

Modulating the biosynthesis of microbially-derived fatty acids is an attractive strategy towards generating precursors for bio-diesel mixtures. *Escherichia coli* produces fatty acids using a set of stand-alone enzymes which form part of the quintessential type II fatty acid synthase. Several deep-sea bacteria are capable of producing higher fatty acid yields using a multidomain type I fatty acid synthase. Overexpression of the DH1-DH2-UMA dehydratase tetradomain from *Photobacterium profundum* has been shown to enhance 5-fold fatty acid production in *E. coli*. In an effort to mimic this protein architecture, we will create artificially linked constructs of 2 dehydratases involved in *E. coli* fatty acid biosynthesis, FabA and FabZ. While these enzymes function as homodimers in *E. coli*, the effect of covalent linkage is unknown. Using specific primers in an overlap PCR, we have generated hybrid gene constructs encoding for 4 dimers separated by a short amino acid linker: fabA/fabA, fabZ/fabZ, fabA/fabZ, fabZ/fabA. These artificial genes have been sequenced and reveal a 100% match with the theoretical constructs. Each construct has been cloned into pET200, expressed in bacterial cultures and proteins purified by NiNTA affinity chromatography and Anion Exchange Chromatography. Purified proteins will be assayed for enzymatic activity by UV spectrophotometry and fatty acid profiles will be generated by GC/MS analysis. In conclusion, we have generated artificially linked dehydratase genes and purified their soluble protein products. This is the first time these enzymes have been covalently linked and may be useful tools for enhancing the production of fatty acids in bacterial cultures.

A-153 Preparedness of Community Primary Care Centers for a Pediatric Emergency in Puerto Rico

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Background & Objectives: Emergency care for life threatening pediatric illness and trauma requires specialized resources including equipment, drugs, trained personnel, and facilities. United States data has demonstrated there is lack of preparation to manage pediatric emergencies. This study will assess the preparedness of community primary care centers (CPCC) in Puerto Rico to manage pediatric emergencies. **Methods:** The Pediatric Emergency Program visited 27 CPCC during 2012-2014 for visual assessment of the equipment and medication available as well as a survey administration. Data was retrospectively analyzed to describe preparedness for pediatric emergencies. The study was approved by the IRB. **Results:** Questionnaire showed that a large number of CPCC are privately owned, there is lack of emergency pediatric care guidelines and required pediatric certification courses are minimal. Frequency of adequate pediatric emergency medication and equipment is low. None of CPCC had all the required equipment and medication to response to

pediatric emergencies. **Conclusions:** CPCC's are not prepared to manage pediatric emergencies. Lack of PLAS training, resuscitation equipment and medications, could be the difference between life and death. The development and implementation of an island wide strategic plan to improve pediatric emergency preparedness is mandatory. **Acknowledgments:** This research was supported by Health Department of Puerto Rico and EMP UPR School of Medicine.

A-154 El Movimiento de Personas entre Puerto Rico y los Estados Unidos: Flujos de Origen y Destino

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La migración es una de las variables de mayor protagonismo a nivel mundial en la actualidad. Puerto Rico ha mostrado un volumen considerable de emigrantes en años recientes. El objetivo del estudio fue examinar los flujos migratorios entre Puerto Rico y los Estados Unidos. Las fuentes de datos fueron el Puerto Rico y American Community Survey, 2008-2013. La investigación fue transversal descriptiva. Durante el 2008-2012 se movieron 68,847 personas desde PR hacia los EE.UU. y procedentes de este país llegaron 27,208. Esto indica que salieron del país 41,639 personas más de las que entraron. El 40% de los que salieron residían en: San Juan, Bayamón, Ponce, Carolina y Caguas; más de la mitad salió de la capital (22%). Los municipios que perdieron más habitantes en relación al tamaño de su población fueron: Culebra (10.6), Vieques (5.3), Juyuya (4.4%), San Juan (3.9) y Patillas (3.6). Solo 8 municipios recibieron más población de la que perdieron. Las zonas de mayor desarrollo social y económico presentaron un saldo migratorio negativo. Los municipios con saldo positivo, que ganaron más población procedente de Estados Unidos de la que perdieron, mayormente están localizados en el interior de la isla. Los estados que recibieron mayor número de puertorriqueños fueron: Florida, New York, Pennsylvania, Connecticut y Texas. El volumen emigratorio de Puerto Rico es alto y contribuye al descenso de población. Este evento tiene consecuencias demográficas, sociales, económicas y de salud, de forma particular para aquellos municipios que muestran la mayor pérdida de habitantes.

A-155 Misdiagnosis of ALCAPA in a 16 Months-old Male with Bronchiolitis and Cardiomegaly

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Anomalous origin of the left coronary artery from the pulmonary artery (ALCAPA) is a rare congenital coronary abnormality associated with myocardial infarction, congestive heart failure and early infant mortality that may be mistaken for common

pediatric conditions such as colic, reflux or bronchiolitis. The incidence of ALCAPA is estimated at 1/300,000 live births comprising between 0.24% and 0.46% of congenital cardiac diseases. A 16-month-old male was evaluated at the emergency room of a private community hospital of the metropolitan area due to respiratory distress, cough and clear nasal discharge of one day of evolution. The chest x-ray showed cardiomegaly for which an echocardiogram was performed. The diagnosis of ALCAPA anomaly was made with an ejection fraction of 30%, left ventricle and atrial enlargement, and a dilated right coronary artery. He was treated for cardiac failure. A chest computed tomography angiogram was done confirming the diagnosis. Patient was transferred to a cardiovascular center where a surgical procedure was performed to correct the anomaly. ALCAPA is a rare congenital abnormality, unusually found in an asymptomatic patient. In this case, the clinical presentation was due to a large RCA providing a brisk collateral supply to the left coronary system. Our patient's uniqueness is his young age and the lack of cardiac symptomatology previous to this respiratory illness. This condition if left untreated after the first year of life has a mortality of 90% secondary to myocardial ischemia or infarction, and mitral valve insufficiency leading to congestive heart failure and eventually death.

A-156 Urban River Pollutants Impact Behavior and Locomotion of Freshwater Prawn *Macrobrachium rosenbergii*
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Urbanism and anthropogenic activities are two common variables related to increase in river ecosystem pollution. Impact studies of emerging contaminants have often focused on effects on endocrine and reproductive function of aquatic fauna, yet little is known about how contaminants associated with the process of urbanization, such as phthalates and heavy metals, may affect an animal's nervous system and the behaviors it controls. Our study looks at effects of phthalates and heavy metals found in urban river on agonistic behavior and locomotion patterns in a farm-grown freshwater prawn, *Macrobrachium rosenbergii*. We monitored agonistic behaviors and locomotion before and after injection into the animal's hemolymph sinus of 0.006 ppm dibutyl phthalate (DBP) or 0.207 ppm manganese (Mn). Behaviors were evaluated by quantifying six parameters observed during interactions amongst pairs. ViewPoint, a recording and movement tracking software, was employed to assess locomotion patterns. Results show no significant changes ($p > 0.05$) in dominance or aggression levels during agonistic interactions, nor on locomotion speed and distance travelled in prawns injected with DBP or Mn. However, prawns injected with DBP or Mn explored more the center of the open field in the observation tank, when compared with animals injected with saline. This change in pattern of movement can increase the risk of becoming an easy

prey. We now plan to determine the effects these contaminants have on central nervous system protein expression. These types of studies are a means to start applying the tools of modern neuroscience to ecological problems of local and global significance. This study was supported by National Science Foundation (NSF) HRD-1137725 CREST, and National Institutes of Health (NIH) MBRS SCORE SC3GM084763. The authors have declared that no conflict of interest exists.

A-157 Xylazine as a Drug of Abuse: Toxic Effects to Endothelial Cells in Combination with Cocaine and Heroin

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Background: Xylazine use as a drug of abuse, in Puerto Rico and worldwide, and its combination with cocaine and/or heroin has increase in recent years. FDA approves Xylazine for animal use only. Clinical findings reported that xylazine users presented limb skin lesions, ulcerations and greater physiological deterioration than heroin users only. The aim of this study was to assess xylazine cytotoxicity on endothelial cells, as this is the first tissue affected upon administration. Methods: Human umbilical vein endothelial cells in culture were treated with xylazine, cocaine, heroin and their combinations from 10 nM to 400 μ M at 24, 48 and 72 hours exposure periods. IC50 was determined applying a fluorometric assay for viability determination. Annexin V and activation of caspases (8 and 9) assays was implemented in order to determine cell death mechanism. Results: Results indicated IC50 values at 24 hours as follow: xylazine 62 μ M, cocaine 202 μ M, heroin 278 μ M and the combination of the three drugs 55 μ M. Similar IC50s was observed at 48 and 72 hours. The Annexin V positive results and positive activation of caspases 8 and 9 strongly suggest apoptosis as the cell death mechanism. Conclusions: The study demonstrated that xylazine inhibits endothelial cell proliferation at lower concentrations than cocaine and heroin. These findings support that xylazine use increase cocaine and heroin toxicity when used in combination, and induce apoptotic cell death by. Acknowledgements: This project was supported by National Institute of General Medical Science grants (SP20GM103475), from the National Institutes of Health.

A-158 Niveles de Conocimientos y Actitudes de los Profesionales de Enfermería en el Manejo y la Promoción del Amamantamiento en Madres con Cesárea

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Antecedentes: La leche materna cumple con características nutricionales que protegen contra enfermedades, promueve el crecimiento y desarrollo saludable del bebé. Dada la continuidad

del cuidado y proximidad a las madres, el personal de enfermería cumple un papel importante en la iniciación, promoción y prolongación del amamantamiento; procedimiento que depende en gran parte de los conocimientos y actitudes que estos proyectan.

Objetivos: (1) Determinar los conocimientos que poseen los profesionales de enfermería sobre el amamantamiento en madres que han tenido parto por cesárea. (2) Identificar las actitudes que asumen los profesionales de enfermería en la promoción e inicio del amamantamiento en madres con cesáreas. (3) Determinar relación entre el conocimiento y la actitud de los profesionales de enfermería para apoyar a madres con cesáreas en el inicio del amamantamiento. Metodología: Para este estudio se utilizará un diseño de tipo descriptivo correlacional de corte transversal. La muestra total para implementar este estudio, es de 42 profesionales de enfermería que se encuentre laborando las áreas de sala de partos, sala de recién nacido y/o maternidad; y se aplicará en un hospital del área metropolitana de Puerto Rico. Los datos serán recolectados por medio de una hoja de datos socio-demográficos y de dos cuestionarios auto-administrables titulados: "Actitudes hacia la Lactancia Materna para Profesionales de Enfermería" de Dávila, Parrilla y Gorrín (2000) y la "Encuesta elaborada por el Comité de Lactancia Materna de la Asociación Española de Pediatría", de la Doctora Temboursy Molina (2002). Implicaciones: Los resultados de este estudio ofrecerán información actualizada a las unidades hospitalarias donde se lleve a cabo la investigación. Se recomendarán estrategias encaminadas en el fortalecimiento de conocimientos y actitudes de los profesionales de enfermería en el inicio y prolongación del amamantamiento en madres con cesáreas. Esto beneficiaría significativamente a esta población; aumentando la adquisición de información e influenciar positivamente en el estado mental de estos profesionales. A su vez serán transmitidos a todas las madres para que inicien y prolonguen el amamantamiento sin diferenciación del tipo de parto, cuando esto ocurre el neonato adquiere nutrientes e inmunidad para un buen desarrollo y crecimiento.

A-159 Factores Asociados a la Calidad de Vida e Ideación Suicida en Adolescentes de Puerto Rico con Diabetes Tipo 1

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Trasfondo y Objetivo: En adolescentes con diabetes tipo 1 (DT1), ideación suicida y calidad de vida son aspectos importantes a atender en intervenciones terapéuticas, aunque han sido poco estudiadas en Puerto Rico. Examinamos los factores asociados a la calidad de vida e ideación suicida en adolescentes con DT1. Esperábamos que la depresión fuera el factor más relacionado con éstas. Método: Participaron 40 jóvenes (22 féminas) de 12 a 17 años reclutados en un estudio de tratamiento para la depresión. Completaron el Diabetes Quality of Life-Youth, el Suicidal Ideation Questionnaire, y otras medidas sobre aspectos emocionales, cognitivos, somáticos y conductuales. Sus encargados completaron el Cuestionario de Barreras

a la Adherencia, la subescala de Quejas Somáticas del Child Behavior Checklist, entre otras. Realizamos análisis de correlación y regresión ($p \leq .05$) para identificar los factores asociados a las variables dependientes. Resultados: Las variables asociadas a la ideación suicida fueron depresión, quejas somáticas, auto-cuidado, autoestima/culpa, indefensión, desesperanza y ansiedad. En una regresión múltiple las primeras dos explicaron un 49% de la varianza [$F(3,36) = 17.85, p \leq .001$]. Las vinculadas a la calidad de vida fueron depresión, alteraciones cognitivas, autoestima/culpa, autoeficacia para la depresión, indefensión, ansiedad, desesperanza, autoeficacia para la diabetes, alteraciones de la actividad, apoyo familiar percibido y barreras a la adherencia. Las primeras dos y la última explicaron 52% de la varianza [$F(3,36) = 13.08, p \leq .001$]. Conclusión: Nuestros hallazgos resaltan el impacto de los problemas emocionales, cognitivos, somáticos y conductuales en la calidad de la salud mental y de la vida en general en los adolescentes diabéticos. Reconocimientos: Esta investigación fue subvencionada por el NIDDK (5R03DK092547-04).

A-160 A Very Rare Presentation of Autonomic Dysfunction in a Patient with Guillain-Barre Syndrome

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Purpose: Classic Guillain Barre syndrome (GBS) is a disorder associated with and immune attack on peripheral myelin causing a flaccid progressive paralysis. Autonomic nervous system involvement is a known complication. Posterior reversible encephalopathy syndrome (PRES) is a clinico-radiologic entity of symptomatic vasogenic brain edema secondary to uncontrolled hypertension, sepsis, eclampsia or chemotherapy. Clinical presentation includes headache, seizures, altered mentation and visual loss. There are very few cases of PRES secondary to GBS prior to treatment. We present a case of PRES secondary to dysautonomia in a patient with GBS. Case description: A 43-year-old woman with no systemic illnesses presented with acute onset of numbness of feet followed by progressive bilateral lower extremity weakness and changes in visual acuity days later. Neurological exam revealed a flaccid quadraparesis and areflexia with distal sensory changes to pinprick. Clinical approach: Patient had lumbar puncture done, electrodiagnostic test, brain MRI and head CT scan. During hospitalization, patient developed severe dysautonomia and respiratory failure. Treatment with immunoglobulins for 5 days was given. Clinical findings: Lumbar puncture showed albuminocytologic dissociation. NCS/EMG showed a demyelinating polyneuropathy as in acquired inflammatory demyelinating polyneuropathy. Brain MRI showed occipitoparietal vasogenic edema, consistent with PRES. The patient recovered completely from visual acuity problems with a normal follow up head CT. Hypothesis: Posterior reversible encephalopathy syndrome can be a presentation of dysautonomia seen in patients with GBS. This is a

very rare presentation of autonomic dysfunction in GBS which warrants prompt recognition and treatment since it confers a good prognosis when treated accordingly.

A-161 Wilm's Tumor of the Left Kidney in a 5-year-old Male with Right Renal Agenesis

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Purpose: Wilm's tumor is a solid tumor of the kidney that arises from immature kidney cells, and is the most common type of kidney cancer in children. It is also the most common abdominal malignancy in childhood, usually diagnosed between 3-4 years of age with approximately 500 new cases per year. We present a case with an unusual presentation of a Wilm's tumor with simultaneous unilateral renal agenesis, complicating furthermore the patient's oncologic condition and treatment plan. **Case description:** Case of a 5-year-old male patient who presented with severe abdominal pain, vomiting and abdominal distention. **Clinical Approach:** Abdominal CT Scan showed a large left suprarenal mass, enlarged left kidney and incidental finding of right renal agenesis. Biopsy was positive for Wilm's tumor. There was no evidence of metastatic disease at diagnosis. After 12 weeks of chemotherapy, the patient had a partial nephrectomy. **Clinical findings:** He completed his chemotherapy regimen without complications. He is currently alive, 4 months after therapy, without evidence of disease. His post treatment course was complicated with an episode of obstructive nephropathy that will require surgical correction. **Hypothesis:** Future studies may focus in the right approach to a patient with a malignant lesion in a kidney when renal agenesis of the contralateral kidney is present.

A-162 En Picada los Matrimonios en Puerto Rico y Diferentes en sus Características el Novio y la Novia

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En la mayoría de las sociedades modernas el número de matrimonios ha mostrado un descenso considerable. Puerto Rico, muestra un descenso en la tasa de matrimonios de 15.1 en 1980 a 5.8 para el 2013. El objetivo del estudio fue describir las características sociodemográficas por género de la población que contrajo matrimonio en Puerto Rico durante el año 2013. La fuente de información fue la cinta de matrimonios del Departamento de Salud de PR. La investigación, fue descriptiva. Los hallazgos señalan que en el 2013 se celebraron 17,010 matrimonios. Un 6% correspondía a personas que residían fuera de PR. Aproximadamente la mitad se celebró en diciembre, noviembre, junio y julio. Prevaleció la ceremonia religiosa (70%). Los novios mostraron

una mediana de edad al casarse mayor que las novias (32 vs 30), un por ciento mayor de divorciados (35 vs 30), un por ciento mayor casándose con 50+ años (15 vs 10), un por ciento casándose con mujeres menores de 50 años que triplicó al de las novias en esta categoría, un por ciento más alto de matrimonios anteriores y con hijos de casamientos anteriores. El por ciento de novias que estaba estudiando triplicó al de los novios en esta categoría. La disparidad demográfica por género de los contrayentes conjuntamente con el descenso en volumen de los matrimonios presenta retos sociales y demográficos. Esto lleva a considerar la estructura familiar actual como una no tradicional que requerirá a su vez de un abordaje de estudio y entendimiento diferente.

A-163 Lethargy and Poor Feeding in a 2 Days Old Baby Boy: A Rare Metabolic Disease

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Purpose: Ornithine transcarbamylase (OTC) deficiency is a rare metabolic disease its prevalence in the general population is 1 in 80, 000. OTC is an X-linked urea cycle defect, which typically presents in males with hyperammonemic coma in infancy. Early diagnosis and treatment is cornerstone for prevention of neurologic damage and ensuring a good prognosis and life span for affected patients. **Case Description:** Here, we present a newborn Puerto Rican male who presented with lethargy and poor feeding on the 2nd day of life. Patient was treated for clinical sepsis without improvement for which ammonia levels were taken and found to be >1,000 mg/dl. **Clinical Approach:** He was transferred to our institution where patient was started on hyperammonemia management protocol. By that time brain MRI revealed multiple cystic lesions consistent with hyperammonemic encephalopathy. **Findings:** Diagnostic evaluation revealed decreased citrulline and arginine serum concentration and increased urine orotic acid consistent with the diagnosis of ornithine transcarbamylase deficiency (OTC). Ammonia levels stabilized several days after treatment and patient's neurologic status improved. Eventually he was discharged home and returned several weeks later with hyperammonemia secondary to upper respiratory tract infection. Patient died due to extremely elevated ammonia levels and brain edema. **Hypothesis:** This case emphasizes the importance of early suspicion of metabolic disorders in a newborn patient with lethargy. Early diagnosis and treatment of an acutely ill patient with hyperammonemia is crucial in preventing irreversible neurologic damage and death.

A-164 Bioguided Fractionation and Isolation of Chemical Constituents of the Puerto Rican Plant *Simarouba tulae*

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Background & Objectives: Species of the genus *Simarouba* have been studied because of its antimalarial, anti-inflammatory, anti-leukemic, antifeedant and antiviral activities. A group of highly

oxygenated terpenes called quassinoids have been isolated from species of the *Simarouba* genus and are thought to be responsible for its therapeutic properties. We hypothesize that *Simarouba tulae* endemic plant is a natural source rich on quassinoids compounds and, thus, responsible of its biological activity. The objective of this study is to isolate and evaluate the biological activity against cancer cell lines of the secondary metabolites from *Simarouba tulae*. Methods: Bioguided fractionation of the crude extract was investigated using the brine shrimp lethality test. Extracts from three organic solvents were prepared and tested for their cytotoxic activity using MTT assay. Results: The *Simarouba tulae* organic extracts were cytotoxic with LC₅₀ values of <200.00 µg/ml. These extracts were further tested against three breast cancer cell lines (MCF-7, ZR-75-1 and T47D) inhibiting more than 80% of cell growth in two of them. The more active chloroform fraction was purified by column chromatography and resulted in the identification of a quassinoid derivative Simalikalactone D in 11 mg. Conclusions: Based on our results, we demonstrate the strong antiproliferative activity of *Simarouba tulae* plant extracts on cancer cell lines and that its major chemical constituents are quassinoids derivatives. Acknowledgements: Supported by the Institute of Interdisciplinary Research and the Dean of Academic Affairs of University of Puerto Rico at Cayey.

A-165 Risk Factors Associated with Bronchiolitis in the Puerto Rican Population

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Background: Evidence suggest that bronchiolitis early in life is a major risk factor for subsequent wheezing episodes and asthma. Literature suggests that risk factors associated with bronchiolitis and atopy overlap in its' association with asthma. However, there is limited information regarding atopy-related risk factors and its' association with bronchiolitis frequency and severity. Methods: Prospective cross-sectional study performed at 4 Emergency Departments of the Metropolitan area. Children less than 24 months of age, with bronchiolitis, and born in Puerto Rico at the time of recruitment were included. Parents were given a physician-administered survey and a bronchiolitis severity assessment was performed. Results: Total of 268 infants were recruited; 57% male, and 43% female. Atopic dermatitis was found to be more predominant in males (19%; p=0.008), and the 4-12 age group. Asthma, and allergic rhinitis were also found significant, suggestive of an association with the atopic triad. Daycare assistance and frequenting with more than 2 children is consistent with risk factors for bronchiolitis. Environmental tobacco smoke failed to show an association with bronchiolitis (23%; p=0.380). Bronchiolitis scores in males were higher across all subscores, but not significant. An increase in RR scores was seen in patients with

previous episodes (p=0.057), MH of asthma (p=0.018), and maternal asthma (p=0.045). This suggests that the patients who present these atopy-related risk factors are more prone to respiratory distress. Conclusion: This study shows that the Puerto Rican pediatric population present atopy-related risk factors, some of which may be modified in order to prevent the development of asthma later in life.

A-166 Effect of HIV and Cocaine in Cathepsin B, NOX4 and Sigma-1 Receptor Expression in Post-Mortem Brain Tissues

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Background and Objectives: Upon Human Immunodeficiency Virus (HIV-1) infection, monocytes can pass the blood brain barrier, transform into perivascular macrophages and secrete neurotoxic factors. This promotes brain inflammation and exacerbates HIV-associated neurocognitive disorders (HAND). One neurotoxic factor is cathepsin B, a lysosomal cysteine protease secreted by HIV infected macrophages that promote neuronal apoptosis. Interestingly, cocaine potentiates further cathepsin B secretion and neurotoxicity from HIV infected macrophages (Zenón-Meléndez et al, 2014). However, how cocaine affects both cathepsin B secretion in vitro and in some brain regions is unknown. One potential mechanism might be through activation and over expression of sigma-1 receptor (σ -1), an endoplasmic reticulum (ER) chaperone that directly binds to cocaine and modulates the activation of NADPH oxidase 4 (NOX4), which promotes reactive oxygen generation and lysosomal disruption. We hypothesize that sigma-1 and NOX4 expression increases concomitantly with cathepsin B expression in post-mortem brain tissues in HIV-infected individuals with cocaine abuse than their non-abusing counterparts and by HAND severity as determined by semi-quantitative immunohistochemistry. Methods: A total of 15 basal ganglia post-mortem brains slides donated by the NNTC Consortium were stained for sigma-1, cathepsin B and NOX4 expression Spots of fluorescence were quantified by the Imaris Software (CT, USA). Two Way ANOVA analyses were done using Graph Pad program. Results and Conclusions: Our results suggest that cathepsin B, σ -1 and NOX4 expression increase significantly (p<0.05) in post-mortem brains of HIV-infected and cocaine abusers versus uninfected normal cognition non-cocaine abusers. Acknowledgements: This work was supported by UPR-MSU institutional funds, R01MH083516.

A-167 Clinical Characterization and Mutation Spectrum in Caribbean Hispanic Families with Lynch Syndrome

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Background and objectives: Lynch Syndrome (LS) is an inherited form of colorectal cancer caused by germline mutations in the Mismatch Repair (MMR) genes. It accounts for approximately 5% of all colorectal cancers. The prevalence of LS among US Hispanics is unknown. Puerto Rican Hispanics are the second most prevalent group of Hispanics in the US and also represent Caribbean Hispanics based on similar ancestry (Indian, African and Spaniards). The objective of this study was to describe the germline mutations of LS in Caribbean Hispanics (CH) from Puerto Rico and Dominican Republic. Furthermore, the study aimed to elucidate the differences between MMR deficient and MMR proficient patients. **Methods:** Subjects were recruited through the Puerto Rico Familial Colorectal Cancer Registry and were classified according to Amsterdam and Bethesda clinical guidelines. Those individuals who meet the Amsterdam and Bethesda criteria underwent MMR gene sequencing or examination of tumors by immunohistochemistry for the MMR proteins. **Results:** Our results show that mutation spectrum of CH LS patients was composed mostly of MSH2 (66.7%) mutations, followed by MLH1 (25%). One mutation was identified in MSH6 (8.3%). A previously unidentified mutation in MLH1 gene c.2044_2045del was found in one CH family. The percentage of individuals that met Amsterdam criteria I and II were 21.3%, whereas 78.7% of individuals met Bethesda guidelines. MMR deficient individuals were more likely to have a prominent family history of CRC and tumors located at the proximal colon. Compared to MSH2 mutation carriers, MLH1 mutation-positive individuals were more likely to have a strong family history of CRC and LS associated cancers. **Conclusions:** This study is the first to enlighten on the mutation spectrum of LS and characteristics of LS individuals in Caribbean Hispanics. **Funding:** National Institute on Minority Health Disparities Award Number 8U54MD 007587-03 and U54MD007587; NCI Award Number 5K22CA115913-03, R21CA167220-01, 5R03CA130034-02, and U54CA096297; Center for Collaborative Research in Health Disparities RCMI Award Number G12MD007600. **Acknowledgements:** This work was partially supported by the Research and Development Service, the Gastroenterology Department and Department of Veterans Affairs, Caribbean Healthcare System San Juan, P.R. The contents of this manuscript do not represent the views of the VA Caribbean Healthcare System, the Department of Veterans Affairs or the United States Government.

A-168 Comparación de Transmisión de Flujo Radiante entre Lámpara LED y Halógena a través de Porcelana Feldespática a grosores de 2, 4 y 6mm

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Abstract: El grado de polimerización juega un papel importante en las propiedades físicas y mecánicas de los materiales a base de resina como la absorción de agua, decoloración, resistencia al desgaste, dureza y fuerza de adhesión. Cuando la luz pasa a través de un material, parte de ésta se pierde debido a su reflexión sobre la superficie y parte es absorbida. La transmisión es el proceso por el cual el flujo radiante incidente deja una superficie o medio desde un lado distinto del lado de incidencia (por lo general el lado opuesto). Es importante conocer esto debido a que en restauraciones tipo onlays/inlays no sabemos cuánto es el flujo radiante disponible para fotopolimerizar el cemento. **Objetivo:** Comparar la transmisión de flujo radiante emitido por lámpara halógena y LED a través de porcelana feldespática a grosores de 2, 4 y 6mm. **Metodología:** Se fabricaron cinco bloques de porcelana feldespática IPS (IVOCLAR) a grosores de 2, 4 y 6mm de 1cm² de perímetro. Se utilizaron lámparas halógena Elipar™ 2500 (3M ESPE™) y LED VALO® (Ultradent Products). Las medidas fueron hechas en un tiempo de 30 segundos con un radiómetro PM320E (THORLABS®). **Resultados:** El flujo radiante transmitido a través del mismo grosor de porcelana es mayor con lámpara LED. Hay diferencia significativa entre todos los grosores a excepción de 4 y 6 mm con LED con un 95% de confianza. **Conclusiones:** Al mismo grosor de material el flujo radiante emitido por la lámpara LED es superior a la lámpara halógena.

A-169 Propiedades Psicométricas del Diabetes Social Support Questionnaire-Family (DSSQ-F) en Adolescentes de Puerto Rico con Diabetes Tipo 1

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Trasfondo y Objetivos: El apoyo familiar es fundamental para facilitar el autocuidado en adolescentes con Diabetes Tipo 1 (DT1). Pocos instrumentos validados en Puerto Rico evalúan el apoyo familiar dirigido a las personas con diabetes. Ninguno distingue la conducta de apoyo emitida del apoyo percibido por el paciente. Examinamos las propiedades psicométricas del Diabetes Social Support Questionnaire-Family (DSSQ-F) en una muestra de adolescentes de Puerto Rico. Esperábamos una consistencia interna $\geq .80$ para las escalas totales y $\geq .70$ para sus subescalas, así como correlaciones moderadas con algunos criterios de validez. **Método:** Participaron 142 jóvenes (76 féminas) de 12-18 años con DT1. Completaron el DSSQ-F y el Self-Care Inventory (SCI) durante un estudio de validación. Estimamos la consistencia interna utilizando el alfa de Cronbach y con el coeficiente de Pearson examinamos su validez concurrente. **Resultados:** Las escalas totales de Frecuencia (conducta emitida) y Sentimientos (apoyo percibido) del DSSQ-F mostraron una

confiabilidad de .93 y .98, respectivamente. El alfa de las subescalas de Frecuencia fluctuó entre .70 y .89; para las subescalas de Sentimientos estuvo entre .88 y .96. Los totales de Frecuencia y Sentimientos correlacionaron .40 y .36 respectivamente ($p \leq .001$) con el autocuidado de la diabetes. En una sub-muestra de 40 participantes, las puntuaciones totales de Sentimientos se asociaron significativamente a la depresión, la autoeficacia para la depresión y la calidad de vida reportada por los adolescentes. Conclusión: Nuestros hallazgos proveen evidencia sólida apoyando la confiabilidad y la validez del DSSQ-F en nuestra población adolescente con DT1. Reconocimientos: Este estudio fue subvencionado por el NIDDK (5R03DK092547-04).

A-170 Development of an Assistive Technology Needs Assessment Questionnaire for Hispanic Community-Living Older Adults with Functional Limitations

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Identifying the assistive technology (AT) needs of older adults is a key feature of quality improvement in modern health-care service delivery. Measuring those needs is one way of assessing and monitoring the quality of health services while also improving the quality of life of this population. This study aimed to develop a tool for assessing the AT needs of community-living older adults with functional limitations. A methodological research design was used to develop the AT needs assessment questionnaire and to test its content validity with aging experts and community-living older adults. We conducted a comprehensive literature review, used the Content-Validity Ratio exercise with five experts in assistive technology and aging, and piloted the preliminary version of the instrument with ten older people 70 years and older, followed by individual interviews. This process resulted in the development of the Assistive Technology Card Assessment (ATCA), an interview-based tool used to measure the AT needs of community-dwelling older adults with functional limitations in the following domains: reading, mobility, personal hygiene, toileting, cooking, home maintenance, medication management, communication, home accessibility, and home safety. It uses a sorting methodology in which the individual sorts the cards depicting a picture of an AT according to their experience with the use of each kind of AT. The ATCA will undergo validity and reliability tests in a future study. Information about the AT needs of this population may be useful to impact policy barriers that interfere with older people getting the AT they need to age in place

A-171 Nandrolone in Adolescence Increases Cocaine-induced Sensitization and Reduces CPP to Cocaine in Rats

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Background and objectives: The use of anabolic androgenic steroids (AAS) is increasing, particularly among adolescents. Since neurobiological systems are undergoing developmental rearrangements, it is important to determine if exposure to AAS during adolescence affects the sensorimotor and rewarding properties of drugs of abuse. **Methods:** From days 28-38, rats received a daily injection of nandrolone decanoate (20 mg/kg/sc). Adult male (65 days) and female (42 days) rats were divided into four groups; Oil-Saline, ND-Saline, Oil-cocaine and ND-cocaine and tested for locomotor sensitization to cocaine or for conditioned place preference (CPP) to cocaine. **Sensitization:** From days 1-5 and at days 13 and 23 rats received an injection of cocaine (15 mg/kg/ip) and their locomotor response was measured at days 1, 5, 13 and 23. **CPP:** Another group of rats received an injection of cocaine every other day for 5 days and their preference for the chamber where they received the cocaine injection was measured. **Results:** Pre-exposure to nandrolone increased the locomotor response to cocaine in both sexes. In females the response on days 13 and 23 was increased, whereas in males nandrolone increased the initial locomotor response to cocaine. Nandrolone had no effect on CPP to cocaine. **Conclusions:** These data show that exposure to supra-physiological levels of androgens during adolescence modifies the brain circuitry that regulates motor and addictive behaviors, increasing the salience and rewarding properties of drugs of abuse such as cocaine. **Acknowledgements:** Financial assistance was provided by FIPR- UPR RRP, an institutional grant from UPR, RRP.

A-172 Optimization of Human Erythrocyte Metabolomics: A Dual pH, Dual Polarity LC-MS Approach for Redox Metabolites

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Background: Due to the complex nature of metabolites, there is no single analytical method capable of profiling the metabolome in its entirety. Metabolite characteristics, such as polarity, pKa, pH, stability, and ionizability are fundamental when determining a global analytical method for metabolomics. Redox couples Glutathione (GSH/GSSG), NAD⁺/NADH, and NADP⁺/NADPH are an example of pH sensitive metabolites, and are great indicators of intracellular erythrocyte environment. **Objective:** Develop a method capable of robust metabolite coverage while maintaining the integrity of pH sensitive metabolites. **Methods:** We developed an analytical platform using LC-MS, consisting of (1) extraction at low and high pH, and (2) column switching for chromatography and mass spectrometry. A dual pH extraction was employed using ammonium formate buffer at pH 3.2 and pH

9.2. Dual polarity, dual pH LC-MS was achieved using ZIC-SeQuant HILIC and ZIC-pHILIC columns. Samples were injected twice into each column, alternating analysis in the positive (+) or negative (-) ion mode. Acidic samples (pH 3.2) were run on HILIC (+/-) column, while the basic samples (pH 9.2) were run on the pHILIC (+/-) column. Results/Conclusions: The effects of implementing a dual pH, dual polarity LC-MS approach on metabolite recovery and profiling was demonstrated. Thereby, establishing optimized methods for extraction and analysis of the metabolites. pH-sensitive redox metabolites showed a predictive behavior given their chemical properties. Certain metabolites were sensitive to pH as well as the polarity and/or column used. Acknowledgements: University of Utah, School of Medicine; University of Puerto Rico, School of Medicine.

A-173 Percepción de Carga del Cuidador Informal del Paciente con Desorden Mental

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Antecedentes y Objetivos: Aunque cuidar a un familiar puede ser elegido el cuidador/a informal puede experimentar carga. Objetivos: (1) Describir perfil de cuidadores informales de pacientes con desorden mental, (2) Examinar percepción de carga objetiva y subjetiva del cuidador/a informal, (3) Determinar si existe relación entre perfil y percepción de carga del cuidador/a. Metodología: Diseño cuantitativo no experimental transversal de corte correlacional. Muestra de 17 cuidadores/as informales de personas con desorden mental participantes de servicios ambulatorios en San Juan, Puerto Rico. Se administró la Entrevista de Carga Familiar Objetiva y Subjetiva (ECFOS-II) (Vilaplana et al. 2007). Resultados: El 58% de los cuidadores son mayores de 60 años y solo uno es varón. El 76 % de cuidadores dedica más de 10 horas a cuidar y lleva más de 13 años como cuidador. La mayoría eran hermanos/as o madres/padres del paciente. El diagnóstico más común fue esquizofrenia. Presentaron mayor percepción de carga subjetiva relacionada a preocupación por futuro del paciente. Mostraron mayor percepción de carga objetiva relacionada a cambios de rutina. Hubo relación significativa entre edad del paciente y carga subjetiva de actividades diarias ($\chi^2=-0.716$, $p\leq 0.05$), y ésta carga con relación con paciente ($r=10.306$, $p\leq 0.05$). Estatus de trabajo presentó relación marginalmente significativa con carga objetiva en actividades del diario ($\chi^2=5.038$, $p=0.081$). Conclusiones: Se presentan datos del perfil de cuidadores de personas con desorden mental, áreas en que perciben mayor carga y aspectos del perfil que se relacionaban a percepción de carga. Información útil para dirigir ayudas específicas a sus necesidades, desarrollar programas educativos y de apoyo.

A-174 Nandrolone in Adolescence Alters Ovarian and Testicular Tissue in Rats

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Background and objectives: Anabolic Androgenic Steroids (AAS) are abused by adolescents, this tendency is 2-3 times more common in males than in females. The present study investigated the effect of nandrolone given during adolescence, and of cocaine during adulthood, on ovarian and testicular histology of rats. Methods: From days 28-38, rats received a daily injection of nandrolone decanoate (20 mg/kg/sc). When animals reached adulthood (males (65 days) and females (42 days) they were divided into four groups; Oil-Saline, ND-Saline, Oil-cocaine and ND-cocaine and tested for CPP to cocaine. A day later animals were euthanized, perfused with 4% paraformaldehyde, and the testes and ovaries removed, postfixed, cryoprotected with 30% sucrose and frozen until the day of the assay. Gonads were sectioned at 20 μ m, stained with H & E, dehydrated with a series of alcohol and coverslipped with permount. Sections were analyzed using a Zeiss microscope. Results Males: Nandrolone decreased testicular and seminiferous tubule size, as well as spermatogenesis. Surprisingly, testicular weight and seminiferous tubule size of nandrolone-treated rats that received cocaine was not significantly different than that of saline controls. Females: Nandrolone decreased ovarian weight and induced follicular atresia. Cocaine induced the development of highly vascular structures resembling cysts. In contrast the ovaries of rats treated with nandrolone and cocaine showed highly vascularized atrophied follicles. Conclusions. This data revealed that exposure to AAS and cocaine has detrimental effects on male and female gonadal tissue and fertility. Acknowledgements: Financial assistance was provided by FIPR-UPR RRP.

A-175 Sub-clinical Phenotype Characteristics of Individuals with Orofacial Clefts

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Background and Objective: Oral clefts (CL/P) are the most common birth defect that occurs when the lip or the roof of the mouth does not form properly. Individuals with CL/P have some visible characteristics called phenotypes as physical manifestation of a certain genotype. A phenotype characteristic increases clinical descriptions, reduces misclassification and helps to identify other associated risk factors. The objective of this study was to perform a systematic review of literature to identify those sub-clinical phenotypical characteristics of individuals with orofacial malformations. Method: A systematic literature review was conducted using PubMed (2008-2014). We used the following keywords: "phenotypes" and "affected" individuals with CL/P. Studies based on phenotypical characteristics in affected indivi-

duals with CL/P with all kinds of study designs were selected. A total of 95 articles were found; but only 7 complied with the criteria defined above. Results: According to our systematic literature review, some sub-clinical phenotype features identified are: microdontia, dental agenesis, supernumerary teeth, dermatoglyphic lip print whorls, microform clefts, bifid uvula, velopharyngeal insufficiency, and defects on Orbicularis Oris muscle. Conclusion: Studies concluded that the identification and characterization of sub-clinical phenotypes are important to study the etiology of CL/P and may or not be present on an unaffected relative. Results support the need to conduct studies that describe and evaluate these characteristics on the Puerto Rican population.

A-176 The Drunken Heart

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Alcoholic cardiomyopathy is characterized by cardiac muscle cell dysfunction secondary to what is believed to be direct acetaldehyde toxicity and cellular apoptosis. Case description: 65 y/o male patient who went to the ER complaining of shortness of breath and bilateral lower extremity edema that started 2 weeks of evolution, associated with dyspnea on exertion and palpitations. Upon evaluation patient was found tachypneic, tachycardic with elevated blood pressure. PE remarkable for bibasilar crackles and irregular rate and rhythm. EKG was remarkable for atrial fibrillation with fast ventricular response and low voltages. CXR with congestive changes and cardiomegaly. Patient was treated with diuretics, nitroglycerine infusion and NIPPV. After adequate response patient was admitted to ward. Patient referred drinking 8-10 beers daily with rum for 35 years but quit 6 weeks prior to admission. Transthoracic echocardiogram was performed which was remarkable for severely reduced EF (10-15%) and an opacity appearing intermittently at the left atrium. This finding was then confirmed by transesophageal echocardiogram and confirmed to be a big laminated right atrial thrombus. Patient was discharged on Rivaroxaban. Follow up echocardiogram revealed resolution of thrombus. Cardiac catheterism was performed and found with non-obstructive CAD for which it was determined that CHF was secondary to cardiac muscle toxicity from alcoholism. Despite quitting alcohol patient remained with severe left ventricular dysfunction and today is on full medical therapy for CHF and has a CRT-D. Early recognition of alcohol induce cardiomyopathy with prompt discontinuation of use can lead to improvement of cardiac dysfunction.

A-177 Systematic Literature Review: Micronutrients and Orofacial Clefts

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Background & Objectives: The etiology of oral clefts might be influenced by multiple factors including the maternal diet. Micronutrients are essential components for the optimal development and function of our body. They are composed of vitamins and minerals, which are consumed in small doses in our meals. The aim of this study was to perform a systematic review of literature to evaluate the association between the maternal deficiency of certain micronutrients during pregnancy and the risk of having a child with oral clefts. **Methods:** A systematic literature review was conducted using PubMed (2004-2014). We used the following keywords: "Micronutrients associated with cleft" and "Studies on micronutrients". Studies performed by the most published author/expert in this field (Dr. Ronald Munger) based on maternal nutrition and all kinds of study designs were selected. A total of 3,665 articles were found; but only 6 complied with the criteria defined above. **Results:** According to our literature review, studies indicated an association between inadequate levels of certain micronutrients in the mother during pregnancy and oral clefts. However, this association is still unclear and inconclusive for humans, especially for ethnicity. This suggests that oral clefts are not only influenced by the lack of intake of certain micronutrients but other factors like genetics and the environment. **Conclusion:** Futures studies should be conducted to analyze the diet of Puerto Ricans to identify patterns of deficiency of nutrients and focus on establishing association with oral clefts to reduce the birth prevalence of this congenital defect.

A-178 The Etiologic Role of Human Papillomavirus and p16INK4A Expression in Penile Cancer: A Study in Puerto Rico

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Introduction and Objectives: Penile cancer accounts for approximately 0.8 to 2.8 new cases per 100,000 males annually in Puerto Rico. During this period men in Puerto Rico had approximately 4-fold increase incidence of penile cancer as compared to Non-Hispanic Whites (NHW). Recent studies reveal that infection with human papillomavirus (HPV) has been linked as a risk factor for penile cancer. Studies have shown that approximately 40% to 45% of penile cancers are HPV-related, with HPV-16 being associated in 63% of the cases. Penile cancer has also been associated with low-risk HPV types, with HPV-8 been the more prevalent. Mortality rates of penile cancer are also significantly higher among Puerto Rican men. Despite the high burden of penile cancer in Puerto Rico as compared with other racial and ethnic groups, no studies have been develop to study the association of HPV genotypes

with penile cancer and limit the opportunity to understand and document the burden of HPV-related penile cancer in this population. Herein we present a correlation of HPV genotypes, with pathological status of the tumor and p16INK4a expression in penile cancer in Puerto Rico. Methods: Thirty-two paraffin embedded tissue blocks and thirty-one fresh penile cancer tumors were identified and collected from surgically treated patients with penile cancer. After histopathological review by 1 pathologist, tumors were characterized based on the histological differentiation of tumor, grade, lymph node involvement, lymphovascular infiltration, and histological subtype. Following DNA extraction, HPV genotyping was performed in all samples using the INNO-LiPA HPV Genotyping Extra Amp detection kit. Also, p16INK4A status was detected using immunohistochemistry. Results: Human Papillomavirus was detected in 28 of 63 cases (44.4%). The most prevalent HPV genotypes were HPV-16 (39 %), HPV-35 (9.8 %), HPV-6 (7.3 %), and HPV-52 (7.3 %). High risk HPV and low risk HPV was detected in 73.2 % and 17.1 % of the HPV positive samples, respectively. p16 expression was observed in 22.0 % of cases. Primary tumor staging was observed pT2 (corpora cavernosum or spongiosum - 30 %) and pT3 (urethra involvement - 30 %). A majority of penile cancer had Grade 1 (well differentiated tumors) of penile cancer. Conclusions: In summary, HPV was found in 44.4 % of the cases and the most common genotypes were HPV-16, HPV-35, HPV-6 and HPV-52. We have established the first study analyzing HPV genotypes, relationship with p16 immunochemistry expression, and histopathological review. Source of Funding: The National Institutes of Health Award Number R25MD007607 from the National Institute on Minority Health and Health Disparities, RCMI Funding, Seed money from University of Puerto Rico Comprehensive Cancer Center, Institutional funds from graduate program of the University of Puerto Rico School of Pharmacy

A-179 Ultrastructural Changes in the Optic Nerve after Injury and Neurotrophic Factor Treatment

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We have shown that ciliary neurotrophic factor (CNTF) and fibroblast growth factor (FGF-2) have strong facilitatory effects on axon regeneration in the adult frog optic nerve after injury. In these nerves, bundles of regenerating axons were associated with astrocytes and macrophage-like cells. The objective of the present study is to characterize the identity of these cells, and to determine the changes that occur after CNTF or FGF-2 application. We performed optic nerve crush and applied into the nerve either saline solution or neurotrophic factors. We examined the optic nerves at different timepoints: 48h, one week, and two weeks after axotomy. Electron microscopy was used to characterize the ultrastructure and localization of the ma-

crophages/microglia after injury and neurotrophic treatment. Antibodies against specific macrophage subtypes were used to label these cells in confocal images of different regions of the nerve. We found a large number of macrophage-like cells at the lesion site, and distally in close proximity to regenerating axons in CNTF and FGF-2 treated nerves. Significantly fewer cells were present proximal to the lesion. Many of these macrophage-like cells at, and distal to, the lesion were ED-1-positive in both CNTF and FGF-2 treated nerves. Both M1 (Arginase-positive) and M2 (CD-86-positive) subtypes were identified. We are currently quantifying the distribution of these cell subtypes at different timepoints and nerve regions after injury. In conclusion, the application of CNTF and FGF-2 affects the number and the distribution of macrophage subtypes after optic nerve injury and during optic nerve regeneration. Supported by NIH-GM 093869, NIH RCMI-G12RR0305. GVM is supported by MBRS-RISE (G12RR03051).

A-180 Molecular Characterization and Screening of Metabolic Diseases: Ornithine Transcarbomylase Deficiency (OTC) and Citrullinemia (CIT) among Puerto Ricans

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Newborn screening is a vital process that defines the course that a baby's life could take. Identifying metabolic diseases at early stages gives the opportunity of early treatment, making the chances of survival higher. Amongst the metabolic diseases tested with newborn screening the urea cycle diseases are one of the most essential. The Urea Cycle is responsible for metabolizing nitrogen in the form of ammonia, which can be toxic in high levels, and so affected newborns can develop coma after 4 days of life. Although the usage of tandem mass spectrometry is the most common way of performing newborn screening for a vast number of metabolic disorders by identifying elevations on chemical compounds in the dried blood spot (DBS) specimen from the newborns, some factors can induce false negatives and false positives. Therefore, several molecular methods have been incorporated to NBS, using the disorders most common mutations as models. These vary due to the ethnic background and those considered "common" mutations by other programs might not be of use to our population. Therefore the aim will be to identify common mutations amongst the population conducting characterization procedures. After characterizing a urea cycle condition patient's genome and comparing it to another baby without the diseases results confirmed that there are indeed two previously unpublished mutations found. Further investigations would confirm if these are specific to our population. (IRB Approved #A9370113)

A-181 Locomotors Analysis of Drosophila Mutants affecting Neurotransmitter Release

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Introduction: Neurotransmitter-release is regulated by several presynaptic-proteins where Syntaxin and Complexin are crucial. We look the locomotor activity of *Drosophila* adult animals to evaluate if altered motor behavior could be a consequence of an abnormal central nervous system or altered peripheral nervous system output. **Hypothesis:** Mutants display poorer motor performance in agreement with altered synaptic transmission. **Methods:** To discriminate between central and peripheral motor alteration we look at the locomotor behavior in animals with and without head. Climbing assays, grooming and flip over were tested in entire animals. Stepping and flip over were tested in decapitated individuals. **Results:** Complexin null and Syntaxin hypomorph mutant display similar phenotype in synaptic transmission but different behaviors. Complexin could not climb, Syntaxin has the lower climbing speed and the other genotypes have indistinguishable performance. Complexin flip over in 15min in turn, other genotypes flip over in few seconds. Decapitated animals are not able to climb but they stay on their feet readjusting the position. Surprisingly, decapitated animals are able to fly without control and flip over. Complexin and Syntaxin display the slower performance compared with the other genotypes. **Conclusion:** Locomotion is a complex behavior which includes central and peripheral control. Flight and stepping is encoded in an independent circuit in the peripheral nervous system in turn navigation requires the central nervous system. Severe synaptic transmission defects observed in Complexin impair all of type of locomotion. Less severe synaptic transmission defects allow the animals to perform all types of locomotion but with lower performance.

A-182 Effect of pH in the Formation and Stability of Sulfmyoglobin

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Introduction: Hydrogen sulfide (H₂S) is a gaseous compound regarded as highly toxic; nevertheless, it was recently discovered that various enzymes in the body produce H₂S (i.e. cystathionine beta-synthase). This allowed a further investigation of H₂S as a possible therapeutic mechanism with roles in neuromodulation, vasodilatation, among others. Moreover, some hemeproteins (like myoglobin), in the presence of H₂S and O₂ or H₂O₂, acquire a modification of the heme group as the HS radical species binds to the pyrrol B forming a sulfheme. In the case of sulfmyoglobin, the protein's ability to bind oxygen diminishes, causing sulfmyoglobinemia. However, the precise role of pH is not yet known, nor its relation to the H₂S and HS- equilibrium that leads to the HS radical formation. **Objective or Hypotheses:** The project will focus on defining the role of pH for sulfmyoglobin formation and its kinetic pathways. It is expected that in a lower pH, myoglobin will be more prone to form the sulfheme derivative because the prominent species is H₂S, while in higher pH values HS- prevails. **Methods:** To determine the presence of sulfmyoglobin, UV-Vis spectroscopy was employed. Samples with different pH values (5.0-8.0) were monitored at visible wavelengths. The band that determined the existence of sulfmyoglobin is at around 620nm. Afterwards, a kinetic analysis during 24 hours was used to evaluate the samples' stability. **Results/Conclusion:** For the better understanding of the reaction's mechanism, pH's effect must be studied extensively to establish parameters that can serve as a basis in the realization of future studies.

Abstracts that reported IRB/IACUC protocol number

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O-009	O-033	A-017	A-048	A-087	A-121	A-153
O-010	O-034	A-019	A-051	A-090	A-122	A-156
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