CRC surveillance: molecular biomarkers with a widespread field effect that would identify patients at highest risk for cancer. We will focus on senescence related markers (SRMs)

because progression to cancer in UC is related to senescence-inducing stimuli such as reactive oxygen, oncogene activation, DNA damage, and telomere shortening. We hypothesize that colorectal epithelium from UC progressors (patients with high grade dysplasia or cancer in the colon) is likely to present elevated levels of SRMs, even without clear signs of abnormal histology. Our goal is to distinguish UC progressors from UC non-progressors (patients who are HGD-free and cancer-free) using immunohistochemistry to detect  $\gamma$ -H2AX (a DNA damage marker) and Dec1 (a senescence marker). This study includes 10 UC progressors and 10 UC non-progressors, one non-dysplastic rectal biopsy for each. Double labeling for  $\gamma$ -H2AX and Dec1 was performed and multispectral imaging was used to separate the signals from the two dyes. Results show that  $\gamma$ -H2AX and Dec-1 can be successfully quantified in non-dysplastic colorectal tissue. Preliminary data suggests that UC progressors have increased signal of SRMs in non-dysplastic tissue, enabling us to distinguish between UC progressors and UC non-progressors. (Supported by SCAP-1P20CA103728)

**R-166 Insulin resistance, central obesity and colorectal adenomas.** Ortiz AP, Thompson C, Chak A, Berger N, Li L, University of Puerto Rico Comprehensive Cancer Center and Case Western Reserve University.

Background: Colorectal cancer (CRC) is among the most common cancer types in the US. The homeostasis model assessment-insulin resistance (HOMA-IR) may provide early indication of evolving hyperinsulinemia and/or hyperglycemia. Results of an association between HOMA-IR with polyps and CRC are limited. Thus, we aimed to determine the association between HOMA-IR, waist to hip ratio (WHR) and colorectal adenomas. Methods: In an ongoing screening colonoscopy-based study, we have prospectively collected data (lifestyle risk factors and fasting blood samples) from 320 incident polyp cases (26.2%) and 902 (73.8%) controls at the University Hospitals of Cleveland. Unconditional logistic regression models were used to assess the association between HOMA-IR, WHR and adenomatous polyps. Results: An interaction was observed between HOMA-IR and sex. When data was stratified by sex, the association between HOMA-IR and polyps remained for men, but not for women. In men, those from the highest tertile were twice more likely to have polyps than those in the lowest tertile (OR=2.03, 95% CI=1.08-3.80) (p-trend=0.0270). Only among women, a significant trend for WHR was observed (p-trend=0.0113); those from the highest tertile were 1.92 times more likely (95% CI=1.16-3.18) to have polyps than those from the lowest tertile. Conclusions: Our results support the notion that IR and WHR are risk factors for polyps in men, and only WHR is a risk factor for polyps among women. Thus, CRC screening should be emphasized in patients with insulin resistance. Study IRB approved and funded by: 1U54 CA-116867-01, 5R25CA094186-08 and G12RR03051.

**R-167 Residential Exposure to Air Emissions of Industrial Carcinogenic Chemicals from the Toxics Release Inventory and Oral Cancer in Puerto Rico.** C.J. Buxó<sup>1</sup>, J. Norat<sup>1</sup>, C.M. Nazario<sup>2</sup> and E. Suárez<sup>2</sup>. Department of Environmental Health<sup>1</sup> and Department of Biostatistics and Epidemiology<sup>2</sup>, University of Puerto Rico, Graduate School of Public Health.

Age-adjusted oral cancer incidence and mortality rates for Puerto Rico are among the highest in the world, especially among men, being the highest in the Western Hemisphere. A secondary analysis of the National Cancer Institute (NCI) case-control study of oral cancer in Puerto Rico (1992-1995) was conducted to elucidate environmental exposures associated with carcinogenic chemicals released by industries that report to the Toxics Release Inventory (TRI) (1988-1995). This analysis included 384 cases of oral and pharyngeal cancers (excluding lip and nasopharynx) and 522 population based controls. Spatial analysis was performed to measure the residential proximity of participants to TRI industrial facilities that released carcinogens within a 1-2 miles radius using ArcGIS 9.3. Multilevel logistic regression models were used to assess oral cancer and these exposures controlling for age and barrio and stratifying for tobacco and alcohol use. Among those who neither drank alcohol nor smoked cigarettes (abstainers): excess risks of oral cancer were observed with residential exposure within 1 mile of TRI industrial facilities releasing carcinogens (OR=2.10; 95% CI: 0.16-21.07) and within 2 miles of TRI industrial facilities releasing carcinogens (OR=1.94; 95% CI: 0.29-13.01). Overall, clinically significant risks of oral cancer were associated with residential exposure to TRI carcinogenic chemical releases among alcohol and smoking abstainers. However, this was a novel exploratory study and further studies are needed. (Supported by US4 UPR-MD Anderson Comprehensive Cancer Center Training Program).

**R-168 La percepción sobre las relaciones médico-enfermeras y la relación con la satisfacción laboral de las enfermeras de una muestra de Hospitales de la Región Norte de Puerto Rico.** Diana Peña-Hernández. Escuela de Enfermería, Recinto de Ciencias Médicas.

Se ha demostrado que la insatisfacción de la enfermera en el área de trabajo por la relación médico enfermera y en aquellos casos donde la relación es inadecuada, contribuye a que la enfermera termina dejando su trabajo (JCAHO, 2002). Para estudiar esta situación se formuló el siguiente problema de investigación: ¿Cuál es la percepción sobre las relaciones médico enfermeras y la relación con la satisfacción laboral de las enfermeras de una muestra de Hospitales de la Región Norte? Los objetivos de este estudio son: 1. Describir la percepción de las enfermeras sobre la relación médico enfermera; 2. Identificar el nivel de satisfacción que poseen las enfermeras de una muestra de Hospitales de la Región Norte y 3. Determinar la relación

entre la percepción sobre las relaciones médicos enfermeras y la satisfacción laboral de las enfermeras de una muestra de Hospitales de la Región Norte de Puerto Rico. La satisfacción se enmarcó en la Teoría sobre higiene y motivación laboral de Frederick Herzberg. La percepción sobre la relación médico enfermera y la satisfacción laboral se estudió en un diseño descriptivo correlacional. La muestra quedó conformada por 69 enfermeras. Se utilizaron dos Instrumentos tipo escala Likert auto administrables creados por la investigadora y sometidos a validez de contenido. Los resultados indicaron que la mayoría de las participantes arrojaron puntuaciones de satisfacción alta en las relaciones laborales y percepción moderada de las relaciones médico-enfermeras. El coeficiente de correlación r de Pearson ( $r=.446$ ,  $p=.01$ ) indicó relación significativa entre las dos variables.

**R-169 Silencing of Fasciola hepatica Saposin-like gene using RNA interference.** Cabán-Hernández K.<sup>1</sup>, Mousley A.<sup>2</sup>, Maule A.G.<sup>2</sup> and Espino A.M.<sup>1</sup>. <sup>1</sup>UPR-School of Medicine, San Juan, Puerto Rico, <sup>2</sup>School of Biological Sciences, Queen's University Belfast, Northern Ireland, UK.

Fasciola hepatica is an important disease of livestock and an emerging human pathogen. Growing resistance to the drug of choice, Triclabendazole, is compromising control options and underscores the need to discover novel chemo-and/or immunotherapeutics. The excretory/secretory (ES) products produced by F. hepatica are key players in the host-parasite interaction and offer appealing targets for chemo/immunotherapy. We have previously identified an ES antigen in adult F. hepatica, a member of the Saposin-like protein family (SAPLIP), termed FhSAP2. Our recombinant FhSAP2 has been shown to have lytic activity on human peripheral blood mononuclear cells and erythrocytes which suggests a role in parasite nutrition. However, the function of this antigen during infection remains unclear. Using quantitative (q)PCR we demonstrate FhSAP2 expression in newly excysted juveniles (NEJs) and immunocytochemical studies using rFhSAP2-antiserum revealed gut and tegument localization. We use RNAi to probe the function of FhSAP2 in F. hepatica. NEJs were exposed to double stranded RNA (dsRNA, 100ng/ul); qPCR confirmation of gene silencing is ongoing. FhSAP2-RNAi was extended to adults and preliminary results obtained by qPCR revealed knockdown of 93% (~15-fold) in the levels of FhSAP2 transcripts. This finding demonstrated, for the first time, the knockdown of gene transcript in the adult stage of the parasite which provides a new platform for gene function studies in this stage. In addition these preliminary data highlight FhSAP2 as potential vaccine/drug target. (Supported by R25-GM061838, NIH-5T37MD001477-07, G12-RR-03051).

**R-170 Possible Role for Toll like Receptors in Interaction of Fasciola hepatica Excretory /**

**Secretory Products with Monocyte Cells.** Olgary Figueroa and Ana M. Espino. Escuela de Medicina, Recinto de Ciencias Médicas.

*Fasciola hepatica*, the common liver fluke, causes widespread disease in farm animals as well as in man. *F. hepatica* is able to immunomodulate its host secreting products that often polarize the immune responses toward the Th2 end of the spectrum. These polarized immune responses may be associated with the development of chronic infections while avoiding the clearance by the host. Because the innate immunity constitutes the first line of defense against infections and molecules produced during innate immune responses stimulate and influence the nature of adaptive immune response, it's possible to hypothesize that the *F. hepatica* ES products are responsible to interact with the cells of innate system resulting in a favorable immunological response that facilitate the parasite survival into the host. In the current study, we present data examining the interaction of total and molecular mass-fractioned ES antigens on human monocyte cell line (THP1-CD14) which express different TLRs. After screening the interaction of the antigens in conjunction with the corresponding agonist and antagonist of all TLRs we stated that ES antigens stimulate positively the TLR-4 and TLR-8 and possibly also interact with the TLR-2 and TLR-5. We also stated that ES antigens in the range of 10-30kDa and 30-100KDa are involved in the interaction with these TLRs. Further studies are in progress to elucidate the complete TLRs signaling pathways stimulated by these antigens during the active infection and its influence on the adaptive immune response. These studies were supported by the MBRS-SCORE Program of the UPR Grant # S06-GM008224.

**R-171 Anticonvulsant Effects of Valeriana officinalis in Adult Zebrafish.** B.A. Torres-Hernández, L. Del Valle-Mojica, S. Torres-Rodríguez and J.G. Ortiz. Escuela de Medicina, Recinto de Ciencias Médicas.

Valerian extracts are used in alternative medicine for its alleged anxiolytic, sedative and anticonvulsant effects. Only few articles have demonstrated the anticonvulsant properties of valerian in animals. The aim of the present study was to examine the alleged anticonvulsant effects of Valerian using the mature adult zebrafish (*Danio rerio*) and exposed to 3mg/mL of pentylenetetrazol (PTZ), a well-known convulsant. We determined the latency time in PTZ after 1 hour absorption of different AED or Valerian extract. When exposed to PTZ, naive fish swim in circles, dart about the enclosure, jump out of the water and loose balance. The latency period was defined as the wild jumping followed by the loss of balance. Zebrafish exposed to PTZ (3mg/ml) never lost coordination when pretreated with clonazepam (0.007 - 0.05 mg/ml). With Phenytoin 1 mg/ml do not change latency, but 2 mg/ml significantly increase ( $p < 0.001$ ) latency. Gabapentin and valproate also increase latency ( $p < 0.001$ ). Zebrafish exposed to Valer-

ian extract (1 mg/ml) showed an increase in latency ( $p < 0.05$ ) and has similar effects to those of gabapentin and valproate. On conclusion, zebrafish exposed to PTZ show a behaviors similar to seizures. Anti-epileptic drugs and Valerian extract increase seizure latency. Approved by IACUC 3180108, January 2009 Supported by: MBRS-RISE Program at the University of Puerto Rico, Medical Sciences Campus (Grant: #GM061838) and PR-LSAMP

**R-172 Does valeriana officinalis really have anxiolytics effects?** L. Del Valle-Mojica, B. Torres-Hernández, S. Torres-Rodríguez and J.G. Ortiz. Escuela de Medicina, Recinto de Ciencias Médicas.

Valeriana officinalis extracts are used as a sedative and anxiolytic. Valerian extracts are believed to stimulate inhibitory neurotransmission. Alternatively, relaxation and sleepiness can be produced if valerian reduces the activation of glutamatergic receptors. Our study examined the effects of valerian extracts and valerenic acid on metabotropic (mGluR) and ionotropic (iGluR) receptors through  $[^3H]$ glutamate binding ( $[^3H]$  Glu). Freshly prepared valerian extract or valerenic acid was incubated with rat cortical membranes in presence of  $[^3H]$  Glu. Aqueous valerian extracts increase binding from  $1 \times 10^{-7}$  -  $1 \times 10^{-3}$  mg/ml. In the presence of LCCG and DCG-IV, valerian markedly decreases binding, but is increased in presence of QA (quisqualic acid). At 0.05 mg/ml, aqueous valerian specifically interacts with KA (kainic acid), but not NMDA and AMPA. Valerenic acid is one of the active compounds present in valerian. Valerenic acid increases the  $[^3H]$ Glu binding at  $1 \times 10^{-1}$  mg/ml. At 0.008 mg/ml, valerenic acid specifically interacts with QA, demonstrating its high selectivity for group I mGluR interaction. The selective interaction of valerian and valerenic acid with group I and II mGluR may represent an alternative explanation for the anxiolytic properties of this plant, since recent scientific literature correlates group I and II mGluR with anxiety. Further studies are being conducted to determine the specificity of valerian and valerenic acid interaction with mGlu and iGlu glutamate receptors. Partially supported by Grant No. 2 R25 GM061838-05.

**R-173 Mitochondrial DNA lesions increase in striatal mouse neuronal cells expressing mutant huntingtin and correlate with loss of mitochondrial function.** Rivera S.<sup>1</sup>, Castro M.R.<sup>1</sup>, Siddiqui A.<sup>2</sup>, Nicholls D.G.<sup>2</sup>, Torres C.A.<sup>1</sup>, Andersen J.K.<sup>2</sup> and Ayala S.<sup>1</sup>. <sup>1</sup>UPR-Medical Sciences Campus, San Juan, PR, <sup>2</sup>Buck Institute for Age Research, Novato, CA.

Huntington's disease (HD) is a fatal neurodegenerative disease caused by an expansion of CAG repeats in the huntingtin (htt) gene. Evidence suggests that oxidative stress and mitochondrial (mt) dysfunction may play a role in HD. We have recently demonstrated that levels of mtDNA damage increase in an

age-dependent fashion in two in vivo models of HD. However, the mechanisms by which mutant htt is modulating the levels of oxidative damage that result in mt dysfunction are not known. Our hypothesis states that mutant htt causes mt dysfunction by increasing oxidative damage to mtDNA. To test our hypothesis we used the following striatal neuronal cells: Q7 (WT) and Q111 (mutant). We determined basal levels of mtDNA damage using quantitative PCR and found that Q111 exhibit 26% higher basal levels of mtDNA lesions than Q7. In contrast, no significant differences were observed in the levels of nuclear DNA damage. We measured oxygen consumption rate (OCR) and glycolysis and found that mutant Q111 exhibit a 50% decrease in OCR and a 52% increase in glycolysis compared to Q7. Also, results from the BD oxygen biosensor system confirmed the significant decrease in mt respiration in Q111 versus Q7. Finally, exposure of cells to H<sub>2</sub>O<sub>2</sub> revealed that mutant cells were significantly more sensitive to H<sub>2</sub>O<sub>2</sub> mediated cell death than WT cells. Moreover, H<sub>2</sub>O<sub>2</sub> induced a further increase in mtDNA lesions only in the mutant cells. We conclude that mutant htt may lead to increased levels of mtDNA lesions that in turn lead to increased mt dysfunction in HD. Supported by NIH grants US4-NS039408, R25-GM061838 and G12RR-03051.

**R-174 Overweight Stigma and perceptions in Latino pre-adolescents in an eastern municipality of Puerto Rico.** M Rivera<sup>1</sup>, R Dávila Torres<sup>1</sup>, CM Vélez<sup>2</sup>, M Matos<sup>3</sup>. Maternal and Child Health Program; <sup>2</sup>Social Sciences Department; <sup>3</sup>Nutrition Program. School of Public Health-UPR.

According to the NHANES, the prevalence of childhood overweight has increased to 17.0% and 17.6% in children from 6 to 11 years and 12 to 19 years, respectively, in 2006. Childhood overweight have psychosocial as well as physiological consequences to children's health. In order to explore children's perception and stigma towards overweight a cross-sectional study was surveyed in pre-adolescents from 9 to 13 years. BMI was also calculated for each participant. Associations of BMI, overweight perception, overweight stigma, and body image were studied using chi-square procedures. Differences in age and gender were also studied through t-tests. 20.4% of girls and 11.6% of boys were overweight and 31.5% of girls and 27.5% of boys were obese at this point. A significant association was found between the BMI of participants and body image ( $X^2(1)=14.179, p=0.000$ ), overweight perception and gender ( $X^2(1)=4.001, p=0.045$ ) and stigma and gender ( $X^2(1)=5.677, p=0.022$ ). There are significant differences between age of the participants and body image. Children who perceived themselves as overweight were younger ( $X_{\text{mean}}=10.58$  yrs) than those who perceived themselves with a healthy weight ( $X_{\text{mean}}=10.96$  yrs). Although there are no associations between BMI and overweight perception, it has implications on pre-adolescents self-body image. Differences

in age for body image could be associated with maturation in children as they go through adolescence.

**R-175 Los hijos de Inmigrantes en Puerto Rico: pobreza y diferenciales demográficos.** Mayol-García, Yerís; León-López, Luz; Mattei, Hernando. Universidad de Puerto Rico, Recinto de Ciencias Médicas.

La investigación tuvo como objetivo general analizar los niveles de pobreza de los hijos de inmigrantes residentes en Puerto Rico. Se examinaron diversos diferenciales de índole demográfica que intervienen con la pobreza de esta población. Al presente la variable demográfica protagonista de los cambios en población es la migración, debido a que los niveles de natalidad y mortalidad en la isla son bajos. Pocos estudios se centran en la segunda generación de inmigrantes. La literatura señala que la migración, dependiendo de las características de los migrantes, puede estar asociada con altos niveles de pobreza. La presente investigación fue de índole descriptiva analítica. Los tres principales grupos étnicos bajo análisis, correspondieron a los hijos de inmigrantes norteamericanos, cubanos y dominicanos. Se observaron diferencias marcadas en la situación económica y nivel de pobreza de estos grupos. Los hijos de inmigrantes mostraron mayor pobreza que los hijos de puertorriqueños. Los descendientes inmigrantes cubanos mostraron tener la posición económica más privilegiada, seguidos por los norteamericanos. La situación más precaria correspondió a los hijos de dominicanos, cuya población es la de mayor volumen. Las principales características sociodemográficas de los padres que actuaron como diferenciales de la situación económica de estos grupos fueron: el año de entrada, la edad y la educación. Su estado de pobreza, nos lleva a reflexionar acerca de sus implicaciones para la salud de esa población y la planificación y prestación de servicios de salud a la misma.

**R-176 The first Vending Machine Implementation to Improve the Access to Sterile Paraphernalia for Injection Drug Users in Puerto Rico.** G Dávila<sup>1,2</sup>; R Dávila<sup>1</sup>; VE Reyes<sup>3,5</sup>; JG Morales<sup>2</sup>; VE Reyes<sup>4,2</sup>; J Vargas<sup>2</sup>. <sup>1</sup>Maternal & Child Health, School of Public Health, UPR-MSH; <sup>2</sup>Iniciativa Comunitaria; <sup>3</sup>Environmental Health; <sup>4</sup>Health Education; Walden University.

During 2009 ICI received funds to establish vending machine with the purpose of improving the access to sterile paraphernalia for injection drug users. Many IDUs need access to services in the evening, at night or in weekends. These users strongly feel the need for a non-contact and out of business hours service and consequently dispensing machine was introduced to supply sterile needles and syringes together with condoms, health information pamphlets and other minor health supplies. The implementation of the machine has been widely accepted among hard to reach IDUs during non-conventional service hour. Two tokens of different colors identified those <

30 years from those older. Also, the syringes were identified by colors to know how many of them return to us. During the first 6 weeks approximately 80 IDU [333 tokens distributed] were impacted. Of them, 192 (57.6%) were recollecting in the machine (36.7% - < 30 years and 67.4% - > 30 years). During the first weeks of activity older clients were more likely to use the vending machine (47% of returned tokens vs 25% for those < 30 years). However at week 6 those younger populations [hard to reach] had showed an increase in the usage pattern. Only 22% of the syringe distributed through the vending machine has been recovered in the needle exchange program. This could be due to the fact that the vending machine has not a system that allows the participant to deposit the syringe used.

**R-177 Pérdida de Transmisión de Ruido por dos Métodos de Encierro.** Avilés R., Caporali S. Escuela de Salud Pública, Recinto de Ciencias Médicas.

Uno de los aspectos más importantes cuando se quiere implementar un control de ruido es la identificación de la frecuencia dominante (FD) de la fuente ruidosa. En el diseño de una encapsulación para control de ruido, la (FD) se usa para identificar el material que provea una mayor pérdida de transmisión (PT) de ruido hacia afuera de la encapsulación. El coeficiente de (PT) es el parámetro que se utiliza en el proceso de escoger el material más apropiado para encapsular una fuente ruidosa. El objetivo de este estudio piloto fue comparar la (PT) provista por madera compensada de ½" de espesor y del material utilizado para el transporte de huevos "cartón de huevos", individualmente y en combinación para la encapsulación de una fuente sonora de espectro de frecuencia conocido. La metodología consistió en utilizar una caja construida de madera bajo dos condiciones, sola y con interior forrado con cartones de huevo, para una licuadora domestica con 2 velocidades de rotación. El diseño experimental controló la distancia desde la fuente ruidosa hasta el instrumento de medición, y tuvo como variables independientes el lado de la caja, la velocidad de la licuadora y la combinación de materiales del encierro en las que el nivel de presión sonora fue medido como variable dependiente. Al analizar las 20 condiciones experimentales entre las frecuencias de 125 y 4000 Hz, se concluyó como método más efectivo la combinación del encierro con el revestimiento de cartón, se consiguió una disminución de ruido de aproximadamente 26%. También se concluyó que la velocidad rotacional de la licuadora afectaba cual era la (FD) en el ruido generado.

**R-178 El Impacto de la Fibromialgia en las Actividades Instrumentales del Diario Vivir, Ocio y Participación Social en una Muestra de Mujeres y Hombres Puertorriqueños.** X. Cajigas OTS, M. Rivera OTS, M.Sandoval OTS, V. Torres THL., OTS, M. Rohena, Ed.D., MS., OTR/L. Programa de Terapia Ocupacional. EPS-UPR- RCM.

Existen pocos estudios sobre la Fibromialgia (FM) y Terapia Ocupacional. Se sienta la base para desarrollar intervenciones. El propósito fue describir el impacto de la FM en la capacidad funcional y en las ocupaciones como actividades instrumentales del diario vivir, el ocio y social en mujeres y hombres con FM. Se indagó sobre la diferencia de ejecución entre genero. El diseño del estudio fue descriptivo cuantitativo. Se administró el Cuestionario de Impacto de la Fibromialgia de Puerto Rico (CIF-PR), versión culturalmente adaptada a Puerto Rico y el instrumento "Categorización de Tarjetas de Actividades" (PR-CTA), adaptado para Puerto Rico. El análisis cuantitativo resultó de la estadística descriptiva e inferencial. El 85% de los participantes reflejo un impacto de moderado a severo a su capacidad funcional. Los participantes obtuvieron un porcentaje de retención entre el 61% y 63% de sus actividades previas en todas las sub escalas de la PR-CTA, excepto ocio de alta demanda, donde fue de un 25%. Se observó una correlación negativa moderadamente débil y significativa entre el puntaje total de la escala de CIF-PR y el porcentaje retenido para la sub escala de actividades instrumental del diario vivir, actividad social y porcentaje retenido para toda la escala del PR-CTA. No hubo diferencias significativas en el porcentaje promedio retenido para las sub escalas de actividades instrumentales del diario vivir, actividades de ocio de baja demanda y actividades de ocio de alta demanda, las actividades sociales y escala total y el género. Se reveló impacto en la capacidad funcional y la participación ocupacional.

**R-179 Outcome of Diabetic Patients with Osteomyelitis After Conservative Management in a Community Hospital in Puerto Rico.** Cajigas, Y., MD ; Díaz, J., MD; Maldonado, M., MD, MPH. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Diabetes predisposes patients to multiple complications that result in higher mortality and morbidity. One of this complications is osteomyelitis, which may result in amputations, sepsis, and death if not adequately managed. This study is designed to evaluate the outcome of osteomyelitis management among Puerto Ricans with diabetes. All adult diabetic patients admitted to a community hospital with diagnosis of osteomyelitis in a period of two years were reviewed (N = 261). A total of 174 admissions were analyzed of which 40.2% ended in amputation. Among patients initially treated with conservative management 44.2% ended in amputation. Staphylococcus aureus was the more prevalent organism found in blood (38%) and infection site (28%) cultures. We found a tendency for a two-fold increased probability of amputation among those patients initially treated with a conservative approach if compared to those receiving a initial surgical approach.

**R-180 Weight Gain and Perinatal Outcomes of Diabetic Patients followed by a Multidisciplinary Approach in the Puerto Rico Diabetes Center**

**Prenatal Clinic.** Veiga-Franqui, S., Rodríguez Irizarry, D., Rivera Viñas, J. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

In the 1990, the Institute of Medicine issued guidelines for maternal weight gain during pregnancy based on pre-pregnancy body mass index (BMI). These guidelines, reexamined on May 2009, have been validated by several studies demonstrating that weight gain according to the guidelines is associated with optimal birth weight and obstetric outcomes. Diabetic patients should not be the exception. The Puerto Rico Diabetes Center Prenatal Clinic was created in an effort to provide the best care for our diabetic pregnant patients using a multidisciplinary approach and providing clear information about how to adequately monitor blood sugar, administer insulin and follow a healthy diet. This is a retrospective cohort study to evaluate diabetic patients who gained weight adequately during pregnancy and their perinatal outcomes and compare it to patients that did not gain weight adequately. Pregnant women with diabetes followed at our diabetes clinics starting in the 2nd trimester and delivering a single fetus were included. The BMI was determined using height and preconceptional weight. Neonatal complications included congenital anomalies, admission to intensive care, neonatal hypoglycemia, hyperbilirubinemia, respiratory distress syndrome, pneumonia, and macrosomia. Fifty five (55) diabetic patients were identified that delivered this year between January and July. We found that diabetic patients that had adequate weight gain had also less perinatal complications than those who did not gain weight adequately. Therefore a good blood sugar control resulting also in adequate weight gain during pregnancy will reduce perinatal morbidity.

**R-181 Population Profile of Latino Youth Who Received Psychiatric Services in State Mental Health Clinics During a Five-Year Period.** Carlos Rached, BS; Stephanie Rivera, Luis Javier Oliveras, Pedro Acevedo, Juan Carlos Gavalda, Juan C. Jorge, PhD, Gloria González-Tejera, MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Objective: To assess the population profile of Latino youth who receive psychiatric services at State Mental Health Clinics according to clinical diagnoses, sex, and age. Method: Data from a State mental health agency database with regard to the sex, age, clinical diagnoses, and type of services received by youth attending the clinics from 2002-2006 was studied. Results: More male patients were brought to the clinics than female patients, particularly for the younger age groups (5-9 and 10-12 years of age). There was an exponential decay of return visits to the public clinics through time but there was a pattern of visits across months of the year. Namely, more cases were attended during October followed by a smaller spike in the number of visits during March. The most common clinical diagnoses for this population were grouped into

five major categories: Any Attention Deficit and Hyperactive Disorder (Any ADHD), Any Mood Disorder, Any Adjustment Reaction Disorder, Any Anxiety Disorder, and Any Other Disturbance of Conduct. From these, a sex by age interaction was noted for Any Mood Disorder. According to Current Procedural Terminology (CPT) codes, a shift from "Individual psychotherapy, office 45-50min" to "Pharmacologic management" was noted from the fifth to tenth visit. Conclusions: There is great need to better understand the clinical and services profile received by youth populations attending public mental health clinics. Programs must create strategies to retain patients and clinical staff in this setting must be aware of the complex interactions between sex, age, and clinical diagnoses to better serve these populations.

**R-182 Quality and completeness of dental records in Forensic Dentistry.** Lyann Puig, DS IV, Miguel Figueroa, DS II, Pedro L. Hernández-Cott DMD, MS, MSc. Escuela de Medicina Dental, UPR-Recinto de Ciencias Médicas.

Adequate record keeping can avoid problems in the identification of an individual. Records must have all information present and filled. Purpose To assess the quality and completeness of dental records submitted for person ID at the PR Institute of Forensic Sciences (PRIFS) during 2009 Methods ADA guidelines provided 26-items for adequate dental record keeping (e.g. patient's demographics, exam, charting, progress notes, x-rays). Two calibrated dental students evaluated the quality and completeness of records. Data was double-entered in SPSS for frequency and percentage analysis. Results All records (n=53) were examined; two records were discarded due to incomplete information. 39 records from private practice and 12 from other sources were evaluated (n=51). None of the dental records examined complied 100% with the 26 items of adequate dental record keeping. Average completeness per record was 62% (range: 6 to 22 items). All records provided patient's names, 94% provided x-rays with diagnostic value, 53% did not report patient's sex, 35% lacked dental charting, 18% did not provide a Dentist's id, and 96% did not describe anatomic variations or provided diagnostic models. Four items (patient's name, missing teeth, dentist's signature and x-rays diagnostic value) considered as minimum requisites for proper record keeping were found in 33% of records Conclusion None of the records examined fulfilled 100% quality and completeness hindering identification. The dental profession should be aware of the importance of proper record keeping for legal and other purposes and promote continuing education programs to fulfill this need.

**R-183 Prevalence and Profile of Major Depressive Disorder among Puerto Rican Children and Adolescents in a Public Clinic.** Juan Carlos Gavalda; Pedro Acevedo; Carlos Rached; Luis Javier Olivera; Stephanie Rivera; Juan Carlos

Jorge, PhD; Gloria González-Tejera, MD. Escuela de Medicina, Recinto de Ciencias Médicas-UPR.

**Objective:** To determine the prevalence of major depressive disorders (MDDs) in Latino public clinics over a five-year period and to determine the profile of MDD expression according to sex and age. **Method:** Data was obtained with regard to the sex, age, clinical diagnoses, and clinical services of youth attending State mental health clinics from 2002 to 2006 (n=5,549 patients). The database did not contain confidential patient identifiers. Analyses of MDD's were restricted from the first through the tenth visit. Statistical analyses revealed a sex by age interaction where a greater percentage of females received an MDD diagnosis across age groups (5-9, 10-12, and 13-17 years of age). On average, a 467% increase in the frequency of MDD was noted from the youngest age group to the oldest. With regard to the two most frequent clinical services provided to the oldest age group, 37.9% of female patients received pharmacotherapeutic services while 62.1% of female patients received non-pharmacotherapeutic services following Current Procedural Terminology (CPT) codes of the American Medical Association. **Conclusion:** MDD's are quite pervasive in our Latino youth population receiving services in public clinics. Our data indicates that females are more likely than males to receive an MDD diagnosis from childhood through adolescence. Retention programs must be created to better serve MDD youth population receiving services in public clinics.

**R-184 Lipid Profile and Cognitive Function in Community Elderly in PR.** G. Pérez-Horta<sup>1</sup>, I. Z. Jimenez-Velazquez<sup>1</sup>, M. González-Viruet<sup>2</sup>, D. Acosta<sup>3</sup>, M. Prince<sup>4</sup>. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

**Objectives and Study:** To explore possible relationships between serum lipid profile and cognitive function in a Hispanic elderly population. Lipoprotein metabolism appears to be altered in Alzheimer's Dementia, Vascular Dementia, and Mild Cognitive Impairment, as shown in diverse studies. To determine the prevalence of cognitive impairment, a prospective community-based cohort study was conducted in a representative catchment area in PR, as a component of the ADI-10/66 worldwide dementia prevalence study.<sup>2</sup> Door knocking was done to invite all residents over 65y/o to participate. 2,000 elderly residents were interviewed and their cognitive function evaluated. In a second visit, a physical exam was done and fasting laboratories were drawn. **Methods:** From a total of 2,000, 432 subjects with cognitive evaluation analyzed using DSM-4 and ADI 10/66 algorithm, and laboratories done from 12/08 to 05/09 were included. Ages =65-97y/o. To determine cognitive impairment the delayed recall 10 word list and Animal Naming from Cerad were used. **Results:** A statistically significant correlation (p=0.011) was found between elevated total cholesterol levels (>200 mg/dl) and cognitive impairment, and between elevated HDL (>50 mg/dl) and better cognitive

function consistent with published literature. No significant correlation between elevated LDL or triglycerides and cognitive impairment was found in our sample. **Conclusions:** A complete lipid profile evaluation in elderly patients is essential.

**R-185 Surveillance of anabolic steroid misuse among athletes in Puerto Rico.** Acevedo P BS, Cruz A. BS (School of Public Health), Jorge J.C. PhD, Barreto-Estrada, J.L. PhD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

The misuse of synthetic derivatives of testosterone is of interest given their misuse by groups to increase muscle mass and strength. An increasing number of athletes have been reported using Anabolic Androgenic Steroids (AAS). Reports on AAS misuse in the Latino community are scarce. We aim to determine the extent of AAS use among professional athletes in Puerto Rico (PR) and to evaluate their coverage and impact in the printed media. Clinical results on doping tests, from 2000-07, were obtained from Albergue Olímpico, Salinas, PR. Test results were classified according to year, sex, and sport. For media coverage, data was obtained using ADENDI search engine for the time period 1999-2007. This data was classified by date and theme, and was limited to PR. We found that Stanozolol and Metabolone were the AAS of choice for athletes in PR. Both male and female athletes were found to abuse AAS. Weightlifting was the sport with the greatest incidence of AAS abuse. Analyses of media coverage revealed that 97 news reports regarded AAS. A greater percentage of news was related to sports coverage while steroid abuse, as a delinquent activity, was the least frequently reported. Moreover, we detected an inverse relationship between sports coverage and educational news. There is a decrease in the percent of steroid abuse related news among athletes as there is an increase in the percent of news providing research and clinical information with regard to anabolic steroid abuse. This trend in media coverage provides an opportunity to educate the public on the detrimental effects of AAS misuse. Support of RCMI and NCRR-NIH.

**R-186 Ethnic difference in physiological responses to a fear learning and extinction protocol.** Franco, JA; Zeydan M; Ojeda B; Segura G; Martínez KG; Milad MR; Quirk GJ. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Hispanics have been consistently shown to be at higher risk for anxiety disorder, especially PTSD. This is the first study to evaluate differential physiological responses between Hispanics and Caucasians. We included 78 healthy subjects (39 Hispanics from UPR and 39 Caucasians from Harvard Univ) that were matched by sex, age and educational level. The experiment consisted of three different phases on Day 1: habituation (only images), conditioning (images of a room when a specific colored lamp light was paired with an electrical stimuli), and extinction (images of a different room with no electrical stimuli). On Day 2, we tested the retention of extinction in

two phases: recall and renewal. Our fear measure was the skin conductance response (SCR). Averages of SCR measures were calculated for the Hispanic and Caucasian groups. Differences in SCR between the groups were evaluated using t test statistic with statistical significance being set at the 0.05 level. Multiple comparisons was taken into account by Bonferroni corrections. Hispanics presented increased skin conductance before starting the experiment ( $t=3.526, p=0.001$ ) and increased SCR during habituation ( $t=3.338, p=0.001$ ). Hispanics also presented higher renewal of fear ( $t=3.041, p=0.003$ ). Hispanic males had higher SCR during habituation ( $t=3.164, p=0.004$ ), less extinction ( $t=3.112, p=0.004$ ) and more renewal ( $t=3.76, p=0.001$ ) than Caucasian males. In females, no statistically significant differences were found. In comparison to Caucasian males, Hispanic males showed difficulty with extinction and with control of fear upon re-encountering conditioning context.

**R-187 Risk Factors for Congenital Syphilis in Puerto Rico, 2000-2007: Assessment of screening for syphilis during the third trimester of pregnancy.** Mónica Castellano-Vega, Juan C. Reyes-Pulliza, Gilberto Ramos-Valencia. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Risk Factors for Congenital Syphilis in Puerto Rico, 2000-2007: Assessment of screening for syphilis during the third trimester of pregnancy. Background: Risk factors for syphilis infection in pregnant women have been largely studied. Nevertheless, few studies have determined the risk factors for the vertical transmission comparing two groups of women with syphilis, those who had an infant with Congenital Syphilis (CS) and those whose infant was born healthy. Objectives: The aim of this study was to assess the role of the third trimester test that is recommended for high prevalence sites and identify the risk factors for CS in Puerto Rico. Methodology: A case-control study was performed, analyzing data from years 2000 to 2007 of the STD Surveillance System in Puerto Rico. The sample comprises 118 cases and 118 controls. Results: Multiple logistic regression analysis revealed those mothers who were screened for syphilis early in the third trimester of pregnancy decreased their possibility of having an infant with CS by half when compared with those women who weren't; women who had three or more syphilis tests performed during pregnancy and those who received prenatal care (PNC) had significantly less possibility of having an infant with CS; and those mothers whose syphilis infection was on the phases primary, secondary and early latent showed significantly higher possibility of having an infant with CS. Having a history of sexual work increased almost 8 times the possibility of having an infant with CS and showed to be the strongest risk factor associated.

**R-188 Estudio sobre la relación entre el asma y la ocupación en trabajadores que recibieron**

**servicios en la Corporación del Fondo del Seguro del Estado durante los años 2002 al 2004.** Figueroa-Sánchez I., González, J. Nazario, C., Rodríguez, M. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

En Puerto Rico, el asma es una de las primeras causas de morbilidad entre los adultos de 18 a 44 años de edad. Sin embargo, no se conoce sobre los riesgos o las exposiciones que ocurren en el ambiente laboral que puedan contribuir al desarrollo o la exacerbación del asma en los adultos puertorriqueños. El objetivo de este estudio fue determinar la magnitud de la relación entre la tarea y el asma en trabajadores que recibieron servicios médicos en la Corporación del Fondo del Seguro del Estado (CFSE), región de San Juan durante el período del 1ro de septiembre de 2002 al 31 de agosto de 2004. El diseño epidemiológico de este estudio fue caso-control. Los casos fueron trabajadores con un diagnóstico confirmado de asma por el neumólogo de la CFSE (N= 170). Los controles fueron trabajadores sin enfermedades respiratorias y con un diagnóstico confirmado de lesión o enfermedad músculoesquelética por el fisiatra de la CFSE (N=726). La información sociodemográfica, ocupacional y de salud se obtuvo mediante la revisión de los expedientes clínicos de los sujetos del estudio. Los resultados mostraron que los trabajadores asmáticos tienen riesgo de un evento asmático de exposición por tarea de 3.85 veces comparado con el riesgo de un evento asmático entre los que en los trabajadores con condiciones músculoesqueléticas ajustado por el historial familiar de asma o alergia, el sexo, el tabaquismo y la escolaridad. Esto implica que las tareas que realizan los trabajadores con asma pueden estar relacionadas con el desarrollo o la exacerbación de esta enfermedad. Se recomienda un sistema de vigilancia para los trabajadores con asma.

**R-189 Attention Deficit-Hyperactivity Disorder Comorbid Transitions among Puerto Rican Youth Receiving Public Mental Health Services.** Luis J. Olivera, MPH<sup>1</sup>, Stephanie Rivera<sup>1</sup>, Carlos Rached<sup>1</sup>, Juan C. Gavaldá<sup>1</sup>, Pedro Acevedo<sup>1</sup>, Juan Jorge-Rivera, PhD<sup>2</sup>, Gloria González, MD<sup>3</sup>. <sup>1</sup>MD Program, <sup>2</sup>Department of Anatomy <sup>3</sup>Department of Psychiatry. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

In spite a high prevalence of ADHD among American youth (3-5%), little is known about the comorbidity of ADHD with other mental disorders. We followed the clinical management of children and adolescents with ADHD who received mental health services from 2001-05 provided by ASSMCA. The sample consisted of 322 patients diagnosed with ADHD, who completed 10 visits to the clinics: those with comorbid psychiatric conditions (n=165) and those with ADHD only (n=157). The sample was binned according to age: pre-pubertal (5-9 y/o), peri-pubertal (10-12y/o) and pubertal (13-17 y/o) groups. We observed the transitions between clinical

diagnoses through time and quantified them according to each group. Most subjects in the sample were male (85.1%) of which 51.5% were comorbid ADHD. The pre-pubertal group displayed the highest 'transition frequency' (HTF) with other diagnoses (n=178) whereas the pubertal group displayed the lowest transition frequency (n=96) of all age groups. The HTF from ADHD to Other Mental Disorder (OMD) was seen with other Disturbances of Conduct (DOC) among pre-pubertal males whereas Mood Disorders (MD) and DOC were comorbid with ADHD among pubertal males. The most common transition from OMD to ADHD was DOC for both pre-pubertal and pubertal age groups. In conclusion pre-pubertal males have more transitions between non-specific diagnoses while pubertal males have fewer transitions with specific comorbidity with MD and DOC. We speculate that neurodevelopmental factors might underlie these transitions. An age-based algorithm can be created to better serve ADHD populations in public clinics.

**R-190 The Epidemiology of Trauma in Puerto Rico.** Victor Hugo Hernández MD, Luis Lojo MD, Manuel García-Ariz MD, Pablo Rodríguez MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

**Introduction:** In a way to developed effective strategies, it is essential to understand how trends in injuries are changing and identify the factors involving it. We want to present a descriptive study of the actual situation. **Materials and Methods:**An analysis is presented about the burden of traumatic injuries in Puerto Rico. Data has been collected from the National Trauma Data Bank, from the Division of Statistics at the Puerto Rico Police Department and the National Highway traffic administration. **Results:**From 2000 to 2008 a total of 12620 cases have been entered into the national data based bank, at the Trauma Center, 82% were males, and 34.3% were between 18 to 29 years old, from these a total of 3553 admissions were due to Motor Vehicle Accidents, 2413 were due to Gun Shot Wounds, and 1893 secondary to falls. From all admissions 12.5% died in the hospital. Changes in admission in a period of five years are the follows fatalities were reported in 2002, as 519 related to traffic accidents, and 781 deaths due to violence, while in 2007, 452 due to traffic accidents and 728 to violence. **Conclusion:** With this study we had map the epidemiology of trauma in Puerto Rico. From the total admissions 29.3% were done by a penetrating injury due to violence, and 50.1% were done by a motor accident. During the last five years, most of the injuries presented a minimum reduction in frequency, but the injuries due to motorcycle, has increase in a 50% range. With this descriptive study we want to call the attention and evaluate to the factors that are killing our young population.

**R-191 Población Puertorriqueña Residente en la Florida: sus cambios en volumen y características sociodemográficas.** Arenas-Ger-

mosen, Belkines, León-López, Luz, Duany, Jorge. Escuela de Salud Pública, Recinto de Ciencias Médicas.

El objetivo de la investigación fue describir las características de la población puertorriqueña residente en la Florida, utilizando el Censo de Población y Vivienda. Durante el siglo XX la migración de puertorriqueños hacia los Estados Unidos tuvo diferentes destinos; Hawaii, Nueva York, New Jersey, Connecticut, Illinois, Massachusetts y Pennsylvania. Luego de 1990 estas áreas comienzan a perder popularidad y Florida se despunta como un destino popular entre los emigrantes. Para el 2000 Florida se convirtió en el segundo estado con mayor concentración de puertorriqueños. La población puertorriqueña que reside en la Florida, difiere considerablemente de los emigrantes anteriores. Los anteriores emigrantes eran trabajadores diestros, agrícolas, con poca escolaridad y bajos recursos. La emigración de puertorriqueños hacia Florida, en particular la ciudad de Orlando, es una selecta. El alto volumen y las características de estos emigrantes hacen imprescindible analizar sus implicaciones tanto para el lugar de origen como para el de destino. Para 1970 residan en Florida 28,166 puertorriqueños, cifra que aumento a 645,240 para el 2005. Al comparar los puertorriqueños residentes de la florida con los residentes en la isla se observó que en ambos grupos predominan las mujeres, los casados y los solteros. Los Puertorriqueños en Florida tienen una estructura de edad más joven, nivel de educación más alto, mayor participación en la fuerza laboral, menor nivel de desempleo y mayor ingreso. Definitivamente esta fuerza migratoria está privando a PR de una población excepcional.

**R-192 Competency Model Development as Primary Tool for Curricular Innovations.** J. A. Capriles. University of Puerto Rico, Medical Sciences Campus, Graduate School of Public Health.

Today's public health workforce (PHW) and leaders must have talent sophisticated skills enough to match the increased complexity of the health systems environment. PHW are expected to demonstrate measurable outcomes and effectiveness and evidence-based decisions. **Objective:** Develop a competency model to guide the development of PHW in the analysis of health systems to innovate and improve the health of the public. **Methods:** Focus group conducted with stakeholders and content analysis of secondary information sources. Data were use to identify areas of need for training of these practitioners. **Results:** A model with 17 competencies that outline three domain areas: decision making, applied research and leadership. This model is aligned with core competencies in areas of PH to design a curriculum of 55 credits which contains three components: core courses in PH, seminars, specialty courses in health systems analysis, practicum experience and applied research. **Conclusions:** Competency models make an important contribution to the growing body of knowledge

to PHW development. This set of competencies should guide curriculum design, examined periodically and renew as new knowledge, practices and challenges emerges in the discipline of Public Health.

**R-193 Knowledge and Attitudes Toward Organ Donation: A Survey Among Medical Students in Puerto Rico.** Omar E. Soto-Avilés, MD, Juan M. Marqués-Lespier, BS, Nicole M. Ortiz-Vega, MS, Maria C. Sánchez, MS and Esther A. Torres, MD. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

The increasing demand of organ transplantation exceeds organ donation rate. This discrepancy is challenging for the organ procurement agency and health professionals involved in the care of patients in dire need of organs. In Puerto Rico, there is no information regarding medical students' knowledge and/or attitudes on organ donation. Hence, we designed a study to evaluate student's knowledge and attitudes toward organ donation for transplantation. A total of 230 participants completed the survey, 98 first year, 45 second year and 87 third year medical students. The survey consisted of 55 questions; 10 assessed knowledge, and 20 assessed attitudes in organ and tissue donation. The remaining questions inquired about demographics and education received on this subject. Results showed that 45.7% of medical students had an adequate knowledge in organ donation (mean score of 6.29 on a 10 point scale). The data also showed that participants had a relatively positive attitude toward organ donation (mean score of 44.9 in a range between 14 and 56). Approximately 72% of participants had a favorable opinion towards organ donation. In addition, 40% of medical students had the intention to donate their organs but lacked a donor card. Only 30% were considering becoming donors but had not made a decision; 23% of the participants had an organ donor card. These findings suggest that medical students have a positive attitude towards organ donation, however lack knowledge in the subject and have not taken the necessary measures to become an active donor.

**R-194 Educación para la Salud: Opción de Auto-cuidado para el paciente diabético.** Yaritza Nieves-Viera, BHE, Wanda I. Tábora-Tirado, MPHE, CHES, Nydia E. Vélez-Torradó, BHE y Luis E. Rosario-Arroyo, MPHE, CHES. Escuela de Profesiones de la Salud, UPR-Recinto de Ciencias Médicas.

Las conductas como acciones directas que influyen en la salud (Green & Kreuter, 2005), son una parte esencial del manejo de la condición crónica de diabetes. Se utilizó el modelo Precede-Procede (Green & Kreuter, 2005) para identificar las necesidades de salud de los suscriptores de la reforma de salud de Triple S Salud diabéticos en un Centro de Envejecientes. Se utilizó la siguiente metodología: revisión de literatura, cuestionario y un grupo focal con el propósito de identificar las conductas de

los participantes (n=26). Los resultados reflejaron que el área de autocuidado diario que un: 61.5% revisan sus pies, 23.1% lima las uñas, 57.7% utilizan lociones para la piel, 11.5% usan el hilo dental, 50% realiza ejercicios y 65% no se verifica el nivel de azúcar antes de comer ni lleva un registro diario de resultados. Estas necesidades fueron atendidas mediante el Proyecto Educativo "En control Día a Día" con cuatro intervenciones de Educación en Salud grupal, utilizando como técnica la demostración con entrenamiento. En la evaluación de resultados se encontró cambios de conducta tales como: la demostración de los puntos de presión del pie, el uso del hilo dental y el uso del enjuagador bucal por un 95% (n=21); el 50% completaron una hoja de observación diaria por una semana el autocuidado de pies y uñas (n=7); el 75% ejecutaron la rutina de ejercicio cardiovascular, estiramiento y calistenia y el 80% participaron de una prueba de cernimiento (n=75). La identificación de necesidades conductuales y su atención mediante el Programa de Educación en Salud contribuyó a la práctica de conductas favorables a la salud.

**R-195 Internal Consistency of the Spanish Health Literacy Test (TOFHLS-SPR) for Puerto Rico.** M. Rivero<sup>1</sup>, E. Suarez<sup>2</sup>, S. Solis<sup>1</sup>, G. Hernández<sup>1</sup>, W. Cordero<sup>1</sup>, I. Vázquez<sup>1</sup>, Z. Medina<sup>1</sup>, R. Padilla<sup>1</sup>, A. Flores<sup>1</sup>, J. Bonilla<sup>1</sup>, W. Holzemer<sup>1</sup>. <sup>1</sup>School of Nursing, MSC and <sup>2</sup>School of Public Health, MSC.

Background: Low functional health literacy has been related to poor viral control, and lower levels of ART adherence in people living with HIV/AIDS. Research in functional health literacy among people living with HIV/AIDS in Puerto Rico (PR) is an unexplored area. Objectives: To describe how the full-length Spanish Version of the Test of Functional Health Literacy in Adults (TOFHLS-S) was adapted to PR. Methods: Thirty participants (women = 16, men = 14) completed a basic demographic questionnaire, the TOFHLS-S and participated in an interview. Analyses were performed to examine the information provided by participants and the internal consistency of the TOFHLS-S. Results: The mean age was 47.7 years (range 34-77). Thirty-seven percent had less than 12 years of formal schooling and 43% reported having education above high school. Changes suggested by participants included: increasing font size from 14 to 16 points for better readability and changes/simplification of several words in order to make them colloquial and comprehensible for the PR context. The reliability coefficient obtained for this scale was strong (estimated alpha = 0.95) however, differences were observed by subtype: numeracy (estimated alpha = .819 vs. comprehension (estimated alpha = .953). Conclusions: Based on this process, we have adapted the original version of the TOFHLS-S and the new version of the full-length TOFHLS-S, PR is now valid for further research and testing levels of functional health literacy in a larger sample in PR. Approved by IRB. Supported by R15NR011130 from the National Institute of Nursing Research.

**R-196 Association among cigarette smoking, metabolic syndrome, and its individual components in a Puerto Rican metropolitan adult population.** William A. Calo, MPH, Ana P. Ortiz, PhD, Erick Suárez, PhD, Manuel Guzmán, MD, Cynthia M. Pérez, PhD. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

**Background:** The metabolic syndrome (MS) is related to an increased risk for type 2 diabetes and cardiovascular disease. Cigarette smokers are at greater risk than nonsmokers of becoming insulin resistant and to develop cardiovascular disease. This study aimed to explore the associations between cigarette smoking, the MS, and its individual components in Puerto Rico. **Methods:** A representative sample of 856 Puerto Ricans aged 21-79 years from the San Juan Metropolitan area participated in this population-based study. Information regarding socio-demographics and lifestyle characteristics, including smoking habits, was gathered from self-reported questionnaires. The MS was defined according to the updated NCEP-ATP III criteria. Biochemical measurements and anthropometric indices were collected for all participants. **Results:** The MS was significantly ( $p=0.001$ ) more prevalent in former smokers (55.3%) as compared to current (36.3%) and never smokers (41.4%). Current smokers who used more than 20 cigarettes per day were 2.24 (95% CI= 1.00, 4.99) times more likely to have the MS as compared to never smokers, after adjusting for potential confounders. This group of heavy smokers were also more likely to have high triglyceride levels (POR=2.22, 95% CI= 1.12, 4.38) and low HDL-cholesterol levels (POR=2.49, 95% CI= 1.28, 4.86) as compared to never smokers. **Conclusions:** This study supports previous reports of an increased risk of the MS among current smokers, particularly those with a heavy consumption. Tobacco control strategies should focus on the prevention of smoking in order to reduce the burden of the MS in Puerto Rico.

**R-197 La Creación de un Vídeo Documental Didáctico en Torno al Tema de la Contaminación Visual en Puerto Rico.** V. Sifres-Fernández. Decanato de Asuntos Académicos-CATA, UPR-Recinto de Ciencias Médicas.

La proliferación desordenada y la saturación de la publicidad exterior, es un serio problema ambiental que genera estrés, distorsiona la estética y deteriora la calidad de vida de nuestras comunidades. Para controlar este desorden publicitario, es necesario crear conciencia del significado de la contaminación visual en la ciudadanía y en los responsables de establecer políticas públicas. El uso del medio audiovisual es una estrategia idónea para educar y concienciar en torno a los problemas de salud ambiental, sobre todo a las nuevas generaciones que forman parte de la actual sociedad del conocimiento. **Objetivo:** Producir un vídeo documental didáctico en torno a la publicidad exterior y la contaminación visual, que sirva para educar, informar y crear conciencia en la comunidad en

general en torno a este tema. **Actividades:** Se realizaron fases de: pre-producción (desarrollo del concepto, recopilación de información, elaboración del guión, plan de rodaje); producción o grabación del vídeo documental; y post-producción o edición del producto final. **Resultado:** Se produjo un vídeo documental educativo de 30 minutos de duración, que incluye cortes promocionales, segmentos de noticieros televisivos, y entrevistas a estudiantes universitarios, expertos en asuntos ambientales, líderes comunitarios y políticos del país. **Proyecciones:** La difusión del vídeo documental por medio del Internet (Youtube), la televisión pública y comercial, así como en foros comunitarios y de instituciones de educación secundaria y universitaria del país, de manera que sirva como material didáctico en el campo de la salud ambiental.

**R-198 Liderazgo Histórico Institucional de la Escuela Graduada de Salud Pública en el Ámbito de la Promoción de la Salud y la Educación para la Salud a Nivel Internacional.** Hiram V. Arroyo, MPHE, EdD. Programa de Maestría en Educación en Salud Pública, Departamento de Ciencias Sociales, Escuela Graduada de Salud Pública, RCM, UPR.

La Educación para la Salud logra el reconocimiento disciplinar y académico en la década del cuarenta en Puerto Rico. Desde el 1947 hasta el presente se han evidenciado iniciativas de capacitación, investigación y servicio en el ámbito de la salud internacional. El liderazgo y la proyección internacional de la Escuela Graduada de Salud Pública (EGSP) en los ámbitos de la Promoción de la Salud (PS) y la Educación para la Salud (EPS) se ha manifestado en el desarrollo de estructuras de salud internacional, en el desarrollo de redes académicas y profesionales, en la implantación de acciones programáticas y de investigación, en el desarrollo de eventos científicos internacionales y publicaciones sobre temas de salud internacional. **Objetivos:** Describir las experiencias exitosas de salud internacional en los ámbitos de la PS y la EPS con particular énfasis en el periodo histórico de 1980-2009 y valorar el impacto institucional universitario de las acciones de salud internacional desarrolladas. **Metodología:** La investigación fue orientada por la revisión y el análisis de documentación histórica de base institucional. **Conclusiones:** La experiencia de salud internacional de la EGSP ha sido valorada a nivel institucional y por las organizaciones internacionales vinculadas a la salud incluyendo la Organización Mundial de la Salud (OMS). Basado en esta experiencia se ha designado a la institución como Centro Colaborador de la OMS/OPS. La designación plantea oportunidades de expansión de las acciones de salud internacional cónsonas con la misión universitaria de internacionalización.

**R-199 Seroepidemiology of viral hepatitis, HIV and herpes simplex type 2 in the household population aged 21-64 years in Puerto Rico.** Cynthia M. Pérez<sup>1</sup>, Edmir Marrero<sup>1</sup>, Héctor

Colón<sup>1</sup>, Ana Ortiz<sup>1</sup>, Carmen Albizu<sup>1</sup>, Esther Torres<sup>2</sup>, Marievelisse Soto<sup>2</sup>, Erick Suárez<sup>1</sup>.  
<sup>1</sup>School of Public Health; <sup>2</sup>School of Medicine, MSC, UPR.

Viral hepatitis and sexually transmitted infections (STIs) are key public health problems that pose an enormous risk for disease transmission in the general population. This study estimated prevalence of serologic markers of HCV, HBV, HAV, HIV and HSV-2 using a stratified cluster probability sample of households in PR. Participants completed a face-to-face interview, a self-administered questionnaire, and provided blood specimens for antibody testing. Prevalence of viral infections were estimated using a logistic regression model weighting for the probability of participation in each household block and the inverse of the probability of selection according to the households' blocks, sex and geographic strata. A total of 1,654 adults aged 21-64 years participated in the study. Seroprevalence estimates for HCV (2.3%), HBV (3.1%), and HSV-2 (22.3%) in PR are roughly in agreement with estimates obtained in the US population; however, HAV (41.3%) and HIV (1.1%) estimates in PR are higher. The proportion of individuals that were unaware of their serostatus was as follows: 80% for HCV, 98.3% for HBV, 96.4% for HAV, 36.4% for HIV, and 97.8% for HSV-2. A concerted effort is needed to strengthen viral hepatitis and STIs prevention and control strategies, support surveillance of these infections to monitor who is being chronically infected, and ensure appropriate counseling, testing, and medical management of infected persons. Integration of HCV, HBV and HSV-2 counseling into HIV prevention services and outreach through social networks might represent a valuable approach to reach high-risk individuals (Supported by S06-GM08224).

**R-200 Prevalence of Oral Anticoagulant Prescribing among Elderly Beneficiaries of the Puerto Rico Health Insurance Program with Atrial Fibrillation.** J.J. Hernández, PhD, Y. Marín, PharmD, I. Lugo, PharmD, C.M. Hernández, PharmD, G. Rivera, PharmD. Escuela de Farmacia, UPR-Recinto de Ciencias Médicas.

Warfarin remains the most cost-effective pharmacotherapy for stroke prevention in atrial fibrillation (AF), however in the United States suboptimal prescribing levels have been reported. In Puerto Rico the problem is compounded by the lack of scientific studies in the field of evidence-based prescribing. This study is the first to determine the prevalence of AF and warfarin prescribing among elderly patients beneficiaries of the Puerto Rico Health Insurance Administration (PRHIA). A cross-sectional study design with a capturing window extending from January 1, 2004 to June 30, 2005 was used. Individuals 65 years of age and older were included, and individuals with warfarin therapy contraindications were excluded. Medical claims were used to identify individuals with AF, and pharmacy claims to identify prescriptions filled for warfarin. A total of 1,533 elderly

beneficiaries of the PRHIA were identified with at least one diagnosis for AF during the study period. This represents 8 cases of AF per every 1,000 elderly beneficiaries of the PRHIA. The proportion of beneficiaries with AF receiving at least one oral anticoagulant prescription was 64%. Increasing age was identified as a statistically significant risk factor for not receiving warfarin given AF (OR=0.79; 95%CI 0.63-0.98). In ambulatory patients with AF eligible for therapy with oral anticoagulation, the prevalence of warfarin use was suboptimal. These results should encourage physicians to prescribe and monitor warfarin in order to obtain cost-effective outcomes that reduce the numbers of stroke cases and related costs per year.

**R-201 Experiencia y percepción de la violencia juvenil en comunidades de alto riesgo: un acercamiento cualitativo.** Negrón-Ayala, J., Reyes-Pulliza, J. Robles, R. Universidad de Puerto Rico en Bayamón.

Los objetivos de este trabajo son explorar las percepciones y las experiencias de los de los adolescentes residentes en comunidades de alto riesgo con respecto a la violencia. Se propone examinar los contextos de los eventos de violencia, enfatizando en las condiciones estructurales de las comunidades y las redes interpersonales. Se emplearon 4 grupos focales y 5 entrevistas semi-estructuradas. Las narrativas fueron analizadas con la técnica de análisis de contenido-categorico utilizando el programa de análisis cualitativo Nvivo 2.0. El eje organizativo de los dominios temáticos siguió los lineamientos del análisis situacional. Se delinearon las instancias que identifican las motivaciones individuales que racionalizan el comportamiento violento, las condiciones proximales (nivel de pares) y las condiciones colectivas (nivel comunitario/social). Se exploró la percepción de violencia/riesgo y su problematización/normalización en la cotidianidad de los participantes. También se analizó la exposición de los participantes a la violencia como perpetradores, víctimas y/o testigos. Las narrativas de los participantes fueron agrupadas en los siguientes dominios temáticos: la guerra (violencia colectiva), peleas y armas (violencia interpersonal), violencia de pareja, familiar y violación a la privacidad, causas de la violencia, y la resiliencia. La experiencia de los participantes con respecto a la violencia aunque refleja un nivel cotidianización, en cuanto a la percepción de riesgo y problematización, no evidencia insensibilización. Financiado por el Departamento de Salud de PR.

**R-202 Association between adiposity indices and cardiometabolic risk factors in Puerto Rican adults.** Palacios C.<sup>1</sup>, Pérez C.M.<sup>2</sup>, Ortiz, A.P.<sup>2</sup>, Guzmán M<sup>3</sup>, Suárez E.<sup>2</sup>. <sup>1</sup>Dept. of Human Development and <sup>2</sup>Dept. of Biostatistics and Epidemiology, School of Public Health; <sup>3</sup>School of Medicine; MSC, UPR.

The most appropriate adiposity index for assessing cardiometabolic risk remains controversial. We evaluated the asso-

ciations between indices of abdominal obesity (waist circumference, WC; waist to hip ratio, WHR) and general adiposity (BMI) with cardiometabolic risk factors in the adult population aged 21-79 years living in the San Juan Metropolitan Area. A household survey conducted between 2005 and 2007 recruited a representative sample of 777 non-institutionalized adults. Logistic regression models were used to estimate the association between each cardiometabolic risk factor [low HDL-C, high non HDL-C, high LDL-C, high triglycerides (TG), high fasting plasma glucose (FPG), high glycosylated hemoglobin (HbA1c), high hs-CRP, high fibrinogen, high plasminogen activator inhibitor 1 (PAI-1), and HBP] and adiposity indices adjusting for age and sex. Elevated WC was defined as  $\geq 40$  inches in men and  $\geq 35$  inches in women; high WHR as  $\geq 0.85$  in women and  $\geq 0.90$  in men; and high BMI as  $\geq 30$  kg/m<sup>2</sup>. Participants with increased WC were significantly ( $p < 0.05$ ) more likely to have low HDL-C, high non HDL-C, high LDL-C, high TG, high FPG, high HbA1c, high hs-CRP, high fibrinogen, high PAI-1, and HBP. Significant associations were also observed for WHR and for BMI and individual cardiometabolic risk factors; however, the associations between these indices and LDL-C and fibrinogen did not reach statistical significance. These findings suggest that general and abdominal adiposity are both associated to cardiometabolic risk in this population (Approved by IRB. Supported by MSD, G12RR03051 and P20RR011126).

**R-203 Epidemiology of High Risk Deliveries in Puerto Rico.** Campos-Rivera, M and Rodríguez-Rivera, I. Scholars Masters in Clinical Research Program, Escuela de Medicina Dental, UPR-Recinto de Ciencias Médicas.

Puerto Rico has the highest rate of preterm birth. We have observed an increase in the number of specialized Neonatal Intensive Care Units in the island. However, there is a gap in the knowledge of the amount of High-risk deliveries based on fetal needs carried out per institution in Puerto Rico. Furthermore, it is not known if the Institutions with the highest number of live births are proportionately burdened with the provision of care for this population. To perform an initial assessment of this health disparity, we determined the rate of pregnancies complicated by preterm delivery and requiring NICU admission. We then identified the institutions with the highest numbers of live births to further evaluate their rate of high-risk deliveries for these complications. Third, we identified the institutions with the highest rates of complications regardless of live birth rate. Complication prevalence higher than that reported for the general population was considered an uneven burden of disease distribution. The rate of preterm birth was 19.7%, and NICU admission was 6.6%. The three institutions with the highest number of live births carried out 7.1%, 6% and 5.3% of the total number of live births in PR. The rate of preterm birth and NICU admission in those institutions was: 20%/8%, 20.4%/6% and 13.3%/6.2% respectively. This assess-

ment suggests that there is a proportionate distribution of the rate of high-risk deliveries per number of live births reported. Supported in part by Award number R25RR017589 CRECD program.

**R-204 Home Health Care Services in Puerto Rico: An Innovative Model to Implement a Strategy for Integrative Primary Care Services.** Malavé-González R.J., Martínez-Marrero J.M., Alonzo-De La Cruz A., Pérez-Fernández C. Escuela de Profesiones Relacionadas a la Salud, UPR-Recinto de Ciencias Médicas.

To provide medical services at home is not a new idea. Available options do exist but mostly addressing particular needs for limited individuals. This work examined the viability of a proposed model that can offer access to home health care services for the Puerto Rican population as a primary health care alternative, based on a health team concept. It proposes primary care home services to the family as a whole; considering their health status and health service needs regardless their age. The objective of this work consisted in studying the application of the home health services concept as an alternative to develop a domiciliary hospitalization model. During our research, several worldwide models were analyzed including the Home Based Primary Care model of the USA Veteran Administration, health care models of Canada, Cuba, Latin America and Europe, among others. As a result a model is proposed considering the Puerto Rico idiosyncrasy. This model can offer alternate interventional health care services provided by a primary care domiciliary hospitalization team. It includes an educational component for family members and care takers on the importance and benefits of primary, secondary and tertiary prevention. It proposes an implementation of a universal home health care insurance coverage including the educational component of all levels of health promotion and prevention through the proposed health care team. This methodology can result in a cost effective model that would improve the quality of the population health status and liberate funds and resources that could be assigned to other health areas.

**R-205 La comercialización de la niñez: retos para la salud pública.** Dr. José Solís Jordán. Universidad de Puerto Rico, Recinto de Río Piedras.

En el 1983 las empresas dedicadas al mercadeo y a la publicidad dirigido a la niñez gastaban unos \$100 millones de dólares. Hoy, esa cantidad sobrepasa \$17 mil millones de dólares. La niñez es responsable por la generación de más de \$40 mil millones en gastos directos para este mercado; aún más, la niñez ejerce una influencia indirecta en el consumo que sobrepasa los \$700 mil millones de dólares (Shor, 2008). Estos últimos datos surgen de los Estados Unidos pero incluyen a Puerto Rico. El mundo de la industria publicista y del "advertising" ha incrementado, de una manera abrumadora, la fijación con la niñez como mercado para el consumo directo e indirecto,

particularmente a raíz de la desregulación de la reglamentación acerca del "advertising" dirigido hacia la niñez. La Academia Americana de Pediatras entre muchas otras instituciones e organizaciones internacionales ha hecho varios llamados a que se atienda este fenómeno que sin duda alguna está afectando la salud de los niños y niñas, y por ende, la salud pública de las comunidades. Esta presentación cuenta con una exposición de los retos que la comercialización de la niñez nos presentan. Estoy trabajando con varias organizaciones internacionales dedicadas a este problema y diferentes iniciativas para promover un consumo mejor informado y más saludable tanto para la niñez como para sus padres, familias y las comunidades en general. El propósito de la presentación inicial es expositiva, con el objetivo de provocar interés en que se diseñen, en el RCM, diferentes investigaciones cuantitativas como cualitativas.

**R-206 Association between body mass index, waist-to-height ratio, and waist circumference with hypertension in a representative sample of elementary school children in Puerto Rico, 2008.** Rivera-Soto, W., Rodríguez-Figueroa, L., Calderón-Rojas, G. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Hypertension and prehypertension are strongly associated with childhood overweight. BMI for age is used as an overweight indicator, but some argue its validity in assessing health risks. Other measurements proposed as better indicators include waist circumference and waist-to-height ratio. This study aimed to assess the association between hypertension and these three overweight indicators in a representative sample of children from elementary schools in Puerto Rico. A two-stage stratified cluster sampling design was used (n=250). Information was collected through direct physical measurements of children. Odds ratios were calculated to evaluate these associations. Hypertension level was assessed according to percentiles for gender, age, and height. High waist-to-height ratio was defined as  $\geq 0.50$ , and high waist circumference was defined as  $\geq 95$ th percentile by gender/age. Half of the students were male (52%); mean age was  $9 \pm 2$  years. Approximately 9% children were prehypertensives and 5% were hypertensives. Almost a third (32%) had a high waist-to-height ratio, 24% had a high waist circumference, and 39% were overweight or at risk of overweight. A high waist-to-height ratio (OR=3.4; 95% CI=1.6-7.0), being overweight (OR=2.5; 95% CI=1.2-5.3), and a high waist circumference (OR=2.8; 95% CI=1.3-5.9) were associated with a higher probability of prehypertension/hypertension. Regardless of the weight indicator used, overweight children are at a higher risk of prehypertension/hypertension risk than non-overweight children. This risk significantly places PR children at high risk for cardiovascular disease and premature death.

**R-207 Noise Exposure Characterization Among Residential Trash Collectors in Puerto Rico.**

Sofía Rodríguez, Melissa Vargas, Marisol Vincenty, Sergio Caporali-Filho. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Environmental noise levels in the metropolitan areas of Bayamon and Dorado, Puerto Rico, are considerably higher than their counterparts around the world. High demographic and vehicular densities are considered to be important contributors to these higher noise levels. The objective of this study was to characterize noise exposure among trash collectors within these two towns. Full-shift noise dosimetry data was collected during the school period from 01/08 to 09/08 for one entire crew in each town to obtain one full-shift estimate for each crew member in all four workdays of the week. Throughout the sampling period, both crews remained with the same truck, made up of a truck driver and two trash collectors. Shifts varied from 6 to 9.2 hrs, depending on the daily route, which was dependent on the day of the week. Noise exposure data was compared with traffic patterns and tested for significant differences between different weekdays, crew member, and town. The day of the week had a significant effect on the individuals' noise exposure. In that sense, Monday was associated with the highest noise exposure, whereas Tuesday was associated with the lowest exposure. No significant differences were found between the driver and the two collectors, which is most likely due to the different impacts that the noise from the truck engine and from the environment had on each crew member's exposure. The driver seemed to be more affected by noise exposure from the engine, whereas the trash collectors seemed to be more affected by the overall environmental noise. Finally, no significant effects were found due to the municipality in itself.

**R-208 Desarrollo y Aplicación de un Programa Psicoeducativo de Terapia Ocupacional dirigido a Cuidadores de Pacientes de Demencia por Alzheimer (PACTO): Estudio Piloto.** González-Rivera JM., Millayes-Nieves S., Sánchez-Lorenzo G. y Rodríguez-Delgado C. Escuela de Profesiones de la Salud, UPR-Recinto de Ciencias Médicas.

Los pacientes con Demencia por Alzheimer son atendidos por familiares o por cuidadores primarios informales en sus hogares. Experimentan una variedad de efectos como depresión, ansiedad y otras condiciones físicas. En PR, no existen programas de intervención, apoyados en evidencia, para este grupo de personas que va en aumento. El propósito de este proyecto fue administrar una intervención psicoeducativa en Terapia Ocupacional (PACTO) dirigida a disminuir la sobrecarga, la tensión y aumentar la calidad del desempeño de las ocupaciones de los CPI. Se aplicaron los siguientes instrumentos antes y después de haber participado en PACTO (n=15, muestra por disponibilidad): Canadian Occupational Performance Measure, Zarit Burden Interview y un Cuestionario de Satisfacción. Los instrumentos alcanzaron coeficientes de consistencia interna (alpha Cronbach) mayores de .90. Los resultados de las

pruebas t revelan que se encontraron diferencias significativas en el nivel de dependencia ( $p=0.036$ ), la tensión experimentada por los CPI ( $p=0.034$ ), al igual que en la sensación de carga general sentida ( $p=.048$ ). Otras diferencias fueron en la ejecución ( $p=0.010$ ) y en la satisfacción sentida en la ejecución de sus ocupaciones significativas ( $p=0.001$ ). Los CPI expresaron altos niveles de satisfacción con el Programa PACTO y reportaron un total de 24 logros individuales. Contribuyeron además con recomendaciones para mejorar el Programa. Estos resultados contribuyen con evidencia importante sobre este tipo de intervención en Terapia Ocupacional.

**R-209 Proyecto Visión Vital: El Uso del Photovoice Como Estrategia de Apoderamiento de Salud Pública para las Comunidades.** M. Santos-Ortiz, M. Reyes-López, E. Valdez-Curiel, M. González, M.T. Borges-Cancel, M. Colón-Colón, N. Chéverez-Rodríguez, M. Feliciano, L. Pérez, F. Mejías, M. Rivera & C. J. Rolón Díaz. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Photovoice es un método de investigación-acción participativa basado en los principios de la promoción de la salud y la literatura teórica sobre educación para la toma de conciencia crítica, la teoría feminista y un enfoque comunitario de la fotografía documental. (Wang y Burris, 1997). Este permite el desarrollo de la creatividad, el empoderamiento y la expresión. Objetivo: Aumentar el conocimiento y destrezas en profesionales de la salud, facultad y estudiantes y personal de organizaciones de base comunitaria el uso de la fotografía como un componente importante en los esfuerzos de educación en salud y promoción de la salud. Actividades: (1) Se realizó un taller sobre la estrategia del "photovoice". (2) Se organizó el grupo de trabajo conocido como Proyecto Visión Vital (ViVi) (3) Se estableció como meta el contribuir al fortalecimiento de las capacidades de las personas y comunidades en Puerto Rico para responder positivamente al proceso de crisis económica. Resultados: Las fotos que se presentaron en una exposición en la Escuela Graduada de Salud Pública. Las imágenes reflejan alternativas que han sido identificadas por las personas del grupo y que se entiende que pueden contribuir a manejar la realidad económica en la que nos encontramos actualmente. Proyecciones: Exponer las fotografías en otros lugares. Adiestrar a otros en profesionales de la salud, facultad y estudiantes y personal de organizaciones de base comunitaria el uso de la fotografía como un componente importante en los esfuerzos de educación en salud y promoción de la salud.

**R-210 Exploratory Study: Perception of the Social Support among a sample of Puerto Rican Baby Boomers that are injecting drug users.** N Labault<sup>1</sup>; R Dávila<sup>2</sup>; V Reyes<sup>3</sup>. <sup>1</sup>Gerontology Program, <sup>2</sup>Maternal and Child Health Program, UPR-MS-C-School of Public Health, <sup>3</sup>En-

vironmental Health Program, School of Public Health-MS-C-UPR, & Walden University.

Objective: To identify the Social Support Perception in a group of Puerto Rican Baby Boomers that are injecting drug users. Method: A cross-sectional exploratory pilot study, with a non-probabilistic sample of 50 individuals (25 females and 25 males) participating in a Needle Exchange Program was conducted. Face to Face interviews were performed to determine the social support perception. A Social Support Scale was adapted of the FIRA-G instruments. The Cronbach's alpha of the scale was 0.869. Results: The median points in the social support scale obtained was 38.42 (moderate social support perception). 56% of the participant perceived that if he/she had an emergency, even people that doesn't know him/her in their community would be willing to help. 36% of the participant perceived that their family members rarely they listen their problems and concerns. 46% of the participants perceived that their community's friends are not part of their daily activities. On the other hand, women perceived significantly less social support than the man ( $t= -3.679$ ;  $p=0.001$ ). Conclusion: The importance of social relationships with family and friends highlights the potential of social interventions to introduce harm reduction initiatives. Additionally, more research should be developed to study the social support issues from a gender perspective.

**R-211 Puerto Rican HIV-Positive Adolescents Experience with Medication Adherence.** Janet Rodríguez-Rodríguez. Escuela de Enfermería, UPR-Recinto de Ciencias Médicas.

As of September 2009, there were 261 cases of HIV, and 265 cases of AIDS, ages 13-19 in Puerto Rico (Puerto Rico Health Department, 2009). The purpose of this qualitative study was to describe the experience of medication adherence in Puerto Rican youth who are HIV-positive. Study was approved by the UPR-MS-C IRB and the IRB of the University of Arizona in Tucson. Semi-structured, in-depth interviews were conducted with 13 Puerto Rican HIV-positive adolescents. The major theme that emerged from the data analysis was the normalization of daily life events. These Puerto Rican HIV-positive adolescents try to integrate their HIV status and treatment with their lives. These adolescents concentrate their lives on striving to live a normal life. A variety of coping strategies are used to deal with HIV and has helped them visualize themselves as a normal adolescent with a normal life. Because they see themselves having a normal life, adhering or not adhering to their medications for HIV is also seen as a normal part of their lives. This study establishes the beginning of understanding the concept and process of normalization in this vulnerable population. It also establishes interventions to promote and improve medication adherence among Puerto Rican adolescents who are HIV-positive.

**R-212 Satisfacción Laboral y Clima Organizacional de la Facultad de las Escuelas de Enfermería**

**de la Universidad de Puerto Rico.** J. C. Soto. Escuela de Enfermería, UPR-Recinto de Ciencias Médicas.

El propósito de este estudio fue examinar la Satisfacción Laboral y el Clima Organizacional de la facultad de las escuelas de enfermería de la Universidad de Puerto Rico. El marco teórico de la investigación se enmarca en los fundamentos conceptuales de la Teoría Motivacional de Herzberg, para explicar Satisfacción Laboral, y de la Teoría de Sistemas Gerenciales de Likert, para explicar Clima Organizacional. Las preguntas de investigación fueron dirigidas a conocer: la percepción de la facultad sobre su Satisfacción Laboral y Clima Organizacional, si existía relación entre las variables y si la percepción de las variables era influenciada por el rango académico de la facultad, por sus años de Servicio o por su estatus como empleados en la Universidad de Puerto Rico. El estudio fue no experimental, transeccional de tipo exploratorio y correlacional. La población del estudio fue la facultad de las escuelas de enfermería de la UPR. La muestra se escogió por disponibilidad de los sujetos. Los dos instrumentos que se utilizaron fueron: El Job Descriptive Index, versión 1997 en español y el Organizational Climate Index, versión en español. En los resultados de la investigación se encontró que la facultad bajo estudio percibe satisfacción laboral con su empleo y clima organizacional abierto. Se encontró que existe relación positiva entre las dos variables del estudio. Finalmente se encontró, que los rangos académicos, los años de servicio y el estatus como empleados/as que posee la facultad influyen de forma positiva tanto en la percepción de su satisfacción laboral como en la percepción de su clima organizacional.

**R-213 La Espiritualidad en el Programa de Bachillerato en Ciencias en Enfermería en una Institución Universitaria: Estudio de Caso.** J. Figueroa. Escuela de Enfermería, UPR-Recinto de Ciencias Médicas.

El propósito de esta investigación fue examinar el concepto espiritualidad según manifestado en la concentración de enfermería del programa y según las experiencias de profesores y estudiantes del Programa de Bachillerato en Ciencias en Enfermería de una Universidad en Puerto Rico. Se utilizó el enfoque cualitativo con un diseño de estudio de caso. Se realizaron entrevistas a profundidad a ocho profesores y a ocho estudiantes, y se analizó el contenido curricular de la concentración. Las preguntas de investigación se dirigen a conocer lo que expresan los documentos del currículo oficial con respecto a la presencia del concepto espiritualidad; así como las experiencias de los educadores y los estudiantes en torno a la presencia de contenidos y las destrezas desarrolladas para identificar y manejar las necesidades espirituales. Los hallazgos apuntan a que la facultad, los estudiantes y la información presente en el contenido curricular, coinciden en que se incluya el concepto espiritualidad desde los primeros cursos de concentración. Se demostró que la facultad enseña y el estudiante aprende a

manejar la espiritualidad. Asimismo recomendaron fortalecer las estrategias de enseñanza respecto al concepto de la espiritualidad. Esta investigación tiene implicaciones para los currículos y la enseñanza de la enfermería; las agencias que ofrecen servicios de la enfermería; la educación continua, y finalmente aporta al conocimiento científico relacionado con la enfermería en Puerto Rico.

**R-214 Integración del Desarrollo de las Competencias de Información en el Currículo del Programa Subgraduado de Enfermería del Recinto de Ciencias Médicas.** E. Flores<sup>1</sup>, D. M. Freytes<sup>2</sup>, M. M., González<sup>1</sup>, C. W. Seguí<sup>1</sup>, R. I. Barrios<sup>1</sup>. <sup>1</sup>Biblioteca, Decanato de Asuntos Académicos, <sup>2</sup>Escuela de Enfermería, UPR-Recinto de Ciencias Médicas.

Los retos de la sociedad del conocimiento plantean la necesidad de que los profesionales de la enfermería del siglo XXI sean competentes en el acceso y el uso crítico de la información. A tono con este panorama, las agencias acreditadoras en el ámbito de la educación superior requieren la colaboración de profesores y docentes bibliotecarios para lograr la integración formal en el currículo del desarrollo de las competencias de información. Objetivo: Integrar las competencias de información al curso "ENFE 4075: Introducción al proceso de investigación", que es requisito del Programa Subgraduado de Enfermería en el Recinto de Ciencias Médicas. Actividades: Análisis del prontuario del curso; diseño de un proyecto de clase innovador que requiere investigación y uso de información; elaboración de un plan educativo semestral; implantación y evaluación del plan. Resultados: De un total de 35 estudiantes matriculados en el curso (segundo semestre 2007-2008), 91% fueron capaces de formular preguntas basadas en su necesidad de información; 71% definió adecuadamente su necesidad de información; 80% dominó la selección de palabras clave y el uso de operadores booleanos; 85% evaluó las fuentes de información de forma crítica; y 90% utilizó la información eficazmente para generar el producto esperado (cartel científico). Usando como base esta experiencia, se incluyó el desarrollo de las competencias de información en la propuesta curricular del Programa Subgraduado de Enfermería. Proyecciones: Lograr que el 100% de los egresados de este programa desarrollen sus competencias de información, una vez sea aprobado el nuevo currículo.

**R-215 The Effect of the Puerto Rico Smoking Ban, controlling by Related Advertisements Expenditures and Seasonal Effects, on the Number of Callers and Registered Smokers to the Puerto Rico Quitline from March 2005 to February 2008.** Elba C. Díaz-Toro, DMD, MSD,<sup>2,3</sup>; William Calo, MPH<sup>3</sup>; Lauren N. Whiteman, MPH<sup>4</sup> Heriberto Marín-Centeno, PhD<sup>5</sup>. Escuela de Medicina Dental, UPR-Recinto de Ciencias Médicas.

The Puerto Rico (PR) Department of Health implemented the Puerto Rico Quitline (PRQ) in December 2004 and the PR's government enacted the Smoke Free Work Places Ban in March of 2006 which became effective a year later. The objective of this study was to determine the effect of the ban on the utilization of the PRQ by the increase in PRQ "callers" and "registered smokers" while controlling for related advertising expenditures (AE) and seasonal effects (SE). Number of "callers", "registered smokers" and AE data from anti-tobacco campaigns for promoting the Smoking Ban (SB) was collected monthly, for 36 month. The outcome variables were the number of "callers" and "registered smokers". Time-series analyses were used to compare the "callers" and "registered smokers" before and after the ban's implementation, controlling for SE and AE. After controlling for confounders, analyses shows that implementation of the Smoking Ban had no statistically significant effect on the "callers" and "registered smokers". However, these outcome variables exhibited strong SE. Total AE had a significant and positive effect on the "callers" and "registered smokers". A 10% increase in AE increased the number of "callers" by 0.48% ( $p < .05$ ) and the number of "registered smokers" by 0.61% ( $p < .05$ ). The implementation of the Smoking Ban in PR had no significant impact on the utilization of the PRQ. However, most effective AE that directly promoted the use of the PRQ or anti-tobacco campaigns with the PRQ logo increase their utilization. These findings have implications when tobacco control resources are limited.

**R-216 Proyecto MANOS.** Mirabal B, Díaz E, Ríos J, Pascual A, Marrero G. Departamento de Pediatría, Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

El propósito del estudio era determinar si un programa educativo para padres de recién nacidos ayuda a prevenir el Síndrome de Bebé Sacudido (SBS) en familias puertorriqueñas, al aumentar conocimiento y ofrecer alternativas para manejar el llanto del bebé. SBS puede ocasionar daño neurológico permanente y/o muerte. Se reclutaron los participantes en Sala de Parto/Recién Nacidos. Luego de firmar consentimiento y hoja de compromiso, los padres observaron DVD, Portrait of Promise: Preventing Shaken Baby Syndrome, con facilitador. Se discutieron alternativas para manejar el llanto. Se administraron pre-post pruebas y se autorizó seguimiento telefónico en 3 meses. Se revisaron 53% récords médicos. Participaron 65 recién nacidos de Pavía Hato Rey y Santurce (62 madres, 11 padres). El 33% de las madres tenían < 19 años. La mitad reportó estudios universitarios; 83.1% tenía Reforma de Salud. Se realizaron análisis descriptivos, pruebas T, chi-squares y odds ratios. Las post pruebas demostraron aumento en puntuación ( $p < 0.05$ ). No se encontró asociación entre educación o edad de padres y puntuación > 70% en post-prueba. Se contactaron 75.4% padres; 98% informó bebé había estado bien/muy bien. Un infante fue referido a Trabajo Social; dos fueron removidos por negligencia. No se reportó trauma a cabeza. El

44.5% indicó era difícil cuidar el bebé; 65.7% informó lo más difícil era controlar el llanto. El 94% utilizó alternativas ofrecidas; todos reportaron les ayudó. Conclusión: Los padres aprendieron a utilizar estrategias para manejar el llanto. Se recomienda continuar el programa en hospitales. Auspiciador: Metro-Pavía Health, Inc.

**R-217 Hospital Disaster and Emergency Plan Knowledge Assessment for Hospital Employees at an Urban Teaching Hospital in Puerto Rico.** Nannette M. Lugo-Amador, MD, MPH, FACEP. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

Background: University of Puerto Rico (UPR) Hospital in Carolina is an urban teaching 250 bed hospital in the North East of PR. The population served by this hospital is 390,038. Objective: Assess the disaster plan knowledge of UPR Hospital employees. Methods: Cross sectional survey. Employees invited to participate were randomly selected from the Human Resources roster, 29% of all eligible employees. Results: One hundred-ninety-nine subjects participated. Participation rate was 83.97%. Participant mean age was 41.57 years. Participant mean length of hospital service was 9.44 years. Fifty-one subjects were male (28.89%) and 146 were female (74.11%). The average test score for all participants was 64.97%. The average scores by main hospital worker categories were: administration ( $n=47$ ) 69.46%, physicians 51.73% ( $n=34$ ), nurses 70.34% ( $n=48$ ). Differences between these groups are statistically significant ( $p < 0.001$ ). One hundred-four participants (52.53%) stated that they feel prepared to work during a disaster situation and 192 (96.48%) were interested in learning more about the hospital disaster plan. Conclusion: Overall UPR Hospital employees had a deficient performance in a written questionnaire about the hospital disaster plan. Physicians had the worst performance as a group. Most participants feel prepared to work in the hospital during a disaster and the great majority wants to learn more about the hospital disaster plan. Approved by the UPR MSC IRB. Statistical support from UPR MSC RCMI NCRR grant G12RR03051.

**R-218 Prevalence of Potentially Inappropriate Prescribing Among Elderly Patients Before, During, and After Their Hospital Stay at an Academic University Hospital in Carolina, Puerto Rico.** Y. González<sup>1</sup>, PharmD, D. Méndez<sup>1</sup>, PharmD, M. Vega<sup>1</sup>, PharmD, S. Rivera<sup>1</sup>, PharmD, J. Hernández, PhD. Escuela de Farmacia, UPR-Recinto de Ciencias Médicas.

Potentially inappropriate prescribing (PIP<sub>x</sub>) has been associated with increased health care cost, hospitalization rates, and mortality. Unfortunately, this prevalence has been poorly studied among patients in Puerto Rico (PR). Objectives: This study aimed to estimate the prevalence of PIP<sub>x</sub> among elderly patients admitted to an academic hospital in Carolina, PR.

Comparisons of the PIPx prevalence upon admission, during the hospital stay, and upon discharge were conducted, and factors associated with it were identified. Methodology: This study followed a retrospective cross-sectional design. A convenience sample was obtained through medical record review of patients 65 years of age and older admitted to the hospital from March 1st to August 31st, 2008. The 2003 Beers' drug list was used to ascertain the prevalence of PIPx. Measures of PIPx are presented and compared: 1) upon admission; 2) during hospital stay; and 3) upon discharge. Results: A total of 98 records were evaluated. The resulting overall prevalence of PIPx was 51%. This occurred to 25% of the patients upon admission, 43% of the patients during hospital stay, and 16% of the patients upon discharge. The prevalence of PIPx upon discharge was statistically significant lower than the prevalence upon admission ( $p < 0.0001$ ). Conclusions: The prevalence of PIPx was found to be high and similar to the one reported in other hospitals in the United States. The findings from this study suggest that there is a need to educate health care professionals to minimize the observed prevalence in order to minimize health care cost and poor health outcomes.

**R-219 Suicidal ideation and suicidal severity levels among Puerto Rican patients with chronic health conditions.** Pérez C., Reyes M., Juarbe D., Huertas S., Huertas A., and Vera M. Escuela de Salud Pública, UPR-Recinto de Ciencias Médicas.

Objective: This study examines the rates and correlates of suicidal ideation and suicidal severity levels among general practice patients with chronic illnesses. Our goal is to gain a better understanding of the main factors separating milder suicidal ideation from more serious ideation. Methods: We screened 2068 patients with chronic physical conditions at 14 urban general practices serving primarily low-income Puerto Ricans. Multiple logistic regression analysis was conducted to examine the relationship between sociodemographic factors, depression, and suicidal ideation. Results: Over 15 % of the patients acknowledged recent suicidal ideation. Among this group, 8.6% reported passive ideation, 3.7% active ideation without a plan, and 3.1% active ideation with a plan or attempt. According to multivariate logistic regression, suicidal ideation was higher among patients with moderately severe depression and severe depression than for those with lower symptoms. Conclusions: Our findings support the importance of public health strategies focused on the early recognition and management of depressed patients in primary care and the implementation of evidence based interventions to minimize and prevent suicide. Supported by MBRS-SCORE Grant S06GM008224 from the National Institute of General Medical Sciences and approved by IRB.

**R-220 Effectiveness of a Collaborative Care Intervention for the Treatment of Depressed La-**

**tino Patients in General Medical Settings.**

D. Juarbe<sup>1</sup>, M. Reyes<sup>2</sup>, C. Pérez<sup>2</sup>, S. Huertas<sup>1</sup>, A. Huertas<sup>1</sup>, M.L. Reyes<sup>3</sup>, M. Vera<sup>1</sup>. <sup>1</sup>Medical Sciences Campus, <sup>2</sup>VA Caribbean Healthcare System, <sup>3</sup>University of North Carolina.

Despite a significant body of evidence sustaining the effectiveness of collaborative care for the treatment of depression in primary care, very little is known about the impact of this model with depressed primary care patients in Puerto Rico. Objective: This study examined whether a collaborative care model for depression would improve clinical and functional outcomes for depressed primary care patients in Puerto Rico. Methods: A total of 179 depressed primary care patients with chronic medical conditions were randomly assigned to receive collaborative care or usual care. The collaborative care intervention involved enhanced collaboration among physicians, mental health specialists, and care managers paired with depression specific treatment guidelines, patient education, and follow-up. In usual care study personnel informed the patient and provider of the diagnosis and encouraged patients to discuss treatment options with their provider. Results: Compared with usual care for depression, collaborative care significantly reduced depressive symptoms and improved social functioning over the six-month course of follow-up. Our data further evidence that integration of collaborative care in primary care practices considerably increased depressed patients' use of mental health services. Conclusions: The collaborative care model seems to be effective for improving clinical and functioning outcomes of depressed patients receiving treatment in general medical settings. Supported by MBRS-SCORE Grant S06GM008224 from the National Institute of General Medical Sciences and approved by IRB.

**R-221 Developing cultural sensitive health instruments to assess breathlessness in Puerto Rico.** De Jesús, Y., Dexter, D., Santos, R., Nazario, C.M. Escuela de Medicina, UPR-Recinto de Ciencias Médicas.

There is a need for cultural sensitive instruments to assess breathlessness in patients living with chronic lung diseases. Several instruments have been validated in English, but none has been adapted for its use in Puerto Rico (PR). Objective: To culturally adapt the Medical Research Council (MRC) dyspnea scale and the Oxygen Cost Diagram (OCD). Design: Cross sectional study to correlate the severity of breathlessness rated in the adapted scales to physiologic measures. Procedures: Subjects rated their perception of dyspnea in the scales, performed a pulmonary function test and a six minute walk (6MW). Spearman correlation coefficient was obtained for each scale to physiologic measures and between scales. Significance was assessed at  $p$  value  $< 0.05$ . Results: MRC demonstrated a moderate inverse correlation to FEV1 (spearman's coefficient -0.49,  $p$  0.002), FVC (sc -0.55,  $p$   $< 0.001$ ), and distance walked (sc -0.44,  $p$   $< 0.02$ ) in asthma patients, whereas no

correlation was observed with COPD patients. OCD was positively correlated to FEV1 (sc 0.49, p 0.002), FEV1% (sc 0.33, p 0.046), and distance walked (sc 0.63, p <0.01) in asthma, while in COPD significant correlation was obtained to FEV1% (sc 0.522, p 0.026), FEF 25-75% (sc 0.49, p 0.04), and distance walked (sc 0.57, p 0.05). A strong correlation between scales was observed (sc -0.63, p <0.001). Conclusions: The severity of dyspnea rated in the adapted scales correlated well to the severity of physiological impairment. The Spanish adaptation of the OCD and MRC can be used to assess severity of dyspnea in PR. Support: NIH grant SP20RR011126.

**R-222 Aplicación de tecnologías de información y comunicación en la educación de cuidadores informales.** Dr. José Sánchez Lugo<sup>1</sup>, Dra. Nirzka Labault<sup>2</sup>, Profa. Rossana Barrios Lloréns<sup>2</sup>. <sup>1</sup>Recinto de Río Piedras, <sup>2</sup>Recinto de Ciencias Médicas, Universidad de Puerto Rico.

Presentamos un proyecto en el cual se integran las tecnologías del Web 2.0 para proveer oportunidades de aprendizaje abierto a una población largamente desatendida en Puerto Rico. La colaboración entre docentes de la Escuela de Salud Pública, la Biblioteca Conrado F. Asenjo y la Escuela Graduada de Ciencias y Tecnologías de Información, todas de la Universidad de Puerto Rico, en alianza con la Asociación Americana de Personas Retiradas (AARP por sus siglas en inglés), generó un weblog para personas que cuidan de sus enfermos o familiares envejecidos en sus casas y que no han recibido adiestramiento formal para estas funciones. El proyecto modela la aplicación de las tecnologías para la inclusión de este sector a la sociedad del conocimiento que paulatinamente se construye en Puerto Rico. La presentación ilustra el potencial del weblog para atender necesidades de información y educación a la ciudadanía en asuntos de salud pública y proyecta las mejores prácticas en la utilización de estas tecnologías para adelantar y diseminar el conocimiento. La presentación explica las condiciones generales de la población envejecida en Puerto Rico y las oportunidades que estas tecnologías pueden proveer a estas poblaciones y sus cuidadores. Continúa con la discusión de cómo la sociedad del conocimiento requiere de estos esfuerzos para la educación ciudadana. Además se explica el proceso de diseño y conducción del curso que sirvió de base para el proceso de producción del recurso así como la validación de lo realizado en un ciclo de evaluación completa. La presentación del blog generado en sus diversas partes cierra la presentación.

## Presentations on Cancer

**D-1 A New Anti-Angiogenic Therapeutic for the Treatment of Breast Cancer.** A. Banerjee<sup>1</sup>, A. Rivera<sup>1</sup>, E. Durán<sup>1</sup>, K. Baksi<sup>2</sup> and D. K. Banerjee<sup>1</sup>. <sup>1</sup>Dept Biochem, School of Medicine,

MSC-Univ Puerto Rico, San Juan, PR and <sup>2</sup>Dept Cell Biol & Anat, Universidad Central del Caribe, Bayamón, PR.

Breast cancer is angiogenesis dependent. Our objective has been to control and/or eliminate breast cancer progression by reducing angiogenesis. We have used tunicamycin, a competitive inhibitor of N-acetylglucosaminyl 1-phosphate transferase because our laboratory has established a dynamic relationship between protein N-glycosylation and angiogenesis. MDA-MB-435 induced breast tumor in athymic nude mice when treated with tunicamycin exhibited reduced angiogenesis and consequently the tumor growth. H & E and immunohistochemical staining of paraffin sections of tumor tissue show down regulation of Ki-67 and VEGF expression and decreased mitotic index. Mechanistic details indicate tunicamycin down regulates cell surface glycoproteins expression and arrests capillary endothelial cells in G1. Up-regulation of c-Jun and c-Myc and down-regulation of c-Fos further support the loss of survival potential. Increased DNA fragmentation and annexin V binding indicate apoptosis. High GRP-78/Bip, ATF6 and PERK expression supports that apoptosis is mediated by unfolded protein response (upr). Tunicamycin is stable under tumor microenvironment and VEGF165 is unable to overcome the inhibition. Expression of phospho-VEGFR1 and VEGFR2 and phospho-tyrosine kinase activity are all down regulated. Western blotting, QRT-PCR and cDNA microarray results indicate inhibition of endogenous angiogenesis inhibitor, thrombospondin (TSP-1) expression. Therefore, we conclude the anti-tumor effect of tunicamycin. Supported by grants from Susan G. Komen for the Cure BCTR0600582 (DKB) and NIH/NCRR/RCMI G12-RR03035 (KB).

**D-2 A functional link between the retinoblastoma protein and the small Rho GTPase Rac1.** Sosa-García, Bernadette<sup>1</sup>; Vázquez-Rivera, Viviana<sup>1</sup>; Dutil, Julie<sup>1</sup>; Cress, William D.<sup>2</sup>; Hinds, Philip W.<sup>3</sup>; and Santiago-Cardona, Pedro<sup>1</sup>. Ponce School of Medicine<sup>1</sup>, H. Lee Moffitt Cancer Center<sup>2</sup> & Molecular Oncology Research Institute and Tufts Medical Center<sup>3</sup>.

The retinoblastoma tumor suppressor (pRb) is a cell cycle regulator inactivated in most human cancers. Our studies suggest a novel role of pRb as a regulator of the activity Rac1, a Rho GTPase involved in many cellular processes such as cell adhesion. Our data show that pRb represses Rac1 by decreasing the levels of its effector the p21-activated protein kinase 1 (PAK1). qRT-PCR, immunoblot and immunofluorescence analyses showed that pRb loss results in increased PAK1 mRNA and protein, without affecting Pak1 mRNA half-life. Promoter-reporter construct expression analyses revealed that PAK1 regulation by pRb occurs at the transcriptional level, which is consistent with pRb's well characterized role as a transcriptional regulator. We identified a pRb-responsive element in a region spanning from -201 to +159 of the Pak1 pro-

moter, and bioinformatic analyses showed this region to contain binding sites for the E2F transcription factors, which are well-characterized pRb binding partners. Taken together, our data suggest that pRb represses Rac1 activity by blocking the E2F-dependent transcription of PAK1. This brings forth the interesting possibility that pRb, acting via small Rho GTPases, could have additional novel roles as a regulator of processes such as changes in cell shape, migration, and cytoskeletal reorganization, processes in which these GTPases play a role. This project is supported by PSM Institutional Funds, by the US6 Partnership between PSM and the H. Lee Moffitt Cancer Center (Pilot Grant No. 10-14352-02-03), and RISE Program 1R25GMO82406 from NIH-NIGMS.

**D-3 COP9 Signalosome Subunit 6 regulation of tumor suppressor p27.** Guma-De la Vega, Sergei<sup>1</sup>, Zhao, Ruiying<sup>1</sup>, Lee, Mong-Hong<sup>1</sup>, and Yeung, Sai-ching J<sup>2,3</sup>. Department of Molecular and Cellular Oncology<sup>1</sup>, Department of General Internal Medicine, Ambulatory Treatment and Emergency Care<sup>2</sup>, and Department of Endocrine Neoplasia and Hormonal Disorders<sup>3</sup>, University of Texas M.D. Anderson Cancer Center.

The COP9 signalosome regulation of the ubiquitin/proteasome system has made it an attractive complex to study, especially in relation to ubiquitination of cancer related proteins. Two of its subunits, CSN5 and CSN6 share significant homology and contain an MPN domain. CSN5 is involved in degrading proteins deregulated in tumorigenesis. However, little is known about the involvement of CSN6 in cancer; although chromosomal location of CSN6 is mapped to 7q22 where amplification is seen in a variety of human cancers. Our data has demonstrated that CSN6 is involved in downregulating p27, a CDK inhibitor down regulated in many cancers. Our objective is to determine the method CSN6 regulates the expression of p27. We hypothesize that CSN6 downregulates p27 by means of nuclear exportation and by promoting its proteasome degradation through the action of a MPN metalloprotease motif. To determine the effect of CSN6 on p27 protein levels, we overexpressed CSN6 through transient transfection in 293T and used stable overexpressing CSN6 and stable CSN6 knockdown HCT116 cell lines. We determined that in CSN6 overexpression, p27 levels decrease in a dose dependent manner. Our data suggests CSN6 downregulates p27 by inducing its ubiquitination and subsequent degradation. Using nuclear fractionation experiments and immunofluorescence, we determined that CSN6 induces the nuclear exportation of p27. PCR with pfu polymerase was used to develop site specific mutations in the MPN domain of CSN6, to determine the importance of this region in p27 downregulation. Mutations within a putative Nuclear Exporting Sequence (NES) were also developed. Our data indicates that CSN6 downregulates p27 by promoting its ubiquitin-mediated degradation and by

inducing its nuclear exportation. Funding for my salary is from the University of Texas Graduate School of Biomedical Sciences. My laboratory is funded by a NIH R01 Grant (2 R01 CA089266-06A1).

**D-4 Treatments for Type 2 Diabetes Mellitus in Pancreatic Cancer.** Velázquez-Torres, Guermarie<sup>1</sup>, Gully, Christopher<sup>1</sup>, Zhang, F.<sup>1</sup>, Zhao, R.<sup>1</sup>, Phan, Liem<sup>1</sup>, Sai-Ching J., Yeung<sup>2,3</sup>, and Mong-Hong Lee<sup>1</sup>. Department of Molecular and Cellular Oncology<sup>1</sup>, Department of General Internal Medicine, Ambulatory Treatment and Emergency Care<sup>2</sup>, and Department of Endocrine Neoplasia and Hormonal Disorders<sup>3</sup>, University of Texas M. D. Anderson Cancer Center.

The fourth most lethal cancer in the United States is pancreatic cancer. Approximately 80% of pancreatic cancer patients have type 2 diabetes mellitus (DM2). We hypothesize that use of anti-diabetic drugs could help prevent or treat pancreatic cancer. Two pancreatic cancer cell lines MiaPaCa-2 and Panc-1 were used in this study. Anti-diabetic drugs, Rosiglitazone (a thiazolidinediones) and Metformin (a biguanide) were used to determine their effect on pancreatic cancer cell proliferation, motility and glucose metabolism. Proliferation and motility on pancreatic cancer cells were decreased upon treatment with Metformin and Rosiglitazone. Also, an increase in apoptosis was observed when cells were treated with Metformin and Rosiglitazone. Glucose uptake of MiaPaCa-2 cells was decreased when treated with Metformin and Rosiglitazone. These two drugs inhibit the protein B kinase (AKT) pathway by different means: Metformin affect AKT/mammalian target of rapamycin pathway through activation of the AMP-activated protein kinase pathway and Rosiglitazone through activation of peroxisome proliferator-activated receptor- $\gamma$ . In conclusion these two drugs have effects on cell proliferation, cell motility, survival, and metabolism of pancreatic cancer cells. The impact of these drugs in pancreatic cell glycolysis could have significant impact on cell growth and survival since tumor cells prefer glycolysis for glucose metabolism as described by Otto Warburg. The study of the effects of anti-diabetic drugs on pancreatic cancer cells could be very important for future treatments to prevent or overcome pancreatic cancer in patients. Approved by IACUC. (Supported by R25T-CA57730 and 2R01CA089266)

**D-5 The Significance of Skin Metastases in Sarcoma Patients.** Ross A. Bones-Valentín, Alexander J.F. Lazar, M.D., PhD, Dina Chelouche Lev, M.D., Wei-Lien Wang MD. UPR Ponce.

Sarcoma is a family of malignant neoplasms showing mesenchymal (connective tissue) differentiation that mostly commonly metastasizes to the lungs. Skin metastasis in soft tissue sarcoma patients are very rare and probably represent an ad-

vanced stage of the disease. This study focuses on a population of forty-seven sarcoma patients from the University of Texas MD Anderson Cancer Center experience, diagnosed with cutaneous metastases. Histological type, distribution, treatment and prognosis of sarcoma patients with skin metastasis were analyzed in this study. Leiomyosarcoma was the most common type of sarcoma to risk rise to skin metastasis. Other metastases, 76% to the lungs, occurred after an average time of thirty-eight months from diagnosis of the primary tumor. A mean of fifty-eight months passed for the patients to develop the first skin metastasis with the scalp being the initial cutaneous site in 40% of cases. As expected, the survival of patients decreased significantly with metastatic progression. Metastasis to the skin is a rare event in sarcoma patients, probably occurring in less than 1 % of cases. The analysis on the impact, progression and outcomes of these patients highlights the significance of skin metastasis in sarcoma and provides important insight in the natural history of this intriguing group of tumors.

**D-6            Structure Functions Studies of the RNA Binding Protein Hfq**, Arianexys Aquino-López, Richard G. Brennan, Todd M. Link. Recinto de Río Piedras -UPR

Hfq is an RNA binding pleiotropic post transcriptional regulator found in multiple bacteria which is required for the degra-

dition of some mRNA transcripts and the efficient translation of others. It is thought that Hfq has at least two different binding sites, the 'distal site', which binds poly (A) tails, and the 'proximal site' which is thought to bind U-rich sequences. The purpose of this research was to test the specificity of its two binding sites. To do that we used the fluorescent polarization technique in which the protein is added to a certain amount of fluorescinated RNA, as the protein binds to the RNA the mP and intensity of it change showing us a plot of mP vs. concentration of protein which will give us the binding constant of the protein (Kd). The RNAs used include fluorescinated poly (A) and U- rich sequences (FA27, FAUSG and FA6G). The proteins used were different E. coli truncated Hfq mutants such as Q52A, Q33P, Y25W and Y25A. It is known that Hfq has ATPase activity, therefore we also wanted to show that ATP binding affects RNA binding only in the 'distal' side, where poly (A) binds, but not in the 'proximal' side, where U- rich sequences bind. The same study was done with GTP since it is thought that GTP can bind at the same place as ATP. Many of the results obtained through this study support our hypothesis that the Hfq protein has two binding sites with different specificities. Still there are results that contradict our hypothesis. This work is part of a series of structure/function studies that should be done in order to understand more clearly the Hfq protein and its binding specificity.