Medical Sciences Campus

HEALTH 2000:

Unraveling the Hereditary and Cellular Mysteries

ABSTRACTS

RESEARCH & EDUCATION FORUM XXI

Oral Presentation

ABSTRACTS

"Health 2000: Unraveling the Hereditary and Cellular Mysteries"
XXI Annual Research and Education Forum

A-1 **Diabetes mellitus mortality among the Puerto Rican population, 1980-1997.** R. Pérez, C. Pérez, E. Súarez. Department of Biostatistics and Epidemiology. Graduate School of Public Health.

Objective. To determine the characteristics and trends of diabetes related mortality among the Puerto Rican population from 1980 through 1997. **Methods.** Death certificates for Puerto Rican residents whose underlying cause of death was coded as diabetes mellitus (N-250) were reviewed, and sociodemographic information was abstracted. Adjusted mortality rates were calculated using the direct method. Sex-specific, age adjusted death rates were compared by computing relative risk and their 95% confidence intervals. The proportion mortality ratio (PMR) and their 95% confidence intervals were calculated by gender, age group, and period of time. Trend analysis in mortality was performed using a Poisson regression model. **Results.** A total of 26,193 deaths (5.8%) were primarily attributed to diabetes mellitus. Females represented 55.8% of all deaths. The highest mortality rates occurred in persons aged 65 years and more (331.3 per 100,000), while the lowest mortality was observed in persons aged less than 19 years (0.14 per 100,000). The relative risk between females and males was higher in the £ 19 years age group (1.89) and in the ³ 65 years age group (1.21). The proportion of diabetes related deaths relative to all causes of deaths increased from 4.4% in 1980 to 7.2% in 1997. The PMR of diabetes mortality relative to all causes increased from 454.6 per 10,000 in 1980-85 to 690.6 per 10,000 in 1992-1997. **Conclusions.** Our results indicates that diabetes mortality has been increasing in Puerto Rico and that females had an excess mortality compared with males in some specific age groups. Further analysis is needed to evaluate the determinants of mortality in diabetes. **Source of funding:** Office of the Dean of Academic Affairs, MSC.

A-2 **La Fecundidad de las Adolescentes en Puerto Rico: Mitos y Realidades.** A.L. Davila, H. Mattei, Escuela Graduada de Salud Pública, Recinto de Ciencias Médicas, Universidad de Puerto Rico

El análisis de las tasas específicas de fecundidad confirma el descenso de la fecundidad en Puerto Rico. Este sugiere que el fenómeno del aumento de la fecundidad de las adolescentes que preocupa a los profesionales de la salud es un tanto ambiguo y hasta cierto punto exagerado, esto como resultado del uso de indicadores que no son los más adecuados. La tasa total de fecundidad ha descendido de 6.4 nacimientos por mujer en 1932 a 2.1 nacimientos por mujer en 1995. Mientras las tasas de las mujeres mayores se han reducido a la mitad, las tasas de las adolescentes se han mantenido oscilando alrededor de 70 por mil durante la última década. El objetivo de este trabajo girará en torno a la discusión de las medidas utilizadas para resaltar la fecundidad de las adolescentes además de tratar sus implicaciones en el campo de la salud.

A-3 **Heavy Metals Concentrations in Aquaic Organisms from an Estuarine Ecosystem.** U. J. Pérez[1,3], C. J. Rodríguez[3], W. Delgado[1] and B. Jiménez[1,2]
[1]The Center for Environmental and Toxicological Research, [2]Department of Biochemistry, [3]Department of Environmental Health, , University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico. This study determined the levels of As, Cd, Pb, Hg Se, Cu and Zn in aquatic organisms from the San Jose Lagoon (SJL), an EPA designated National Estuary of great importance in Puerto Rico. Three organisms selected, the filter feeder false mussel (*Mytilopsis dominguensis*), the blue crab (*Callinectes sp.*) and the stripped moharra (*Diapterus plumierri*) represent different levels of organization in the food chain. Hg and Pb were the metals of most concern because of the high concentrations obtained in animal tissues. The highest average Hg concentration found in fish muscle was 0.45 µg/g, which does not exceed the Food and Drug Administration (FDA) action level standard of 1 µg/g. However, fish collected at a SJL station had Hg concentrations as high as 1.54 µg/g, representing a possible adverse health risk to humans. The highest Pb concentration in edible fish muscle, obtained in SJL was 7.60 µg/g (4 times higher than the FDA seafood standard of 1.7 µg/g). Pb concentrations in blue crabs and mussels were 0.3 µg/g and 0.85 µg/g, respectively. In conclusion, this study showed that edible tissues of fish and blue crabs collected from SJL contained high concentrations of toxic metals which may posed health risk to this valuable ecosystem, and to humans, and that mussels could serve as indicators of water pollution. Author to contact: Dr. Carlos J. Rodríguez
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A-4 **Estudio de parámetros físico-químicos y biológicos usados como indicadores de la calidad de las aguas de la Laguna San José, Carolina, Puerto Rico.** José M. Nazario Rodríguez, Edna L. Negrón Martínez y William E. Arias Morales. Departamento de Salud Ambiental, R.C.M., Universidad de Puerto Rico y Departamento de Biología, R.M., Universidad Interamericana de Puerto Rico.

El objetivo principal de este estudio fué estimar las densidades de *Pseudomonas aeruginosa* y *Vibrio spp.* en aguas salinas y determinar su relación con la presencia de los coliformes totales y termotolerantes. Se midieron

los parámetros de temperatura, oxígeno disuelto, salinidad, pH, turbidez y niveles de fosfatos, nitratos y sulfatos en cuatro (4) estaciones seleccionadas, utilizando métodos estándares. Se analizaron 352 muestras de agua entre los meses de marzo y julio de 1998; por medio de la técnica de filtración por membrana. Se estimaron las densidades de coliformes totales, termotolerantes, *P. aeruginosa* y *Vibrio spp.*, utilizando medios de cultivos selectivos. Se encontró correlación Pearson significativa entre las densidades de coliformes totales y *P. aeruginosa* (0.761; $p<0.05$). De igual forma ocurrió entre las densidades de coliformes termotolerantes y *P. aeruginosa.* (0.920; $p<0.01$). Las densidades de *Vibrios spp.* correlacionaron significativamente con los niveles de nitratos (0.549; $p<0.05$). Se aislaron 125 colonias de *Vibrios* sucrosa negativo de los cuales 13% eran *V. vulnificus*, 9% *V. hollisae*, 6% *V. parahaemolyticus*, 6% *V. mimicus* y 66% no fueron identificados. Por otro lado, de 133 colonias sucrosa positivo aisladas el 20% eran *V. metchsnikovai*, 14% *V. fluvialis*, 13% *V. cholerae* y 53% no fueron identificados. De este estudio se desprende que sería recomendable utilizar indicadores adicionales de calidad de las aguas tales como: *Pseudomonas spp.* y *Vibrios spp.* Los hallazgos del estudio demostraron que la laguna se encuentra en un estado hipertrófico. Las altas concentraciones de microorganismos en la Laguna San José pueden presentar riesgos a la salud pública.

A-5 **Introducción a Ensayos Clínicos: una Perspectiva Bayesiana.** Josué Guzmán, Ph.D. Departamento de Bioestadística y Epidemiología, Escuela de Salud Pública, R.C.M.

Abstracto: Introducción a los principios básicos sobre ensayos clínicos, bajo el paradigma bayesiano. Repaso de algunos conceptos pertinentes: origen histórico, el role de R.A. Fisher en estudios experimentales, ensayos clínicos, aleatorización, población de referencia. El modelo bayesiano en su forma general y su aplicación en la metodología de investigación de ensayos clínicos. Información previa, verosimilitud, distribución posterior y predicción. El role de la computación moderna y la simulación tipo Monte Carlo en cadenas de Markov en el modelaje y aplicación del paradigma bayesiano. Al final de la monografía, adjuntamos una bibliografía pertinente, que abunda sobre nuestro tema, desde los principios filosófico-teóricos hasta la aplicación de la metodología bayesiana a problemas de investigación clínica.

A-6 **Faculty Training in Multimedia Development.** Evelyn Haddock and Ruben Garcia. Title III Project, C.P.R.S.

Research in the effect of multimedia in the classroom has been proven throughout the past years. The literature review of multimedia in education to enhance the teaching-learning process, will be presented in support of our project. The goal of the multimedia component of our Title III Project has been to trained faculty from the different health related fields in computer technology usage of applications, which support multimedia features. Professors of various programs have participated in the preparation of instructional multimedia material. These productions have undergone continuous formative evaluation by colleagues and peers. Faculty selected their topics according to their related expertise and produced at their own pace these creations. This project is in the developmental stage and various productions will shortly commence the assessment stage with students in a classroom setting. A sample of the instructional multimedia material created by faculty will also be presented. After completing the materials, they will be place in a network environment, where student can have access to them at any time. In the future, the final stage of this project will be to evaluate the students' academic performance after using the multimedia instructional materials.

A-7 **Creating an Intranet Training Unit.** Carlos Ortiz and Ruben Garcia. Title III Project, C.P.R.S.

The new technology offers a number of exciting opportunities in the university environment. The appropriate use of the technology is one of the biggest advantages in bringing the internet to the classroom and maximizing the educational administrative activities. The development of an intranet training unit has an important role in offering the users (students, faculty and personnel) the basic knowledge to begin their participation using this technology and infrastructure. The success of all these activities depends on the development of basic skills, experience and continuos improvement of every user through an excellent intranet training unit. The CHRP Training Unit coordinates all activities in the areas of information technology in cooperation with the other units. It offers a number of courses as technological support for the program. Topics include: Windows, MS Word, Excel, Power Point, CHRP Red, and Web-Page Design among others. Through these units, the CHRP offers personnel, student, faculty and general community a different way to learn their favorite computer applications. The service includes online enrollment. The CHRP training unit reflects a substantial institutional commitment to technological skill development and both technical and management consensus about essential skill and priorities for today's learning organizations.

A-8 **Development of Infrastructure of Communication and Computer Though our College.** Ruben Garcia and Saul Aponte. Title III Project, C.P.R.S.

Though the Title III Project the College of Health Related Professions developed a high tech infrastructure for communication and computer that permitted us to move our teaching and learning process environment from the classroom to the computer room. Implementation of the College Network, with high tech equipment and training for faculty, students and non-teaching personnel. Development of Intranet applications for Students Affaires Office for use with currents SIS system. The Office Learning Resources and Information System is developing a project for major expansion with the Tittle V proposal. Developments in: distant learning technology, web base courses and virtual laboratories, including expansion of fiber optics for single and multi mode in gigabit conduction, back bone wiring for Nursing and Pharmacy buildings. Electronic document management system and Human resources management system. The Tittle V proposal also offers undergraduate students an Educational Health Promotion and Illness Prevention Training Center.

A-9 **Fighting Insanity: A Qualitative Study Of Dual Diagnosis Patients Experiences.** Maria E. Rosa, DrPH, PhD, CARN. University of Puerto Rico, Medical Sciences Campus, School of Nursing, 758-2525 ext2100.

The positive effects of integrating advance practice nursing in a comprehensive psychiatric program prompted the exploration of personal and common meanings of participants. This study is viewed as an important step in providing quality nursing care to substance dependent schizophrenics as defined by them. Personal and common meanings embedded in the experiences of eight veterans, and two family members receiving outpatient care in West Los Angeles Veterans Affairs Medical Center Dual Diagnosis Treatment Program. These meanings are interpreted using a seven-stage Heideggerian hermeneutical phenomenological approach. An unstructured personal experience was obtained by use of audio-taped interview of each participant. The four themes that emerged from each story extended from how one is now, how one became mentally ill and addicted to drugs, how one relates or be in the world. Three constitutive patterns emerged: being deeply touched by caring, wanting connections, and being after recovery. These patterns endured across the treatment experience of each person and continued to endure at the time of interview. The revelation of common and personal meanings provide new possibilities for the transformation of nursing practice to ensure quality care from the perspective of what is considered meaningful to each dually diagnosed individual.

A-10 **Minerals Profile Of Puerto Ricans Who Seek Help At A Living Food Educational Center.** Mildred Rivera, MA, LFP; María E. Rosa, Dr PH, PhD, RN; Aurora I Vassos, PhD, MHSN;Evelyn Crouch, PhD, RN, University of Puerto Rico, Medical Sciences Campus, Nursing School.

Although in today's Puerto Rican society individual nutritional deficiencies such as scurvy are rare, overnutrition and nutritional imbalances represent major problems. The five leading causes of death in Puerto Rico reported by the Health Department are: heart disease, malignant tumors, diabetes mellitus, AIDS and cerebrovascular disease. It is noted that most of the causes of death are related to personal behavior and lifestyles that could be modified through clinical preventive services. More people are now seeking help in alternative programs, such as Health Food Centers and Community Educational Programs. A descriptive study was conducted among ninety-five (95) Puerto Ricans who voluntarily attended a Living Food Educational Center to seek help for chronic health concerns. A nutritional assessment was performed on each participant with the purpose of identifying mineral deficiencies, which could be contributing to their health concerns. They were all tested for essential and additional minerals as well as for toxic minerals by use of hair analysis. Although the use of this test has been controversial in the past, after 30 years of research, hair analysis has emerged as the most practical method of testing for mineral balance in the body. Participants found this procedure non-invasive, as well as easily collected, stored and transported. The group turned out to be relatively young, with a mean age of 50.06, the majority being females (73 %). Most of them lived in metropolitan areas, such as San Juan (39%) and Guaynabo (32%) and worked in indoor settings (65%). Among other findings, participants showed abnormally low levels of thirteen (13) nutritional minerals as found by hair analysis, particularly copper, zinc, iron, manganese, chromium, and germanium. Calcium and boron were found to be high among the majority of the participants. In addition, toxic metals assessment revealed 27.4% of the participants to have non acceptable levels of mercury and 35 % non acceptable levels of aluminum. It was concluded that the sample studied had a significant imbalance in most essential minerals necessary for proper body functioning. Each participant received nutritional education and explanations regarding their most significant mineral findings and their interrelationships. They were also taught which foods they should emphasize and which to avoid to further assist in balancing minerals. Implications for further research are discussed with emphasis in culturally sensitive health promotion and health education. The teaching of simple and basic nutritional principles to all age groups is recommended.

A-11 **The Effect Of Nutrition, Exercise And Of Character Strengthening On The Lifestyles of Ten-Year-Old Children.** Aurora I Vassos, Ph.D., MHSN, María E. Rosa, DrPH, PhD, RN, Ana Belka Morales, MSN, RN, University of Puerto Rico, Medical Sciences Campus, Nursing School.

Lifestyle changes are difficult to accomplish. Several risk factors for cardiovascular diseases, diabetes and HIV have to do with factors related to lifestyle. Nutrition is one of the most important factors in children's lives, with exercise as a close second. The sample used was composed of twenty (20) children in the fifth grade of a private elementary school in the Eastern part of the Island. Even though they did not have any special nutritional, behavioral or drug related problems, the children were exposed to these problems because of the surroundings. A preliminary analysis to learn more about the nutritional and behavioral characteristics of the children was carried out. The director of the school, some teachers and parents were interviewed and it was discovered that many of the children did not eat breakfast, and the ones that did, were not eating properly. They also were eating fast foods in preference to meals prepared at the school dining room. In addition they were having problems with self-esteem and some of them did not have the tools to make wise decisions. Some of the children were also overweight. A series of activities on healthy lifestyles were carried out. The children were given conferences on the importance of breakfast, especially for those suffering from diabetes; of having a variety of foods, keeping in mind the number of children being overweight, and above all, about the importance of whole foods over processed foods. They were also explained about the benefits of avoiding certain types of foods, especially those containing saturated fats. Emphasis was made on trying to have in their meals foods included in all groups in the food pyramid. The importance of exercise and its relationship to health was discussed with the children. Conferences on self-esteem, how to make wise decisions were also given. At the end of each conference, they were given an evaluation questionnaire, especially designed for the children. At the end of the project, a questionnaire was given to the parents and teachers to evaluate the change in eating habits as well as the behavior and learning improvements. It was observed that there was a marked improvement in physical exercise and the nutritional habits of the children as well as in their relationship with other children and their parents. A more extensive study is planned. It is hoped that this school and others Island-wide as well in the Metropolitan area will be later included.

A-12 **Estudio Longitudinal de los Estilos de Aprendizaje de los Estudiantes de Enfermería de la Universidad de Puerto Rico, Recinto Universitatario de Mayaguez.** Margaret Toro, RN, MSN & Rose M.Méndez, RN, MSN, Universidad de Puerto Rico, Recinto Universitario de Mayaguez, Escuela de Enfermería.

El propósito de este estudio descriptivo es determinar los estilos de aprendizaje predominantes entre los estudiantes del departamento de enfermería de la Universidad de Puerto Rico – Recinto Universitario de Mayaguez por un periodo de tres (3) años académicos consecutivos y evaluar si existen cambios en los estilos de aprendizaje a través de los años. El marco conceptual del estudio se fundamentó en el Modelo de los Estilos de Aprenizaje según el Dr. Richard Felder y Linda Silverman. El instrumento utilizado fue el Indice de Estilos de Aprendizaje diseñado por el Dr. R. Felder y la Dra. Barbara Soloman. Este modelo consiste de cuatro dimensiones, que a su vez contiene dos categorías las cuales se dividen de la siguiente manera: percepción (sensorial/intuitiva), entrada (visual/verbal), procesamiento (activo/reflexivo) y comprensión (secuencial/global). La muestra fue una de tipo estratificada en la que participaron 118 estudiantes de primer a cuarto año. Los hallazgos reflejan que en la dimensión de percepción todos los grupos tuvieron una preferenci moderada hacia la categoría sensorial. Los grupos resultaron con una preferencia balanceada en las dimensiones: modalidad de entrada, procesamiento y comprensión; con excepción del grupo de cuarto año, que en la dimensión de entrada resultó con una preferencia moderada hacia la categoría visual. Las implicaciones del estudio en la educación en enfermería estriban en la importancia de proveer actividades para todos los estilos de aprendizaje en el proceso de enseñanza/aprendizaje. Al profesor alcanzar este balance producirá el funcionamiento efectivo del individuo en las diferentes dimensiones pues de esta manera desarrollará las destrezas mentales para alcanzar su nivel máximo; logrando asi el desarrollo de profesionales efectivos.

A-13 **Efecto de la Adaptación al Logro del Autocuidado del Paciente Ostomizado.** RA Rosemary Antomattey Dietrich

Esta investigación descriptiva-retrospectiva se lleva a cabo con el propósito de determinar como afecta la adaptación del paciente ostomizado al logro de autocuidado. La misma se realizó con sujetos adultos entre las edades de 20 a 65 años procedentes de la Asociación de Pacientes Ostomizados en septiembre a octubre del 1998. La muestra fue de 25 participantes

para determinar el efecto de la adaptación en el logro del autocuidado se utilizó instrumento validado por Olbrish en el 1982, el cual fue desarrollado por la investigadora. El análisis de los datos demuestran lo siguiente: que los sujetos con ostomias permanentes reflejaron mayor adaptación que los que tenían ostomias temporeras, que la mujer refleja mayor adaptación a cambios físicos que el hombre y que las actividades de enfermería durante el proceso de recuperación y rehabilitación del paciente son un factor necesario para promover la adaptación de los pacientes y a su vez fomentar el autocuidado. Se considera que los hallazgos de esta investigación puedan ser útiles para la práctica de los profesionales de la salud que se relacionan directamente con los pacientes ostomizados.

A-14 **Estudio Descriptivo Sobre la Educación Preventiva en los Accidentes Ocupacionales de Adultos Lesionados de la Espalda.** Astrid G. Seguí, RN, MSN, Mabel Medina Cintrón, RN, MSN, Universidad de Puerto Rico, Recinto de Ciencias Medicas, Decanato de Enfermería, 758-2525, ext. 5605 ó 4622.

El daño relacionado a la espalda es uno de los principales problemas de salud en la fuerza trabajadora, afectando el 35% de ésta y contando con un 25% de todas las reclamaciones. La Comisión Nacional de Seguridad invierte cada año 11.9 billones de dólares para este particular. En los Estados Unidos se ha estimado que 31 millones de habitantes sufren de dolores o lesiones en la espalda. En Puerto Rico entre el 1995-1999 se reportaron 72,986 casos nuevos de trabajadores lesionados de espalda. Lo cual implica en costos 24 mil dólares por cada persona lesionada. Esta investigación pretende evaluar si existe alguna relación entre la educación preventiva y los accidentes ocupacionales de los adultos lesionados de la espalda. Al ser un problema económico y de salud, se realizó un estudio descriptivo con 40 sujetos lesionados de espalda a causa de trabajo. Se realizaron entrevistas para explorar la educación preventiva en este tipo de accidente ocupacional. Se tomó en consideración los siguientes factores tales como alcance, causas, estrategias educativas, conocimiento de factores de riesgo y equipo de seguridad, entre otras. Los hallazgos indican que la educación preventiva y los factores antes mencionados son cruciales para la prevención de los accidentes ocupacionales. El 70% de los participantes nunca fueron educados sobre cómo evitar lesiones. El otro 30% fue orientado en algún momento aunque no necesariamente por el particular de necesidad, ni por el personal profesional preparado en la materia. El equipo de seguridad disponible y cómo utilizarlo fue nulo en mas del 85%. Los estilos de vida sedentarios en algunas personas, posturas inadecuadas en el trabajo por largos periodos de tiempo y el esfuerzo físico extremo fueron otros hallazgos encontrados. A base de estos hallazgos se ofrecen recomendaciones dirigidas a establecer educaciones continuas compulsorias, un equipo de profesionales multidisciplinario, programas de ejercicios, equipo ergonómico, desarrollo de modelos educativos de prevención resaltando el cuidado primario en los escenarios de trabajo y otros.

A-15 **Clinical Presentations which Mimic Child Sexual Abuse.** B. Mirabal- Colón, MD AND M.N. DE Jesús, MSN, Dept. of Pediatrics, UPR School of Medicine.

Child sexual abuse is a serious public health problem; 25% adult females and 15% of males report having suffered sexual abuse. Evaluation for child sexual abuse requires validation of the child's disclosure and a complete history, physical and genitoanal exam, by an experienced examiner. Colposcopy is encouraged since it provides magnification, illumination, photographic evidence and can be used for follow up and consultation. The purpose of this case review is to enable physicians to recognize clinical presentations that may mimic child sexual abuse. Four children (5 months to 6 years old) were referred to the Biopsychosocial Program, Dept. of Pediatrics, UPR School of Medicine (which receives VOCA funds from PR Dept. of Justice) due to suspected child sexual abuse (1997-98). Two girls (4 10/12 and 6 years old) presented vaginal bleeding; a 2 10/12 year old male was evaluated due to multiple perianal fissures and a 5 months old infant was referred due to vaginal and anal lacerations. All children had a colposcopic exam to document and photograph the physical findings. Of the four children, two(2) female patients had urethral prolapse as the cause of bleeding. The male infant had sustained non-intentional trauma to the perianal tissues after a fall in his backyard, confirmed by the police. The female infant was followed by the physician and Child Protection for over one year, due to persistent perineal and anal lesions. In this case, a congenital lesion due to failure of midline fusion of the perineum is likely. An interdisciplinary approach, by professionals experienced in this field is recommended to confirm or rule out child sexual abuse due to its serious consequences.

A-16 **Neonatal Persistent Tachycardia: Hallmark of Neonatal Graves' Disease.** Nieves-Rivera F, González-Pijem L, Concepción CB, Rodríguez L, Valcárcel M. *Department of Pediatrics, UPR.*

Neonatal Graves' disease (GD) occurs in approximately 2% of mothers with GD during pregnancy, an incidence of approxi-

mately 1:25,000 newborns. The case of a 22 day old baby girl PreTAGA with persistent tachycardia and weight loss is presented. This was the 1.4 Kg product of a 26 weeks pregnancy complicated by severe preeclampsia, GD, congestive heart failure and dilated cardiomyopathy delivered by cesarean section. The baby required assisted mechanical ventilation and treatment with Survanta. At 9 days of age aminophylline was discontinued because of tachycardia bouts. At 12 days old evaluation by cardiology was requested because of persistent tachycardia (183/min) and hypertension (96/60 mmHg). A systolic heart murmur was heard over the 2nd intercostal space along the left sternal border. Supraventricular tachycardia was confirmed by EKG without evidence of structural heart disease anomalies. The patient was started on digitoxin and furosemide. Tachycardia continued in spite of therapy and weight dropped to 1.1 KG (-20% BW) while receiving formula with up to 24 Kcal/oz. At 22 days evaluation by endocrine services was performed. A wasted, hypotonic baby with a heart rate of 164/min and diffuse goiter was observed. Treatment was begun (â block) because of suspected neonatal GD until thyroid function test results became available. In fact, results obtained at 22 days of age confirmed it: TSH 0.03 FIU/ml, T_4 25.7Fg%, T_3U 46.9%, FTI 12.08. Potassium iodide was added at 33 days of age: TSH 0.02 FIU/ml, T_4 16.4Fg%, T_3U40.9%, FTI 6.72. Thyrotropin receptor antibodies were still borderline positive at 45 days of age confirming etiology. Weight started to recover by 41 days of age (1.3 Kg):TSH 0.07 FIU/ml, T_4 3.5Fg%, T_3U 25.7%, FTI 0.89. She was discharged home on no thyroid medication at 56 days of age weighing 1.9 Kg: TSH 0.77 FIU/ml, T_4 8.2Fg%, T_3U 28.9%, FTI 2.36. In summary, the case of a premature neonate with GD is presented. Neonatal GD, although rare, should always be suspected in newborns who persist with tachycardia once common etiologies are discarded.

A-17 **Use and Applicability of the TPBA, Pilot Project.** C. Rodríguez, Ph.D., M. Morales, MS., Occupational Therapy Program, College of Health Related Professions, University of Puerto Rico.

The purpose of this pilot project was to explore the applicability of the "Transdisciplinary Play Based Assessment" (TPBA) in a sample of ten Puerto Rican families. The TPBA is a natural, functional and non-traditional nonstandardized form of play assessment that is used with children. The transdisciplinary team and the parents administer it in a natural scenario for the child. The child is observed in four domains: cognitive, social - emotional, language/communication and sensorimotor. Professionals are finding that the traditional tests do not always give valid and reliable or appropriate information particularly in the ages 0 to 3. The early intervention program, offered by the PR Health Department need to identify an assessment tool that complies with the requirements of parents participation, natural environments and teamwork as specified in Part C of Individuals with Disabilities Education Act. The objective of the study was to explore how the families and the transdisciplinary team responded to the TPBA and to make recommendations about it's implementation. The Early Intervention Program provided the funds.

The sample was composed of five families with typical children and five families that participated from the services of the Early Intervention Program. The families were interviewed using a specific format designed for the purposes of the investigation. The TPBA was administered to each child. All the administrations were videotaped. The results obtained through the assessment were analyzed and compared between the two samples. The transdisciplinary teamwork members and the parents that participated evaluated the process and make recommendations. It was found that the TPBA facilitated the identification of the strengths and needs of the children with developmental delays. No developmental delays were identified in the typical children. Areas such as temperament, social relations and parent-child relations were effectively documented with the TPBA. The interview was valuable to analyze family dynamics, including typical play patterns of the child. The TPBA was effective as an educational tool for the parents. The analysis of the instrument designed to obtain their opinion revealed high levels of satisfaction and trust in the teamwork. Various factors related to the transdisciplinary model were identified. The content validity and the social validity of the evaluation were confirmed. The value of using the play as a theme for the evaluation of children with disabilities was validated.

A-18 **Ca^{++} Homeostasis: Possible Excitatory Amino Acid Transporters Regulator in Experimental Epilepsy.** O.I. Claudio, N. Berríos, L. Dominguez, R. Casasnovas and J.G. Ortiz. Department of Pharmacology and Toxicology, University of Puerto Rico School of Medicine, P.O. Box 365067, San Juan, Puerto Rico 00936-5067

High glutamate (**Glu**) concentrations, the major excitatory neurotransmitter in the brain, are observed in many pathological conditions such as stroke and epilepsy. Excitatory amino acid transporters (**EAATs**) are known as the main mechanism for removing Glu from the synapse. Thus, up-regulation of EAAT=s activity could have profound therapeutic implications in these conditions. Veratridine (inhibits voltage gated Na^+ channel inactivation) and 50 mM K^+ (depolarizes the cells) produce epileptiform activity in rat hippocampal slices. However, veratridine, but not 50 mM K^+, causes a decrease in EAAT=s activity. Tetradotoxin, (TTX, an inhibitor of voltage dependent Na^+

channels activation) does not prevent the inhibitory effect of veratridine on Glu uptake. Reduction of extracellular Ca^{++} potentiated the inhibitory effect of veratridine on EAAT activity, but the blockage of voltage dependent Ca^{++} channels did not alter the effects of veratridine. Co-incubation of veratridine with benzamil (Na^{+}/Ca^{++} exchanger inhibitor) or with amiloride (Na^{+}/H^{+} transporter inhibitor) was not significantly different from incubation with veratridine alone. In contrast, co-incubation of veratridine with BAPTA-2am (free intracellular Ca^{++} chelator) enhances the veratridine-induced decrease on Glu uptake. These results suggest that intracellular Ca^{++} mediates the inhibitory effects of veratridine on EAAT=s activity and could be one of its possible modulators. Metabotropic glutamate receptors (mGluRs) have been credited with releasing Ca^{++} from intracellular stores. Indeed, L-AP4 (group III mGluRs agonist) reverses the inhibitory effect of veratridine on EAAT activity. Similar effects are observed with the group I/II antagonist, MCPG. Taken together, these results point to the involvement of EAATs in epileptic activity and to its regulation by mGluRs, through intracellular Ca^{++}, as potential therapeutic agents. (Partially supported by MBRS and RCMI programs)

A-19 **Correlation Between Vitamin C Levels in Blood and in the Diet of Children either Exposed or Not Exposed to Environmental Tobacco Smoke.** AE Liano Colón, C Rodríguez, L Alamo, and AM Preston. Dept. Biochem., Univ. P.R., Med. Sci. Campus, San Juan, PR 00936

Extensive documentation exists showing that cigarette smokers have lower dietary intakes of vitamin C (vit C) than non-smokers. Less studied is the effect on dietary and blood levels of vit C in persons involuntarily exposed to environmental tobacco smoke (ETS). To address these issues, we have compared vit C levels in the diet and blood of 606 healthy children ages 2-12 yr. and subdivided into 3 age groups: 2-4 yr., 5-8 yr. and 9-12 yr. This population was selected from an industrial community in P.R. with households either free from or having ETS. Exposure to ETS as well as dietary information were determined from a questionnaire administered to mothers at a community health center. Exposure was validated via measurement of urinary cotinine, a specific biomarker for nicotinic exposure. Results show that 50% of children were exposed to ETS from one or both parents with equal exposure occurring in girls and boys. Among children exposed to ETS, 75% had households with one smoker (2/3's of which being the father) while in 25% of the households both parents smoked. Exposure level was less than 1/2 pack/day in 50% of households, 1/2 to 1 pack/day in 30% and >1 pack/day in 20% of the households. We observed slightly lower vit C intake in smoking households and correlation curves indicated that ETS exposed children had lower vit C blood levels at equivalent dietary intakes of vit C than did non exposed children. The most dramatic decreases occurred in girls where the father was a smoker and in children of both sexes in the age 5-8 group. These finding could be used by health workers to further strengthen the anti smoking message to vulnerable populations. Supported by the USDA NRI Grants Prog. #94-37200-0602.

A-20 **TypeII Myosin deficiency in *Saccharomyces cerevisiae* increases the expression of the morphogenesis checkpoint effector *SWE1*.** Irizarry, M. PhD., Ríos, W., Gómez, D., Rivera, F., González, S., Villanueva, L., and Rodríguez, J.R. University of Puerto Rico, Medical Sciences Campus, School of Medicine, P.O. Box 365067 San Juan, P.R. 00936-5067.

Cytoskeletal components are regulated throughout the cell cycle. In yeast cells it has been reported that depolymerization or lack of proper organization of actin can lead to cell cycle delays (Lew and Reed, 1993). To address the possible role of another cytoskeletal component, type II myosin (Myo1p) in the cell cycle control of *Saccharomyces cerevisiae*, we examined the effects of Myo1p deficiency in the G1-S and G2/M-G1 transitions. We also addressed the possibility that a morphogenesis checkpoint, which has Swe1p as an effector (Sia et al.1996), could be involved in monitoring aspects of the function of Myo1p in the cell cycle. Results from flow cytometry analysis support that in Myo1p deficient strains there is a delay in the transition from G1 to S. RT-PCR data for the expression of the *SWE1* gene show higher levels of *SWE1* mRNA in Myo1p deficient strains, for a longer time span than wild type cells. These results suggest the possible induction of expression of this protein's mRNA in Myo1p deficient cells and the activation of the morphogenesis checkpoint in these strains. This Research is supported by NIH (S06GM08224), and partially supported by NIH-NCRR (G12RR03051), NSF (HR9108775), EPSCoR Fellowship Program, and by the Dean ship of Biomedical Sciences and Graduate Studies of the School of Medicine of the University of Puerto Rico.

A-21 **Neuroprotective Effects of Basic Fibroblast Growth Factors on Axotomized Retinal Ganglion Cells.** Rosa E. Blanco and Jonathan Blagburn. *University of Puerto Rico, Departments of Anatomy and Physiology, and Institute of Neurobiology, 201 Blvd. del Valle, San Juan, P.R. 00901*

The neuroprotective effects of basic fibroblast growth factor (bFGF) on the long-term survival of axotomized retinal ganglion cells (RGCs) were studied in the frog, *Rana pipiens*. Cell loss was quantified in different regions of

the ganglion cell layer using Nissl staining and tetramethylrhodamine dextran amine backfilling. All regions of the retina showed a significant decrease (32–66%) in RGC numbers between 4 and 16 weeks after axotomy. Some cells showed morphological and biochemical signs of apoptosis. A single application of bFGF to the optic nerve stump at the time of axotomy protected many of the cells 6 weeks after the injury but this effect was lost by 12 weeks. A second application of bFGF, 6 weeks after the injury, rescued many RGCs at 12 weeks. In contrast, single or double injections of bFGF into the eyeball had no effect on RGC survival. Axotomized RGCs were significantly enlarged and elongated after axotomy, and these morphological changes were increased by bFGF treatment. In the normal retina and optic nerve, immunocytochemical staining showed bFGF-like immunoreactivity (-LI) in the pigment epithelial layer, the outer segments of photoreceptors, and in occasional RGCs. Strong bFGF-LI was present in Müller cells and in optic nerve astrocytes and oligodendrocytes. FGF receptor-LI was present in photoreceptors, the outer plexiform layer, retinal ganglion cell axons and Müller cells. FGF receptor-LI was also observed in optic nerve glia. Supported by NIH MBRS S06 08224 and G12RR-03051.

Session B

B-1 **HIV-1 Delays FAS-Induced Apoptosis in Lymphoid Cells by Interfering with Caspase 3 Post-Activation Events.** M. Roche, G. Rosario, R. Delgado, A.M. del Llano and J.A. Lavergne, School of Medicine-University of Puerto Rico, San Juan PR 00936-5067

Caspases play a critical role in the regulation and delivery of specialized signals in apoptosis induction. Caspase 3 is a key executioner of Fas-mediated apoptosis. The aim of this work was to establish a relationship between the induction of apoptosis and the activation of caspase 3 in a cell line chronically infected with HIV -1. We induced Fas mediated cell death in uninfected Jurkat and in HIV-1 chronically infected J1.1 cells and sequentially analyzed (0-12 h) the development of DNA fragmentation, phosphatidyl serine (PS) expression in early apoptosis and the percentage of cells positive for active caspase 3 using flow cytometry. The % of positive cells for active caspase 3 resulted higher in Jurkat cells (0-17%) when compared to J1.1 cells (0-12%). Increased activation of caspase 3 after induction with anti-Fas occurs at different times for each cell line: Jurkat (2h) and J1.1 (4h). The number of positive cells for active caspase 3 in J1.1 cells did not correlate with their viability (98-85 %), DNA fragmentation (0-3%) or PS expression (4-10%) after Fas induction, while it did for Jurkat cells (viability: 90-70%, DNA fragmentation: 0-17% and PS exposure: 0-31%). These results suggest that the presence of HIV-1 in J1.1 cells retards the development of Fas mediated apoptosis, by affecting cellular events that take place after the activation of caspase 3. Supported by NIH RR03051 and NIH S06-GM08224 grants and the Grad. Sch. Biomed. Sci., Sch. Med.,UPR.

B-2 **Sequential Mitochondrial Alterations and Nuclear Apoptosis Mechanisms in J1.1 Cells Stimulated with Anti-Fas Antibodies.** G. Rosario, M. Roche, R. Delgado, W. Kozek and J. Lavergne, School of Medicine, University of Puerto Rico, San Juan, P.R. 00936-5067.

Inhibition of Fas-induced apoptosis is proposed to be a relevant mechanism of HIV-1 for the establishment of a persistent infection in lymphoid cells. The kinetics of apoptosis and mitochondrial integrity after anti-fas antibody exposure was evaluated in J1.1 cells (HIV-1 infected). J1.1 cells treated with anti-fas antibodies and harvested from 0 to 72 hours post- treatment, showed a decreased mitochondrial membrane potential (0 - 27%) and integrity (0 - 42%) indicative of damage in this organelle. These effects were observed at 2 and 10 hours, respectively. Mitochondrial potential disruption preceded fas-induced nuclear apoptosis (0 - 24%) which started at 8 hours after treatment. Cell morphology and viability correlated with quantitative values of apoptosis and mitochondrial alterations in J1.1 cells. In contrast, all mitochondrial and nuclear changes in parental Jurkat cells were significatively higher. In conclusion, treatment of J1.1 cells with anti-fas antibodies resulted in the following sequential events: 1. impaired mitochondrial function, 2. nuclear apoptosis and, 3. mitochondrial structural damage. In addition, there is a relative protection from these phenomena in J1.1 cells when compared with Jurkat cells. These results suggest that the presence of HIV-1 regulates fas-induced apoptosis and represents a strategy for the virus persistence or latency. Supported by NIH-RR03051, NIH-S06-GM08224 grants and The Graduate School of Biomedical Sciences, School of Medicine, UPR.

B-3 **Increasing Use of HAART and Elective C/S during Pregnancy with No Perinatal HIV Transmission.** Zorrilla C, Matos M, Huerta J, Bonano JF. Dept. of OB-GYN, UPR, School of Medicine.

Background- Pregnant women living with HIV are currently offered Highly Active AntiRetroviral Therapy (HAART) according to current reccomendations for treatment in adults. **Methods**-Chart abstraction of 77 pregnant women and their infants delivered between 1997 and 1999. Two tretment options: dual (ZDV/3TC) or triple (ZDV/3TC and a Protease Inhibitor) therapy were offered according to clinical status. Elective C/S was offered since june 1998. **Results**-None of the 61 infants born to date is HIV infected. The mean Birth Weight was 3,170 gm. The rate of pre-term deliveries (<37 weeks GA) was 20% for each group. 93% of the mothers in the PI group and 85% of the dual therapy delivered at 35 weeks or more. Of the women receiving dual therapy (n=42) the mean CD4 pretherapy was 476, the mean Viral Load (VL) pretherapy was 10,400 copies/per ml, 66% had a VL <1000 at delivery, 35% had a VL <500 at delivery. Of the women receiving triple (HAART) (n=35) the mean CD4 pretherapy was 365, the mean VL pretherapy was 48,533, 77% had a VL <1000 at delivery, 70% had a VL <500 at delivery. One third of all the women were on therapy prior to conception, and 50% were started during the second trimester. During 1996, 9% of the women were on HAART, which increased to 46% in 1997, 61% in 1998 and 86% in 1999. The transmission rate was zero in both groups and there was liberal use of the elective C-section (55% and 57% respectively). **Conclusions**-The use of HAART was associated with a higher proportion of undetectable viremia at delivery, therefore suggesting a potential long-term maternal benefit of such therapy. A trend towards more aggressive use of HAART was seen in this retrospective review of which 86% are currently offered HAART. No HIV transmission was seen and the perinatal outcome was good.

B-4 **HIV-1 Envelope V3 loop Molecular Characterization of Puerto Rican Transmitter Mother-Infant Pairs and Non-Transmitter Mothers Isolates.** *Arroyo M.A.*[1], Swanstrom R[2]., Cadilla C.L.[3]., Hillyer G[4]., Diaz C.[5] and Meléndez-Guerrero, L.M[1]. [2]Linberger Comprehensive Cancer Center, UNC, [5]San Juan Pediatric Hospital, Depts. of [1]Microbiology and Medical Zoology, [3]Biochemistry, [4]Pathology, UPR Medical Sciences Campus, San Juan, PR.

HIV-1 vertical transmission in Puerto Rico has decreased significantly due to the implementation of antiviral therapy. Studies in other parts of the world have shown that most of the HIV-1 transmitter mothers infect their newborns with NSI/MØ tropic/CCR5 using viruses. Our hypothesis is that HIV-1 envelope V3 loop sequences will show specific amino acid differences between transmitter maternal-infant pairs and non-transmitters on specific amino acids positions that are predictive of NSI/MØ tropic/CCR5 phenotype. Peripheral blood mononuclear cells were obtained from 30 patients; ten non-transmitter mothers and ten transmitter maternal-infant pairs, in order to clone the HIV-1 envelope V3 loop region. V3 loop amino acid sequence analysis of each patient viral was performed to predict their phenotypic characteristics. Our results showed that all of the transmitters pairs and non-transmitter mothers had specific amino acids that are predictive of NSI/MØ tropic/CCR5 using viruses. Heteroduplex Mobility Tracking Assay was performed to determine evolutionary variants of V3 non-transmitters and transmitter maternal-infant pairs. Only two non-transmitter mothers (9717A & 9602A) showed an heterogenous V3 population. Our results demonstrated that the most abundant maternal V3 loop variant was vertically transmitted. In conclusion, these results agree with the patterns of phenotypic selection seen on HIV-1 in other parts of the world. Further studies will be performed to compare the replication kinetics and coreceptor usage at a cellular level. *Research supported by NIH MBRS SO6GM08224, RCMI G12RR03051 & CFAR P30-H D37260.*

B-5 **CCR5 Genotyping and Production of b-chemokines by Peripheral Blood Mononuclear Cells in HIV-1 Infected Children.** E. Sánchez-Carrasquillo[1], V. García[1], I.Febo[2] and L. Meléndez-Guerrero[1]. [1]Dpt. of Microbiol. and Med. Zool. [2]Gamma Project: Pediatric Hospital. U.P.R: Medical Sciences. Campus.

The duration from initial infection with HIV-1 to CD4 lymphocyte depletion and progression to AIDS varies among infected individuals. In this study we examined the genotype of the chemokine receptor CCR5 and the production of b-chemokines by PBMC of HIV-1 infected children in order to define determinants of HIV progression. Population was divided in two groups: Group 1(G1) includes 10 patients with a mean age of 11 yrs, B1-B2 disease classification, high levels of CD4 (mean 650 cells/ml), viral load mean of 1500 copies/ml and with less aggressive therapy (only 3 in HAART). Group 2(G2) includes 9 patients with a mean age of 4 yrs, C3 disease classification, variable CD4 counts and viral load over 50,000 copies/ml. All the patients had a CCR5 wt genotype indicating that they do not have the 32 base-pair deletion associated with slower progression. Unstimulated cells from G1 produced less b-chemokines than G2. However, G1 patients increased their MIP-1b production after PHA stimulation (range 937

to 7855 pg/ml) while MIP-1b production in G2 was decreased (range 872 to 39991 pg/ml) except for patients with a low p24 antigen titer. Both groups increased RANTES production after stimulation (G1 range 311-1226 pg/ml and G2 465-1926 pg/ml) although the magnitude of stimulation was higher in G1. The decreased MIP -1b activation seen on G2 patients is in agreement with other studies that postulate a disruption in MIP-1b secretion during AIDS. Production of MIP 1a was variable in both groups. Differences in basal levels of b-chemokines among both groups could reflect age differences or a overactivated state of T cells *in vivo* and their consequent inability to respond optimally to exogenous stimulus. These preliminary results support the hypothesis that slower progressors are capable to respond better to stimulation, but do not agree with the fact that slow progressors have higher levels of MIP-1b and RANTES than rapid progressors. *Research supported by NIH MBRS SO6GMO8224 and RCRII Award 1P20 RR 11126.*

B-6 **Factores que intervienen con el cumplimiento del tratamiento con inhibidores de proteasa por parte de madres, padres, o encargados(as) de una muestra de pacientes pediátricos VIH/SIDA, durante el año 1999.** Santiago, U.I.and Santiago, G.L.U PR, RC.M, San Juan.

Objetivo general : Identificar los factores que intervienen con el cumplimiento del tratamiento con inhibidores de proteasa por parte de las madres, los padres, o encargados(as) de una muestra de pacientes pediátricos VIH/SIDA durante el año 1999. Objetivos específicos :(1) Describir las características sociodemográficas y personales de los(as) participantes y sus pacientes pediátricos; (2) Identificar las barreras que tienen los(as) participantes para cumplir con el tratamiento;(3) Identificar los factores que facilitan el cumplimiento con el tratamiento por parte de los(as) participantes;(4) Identificar los beneficios de cumplir con el tratamiento que perciben los(as)participantes en el estudio.Descripción: Estudio de carácter exploratorio en el cual se utilizó un diseño no experimental.La población de estudio la constituyeron las madres, los padres o encargados de una muestra de pacientes pediátricos VIH/SIDA con tratamiento con inhibidores de proteasa. 185 pacientes pediátricos estaban en la terapia con inhibidores de proteasa; la muestra utilizada fue de 59 participantes. El cuestionario utilizado fue diseñado por las propias investigadoras. Los participantes asistían a 6 Clínicas Regionales del DS, Proyecto GAMMA y la Clínica Amb.del Hosp Mun. de San Juan. Resultados: El género que predominó en los pacientes pediátricos fue el sexo femenino (59.3%). 37.3% de los pacientes pediátricos estaban en las edades de 6-10 años. El inhibidor de proteasa de mayor uso fue el Viracept (63.9%). Un 71.2% de los participantes no trabajaban y un 62.7% poseían estudios universitarios. 81% de los participantes expresaron que faltaban a las citas por no tener transportación. El parentesco con los pacientes pediátricos que más predominó fue el de madre de crianza(47.3%). 100% de los(as) participantes expresaron que el cuidado médico que recibían sus pacientes pediátricos era bueno.Conclusiones:Los participantes ven a los inhibidores de proteasa como beneficiosos para la salud de sus pacientes pediátricos, aunque por temor al rechazo no compartan esta responsabilidad con otros familiares u amigos. Es necesario establecer programas dirigidos a orientar a la comunidad sobre este tratamiento.

B-7 **Clinical Outcome of Chronic Hepatitis C (CHC) in Cirrhotic Patients.** Jessica Rosa, MD (Associate), Henry González, M.D., Esther A. Torres, M.D, Fernando J. Castro, Cynthia E. Rivera, M.T., M.P.H., University of Puerto Rico, School of Medicine, San Juan, Puerto Rico.

Background: Nearly 4 million Americans are infected with hepatitis C. At least 20% of the patients with chronic infection will develop cirrhosis after 20 years of the onset of infection. CHC patients with cirrhosis have higher risk of developing hepatocellular carcinoma. Also, response rates to interferon are poor. Objectives: To study the epidemiologic data, risk factors, biochemical and histologic parameters, response to treatment and outcome in hepatitis C patients with cirrhosis. **Methods:** The records of 81 cirrhotic and 98 randomly selected noncirrhotic patients from the University Hospital Hepatitis Research Clinics were reviewed. All patients were HCV positive and had a liver biopsy. Data regarding sex, age, risk factors, symptoms, histologic findings, response to interferon and outcome were collected in all patients. Analysis of the data was performed using the Student's test or Wilcoxon two sample test, when appropriate, to compare the means or medians of these variables. The Pearson chi square test or Fisher's exact test, when appropriate, was used to determine statistical associations between categorical variables. **Results:** The was no difference between groups in gender, risk factors, time of exposure to the virus, alcohol use, symptoms and sings, except for lower extremities edema, that was more common in cirrhotic patients ($p<0.05$). Cirrhotic patients were older (53 ± 10 y vs 44 ± 12 y ($p=0.000002$), had a higher Knodell score (12.7 ± 3.1 vs 8.4 ($p=0.03$) and were more likely to have fibrosis ($p=0.0001$) and necrosis ($p=0.006$) as compared with non-cirrhotic patients. End of treatment response to interferon was significantly better in non-cirrhotic patients as compares with cirrhotics (39.8% vs.14.1%

(p=0.0006)). There were 8 death (6 liver related) in the cirrhotic group as compared with no deaths in the non-cirrhotic (p=0.0001). **Conclusions:** CHC patients with cirrhosis present a poor response to interferon treatment and higher mortality as compared with non-cirrhotic patients.

B-8 **Development of Dengue-2 Envelope Expression Vector for DNA Immunization.** Colón C, Martínez I, Vorndam V, Beltran M, Vergne E and Kraiselburd E. Department of Microbiology and Medical Zoology, School of Medicine, San Juan, PR; Division of Vector-Borne Infectious Diseases, Dengue Branch, Center for Disease Control and Prevention, San Juan, PR.

Dengue fever is a debilitating illness that can include hemorrhagic fever and shock syndrome. Despite many years of research efforts, vaccine development remains at the experimental stage. The main goal of this study was to construct and evaluate a dengue-2 (D2) DNA vaccine. For this, the prM and env genes of D2 were cloned in the expression vector pJW4304, originating Vec D2. Expression of D2 envelope (E) protein by was monitored by immunofluorescence and western blot from Vec-D2-transfected COS-7 cells. To determine if Vec D2 was immunogenic, groups of 7 mice each were immunized either with Vec D2, or with Vec D2 plus the genetic adjuvant GM-CSF. Controls consisted of mice immunized either with pJW4304 or with pGM-CSF. Doses of 100μg of each vector were delivered i.m. on weeks 0,4,10 and 16. Immune responses were monitored by immunofluorescence and by plaque reduction neutralization test. Dengue specific antibodies appeared earlier in mice immunized with Vec D2 plus GM-CSF than in mice immunized with Vec D2 alone. Differences in antibodies titers between these groups were found to be statically significant. Very little if any-dengue-2 neutralizing antibodies were detected in the DNA-immunized animals. To determine whether Vec D2 vaccinated animals were primed for antiviral responses, a dengue-2 protein boost was administered on week 24 (i.e. 8 weeks after the last DNA dose). The protein boost consisted of wild type dengue-2 New Guinea C virus inactivated with formaldehyde, adjuvanted in alum. Strong, anammestic responses were observed in all animals that were previously vaccinated with Vec D2 ± GM-CSF. These responses included high titers of virus specific neutralizing antibodies. It is concluded that Vec D2 was expressed both "in vitro" and "in vivo" and that it was able to prime for protective immune responses against dengue-2.

B-9 **Predictors of Performance on National Boards at UPR Dental School**, K. Crespo, J. Torres, M. Recio, C. Toro, A. Reyes

The aim of this study was to determine variables associated with students performance on the National Board Dental Examination, in order to plan for curricular improvements and consider changes in admission criteria. Data was gathered from the graduating classes of 1994-1996.Statistical analyses using multiple and logistic regressions were performed to determine the association between variables on students admission and academic progress in dental school with students= performance on the Boards. Analyses performed by multiple regression (n=140) indicated that the model that best predicted students' performance on Part I of the National Boards included as predictors DAT academic average, Microbiology course grade, and first year grade point average ($R^2 = 0.66$). Two models developed by logistic regression contained predictors that with 78% certainty predicted the probability that students approve Parts I and II of the National Boards (n= 91). Model I (stepwise) included course grades in gross anatomy, oral histology, and microbiology. Model II (backwards) included course grades in Gross Anatomy and General Pathology, GPA in Science upon admission, and DAT score in Sciences. It can be concluded that admission criteria, as well as students' performance in dental school are important predictors of approval of the National Board Dental Examination.

B-10 **Tool Lifetime on the Cerec 2.** Sr. Ramón Ortiz B Student II Year, School of Dentistry, Medical Sciences Campus, University of Puerto Rico, University of Minnesota

The objective of this study was to measure the lifetime of the diamond tools on the Sirona™ Cerec 2™ system for milling of two commercial porcelain materials (Vita™ Mark II™ and Ivoclar™ ProCAD™) and a polymer ceramic material (3M™ Paradigm™ MZ100). Starting with a new set of tools, a full coverage crown for the concentration of Sirona™ Dentatec™ mill fluid; 25 ml per tank was used for the Paradigm material. The occlusal surfaces were digitized with a contact digitizer. Vickers hardness was measured using a 1 kg load and 15s load time. The Vickers hardness (kg/mm ^{2}) was: ProCAD 525.9 " 40.3; Paradigm 123 " 11.0; Mark II 543.6 " 59.2. The increase in mill time with respect to cumulative volume milled was linear. The lifetime of the diamond wheel was 32 units for ProCAD™ (n=1), 135 " 8 units for Paradigm™ (n=2), and 33 " 7 units for Mark II™ (n=3). The wheel life was greater for 3M™ Paradigm™ than for Ivoclar™ ProCAD™ and Vita™ Mark II™.

B-11 **Inactivation of HIV-1 using Gamma Irradiation Sterilization on Allogenic Cancellos Bone and Marrow.** Dr. José Pedroza, Research Office, School of Dentistry - RCM - UPR

Bone grafting has become a predictable and common procedure in implant dentistry to regenerate bone defects (Tatum, 1989). However, important questions remain to be answered, regarding the transmission of disease, particularly HIV, when using non-autogenous grafts. The purpose of this study was to evaluate the efficacy of gamma irradiation sterilization procedure in the inactivation of HIV-1. The process consisted of gamma sterilization at 2.5 B3.8 megarads of irradiation from a cobalt 60 source. High titers of the virus were absorbed into the Allogenic Cancellous Bone and Marrow (Rocky Mountain Tissue Bank) prior to sterilization process. The presence of infective virus following the exposure was analyzed by standard tecniques. The percent reduction of HIV-1 present in the three samples treated with gamma irradiation was 99.9998% when compared to the three control sample groups that were not treated with gamma irradiation. Therefore, we can conclude from this study that the cobalt 60 source at 2.5 B3.8 megarads completely inactivates the HIV-1 under these test conditions.

B-12 **Mesiodistal Width of Permanent Mandibular Teeth in a Contemporary Puerto Rican Population: A Pilot Study.** Dr. Francis Picón - Graduate Resident, Odontopediatric, Medical Sciences Campus - UPR

Tooth size is influenced by genetic and environmental factors (Bailit, 1975) and thus, variation among races and populations exists (Shaltry, 1989). The objectives of this study were to determine the mesiodistal crown diameter of the mandibular teeth in a contemporary Puerto Rican population and to compare these measurements with those of a North American population, of Northwestern European Ancestry, upon which most of the mixed dentition space analysis methods are based. Measurements of the greatest mesiodistal crown diameter were taken with a dial caliper calibrated at 0.1mm from plaster cast models of patients (n = 42) of both genders in the permanent dentition (Bjork stage 4). Subjects were randomly selected from the undergraduate orthodontic clinic at the University of Puerto Rico School of Dentistry. A qualified dentist performed the measurements and registered the data. The mean values of the Puerto Rican population were larger in general than those of the North American population except for the four mandibular incisors. There was a consistent and statistically significant difference between the groups in the mesiodistal width of the first premolar (larger in the Puerto Rican population, $p \geq 0.04$). A consistent numerical, but not statistically significant, difference was observed in the sum of the four mandibular incisors which was smaller in the Puerto Rican population. These findings suggest that the current methods for predicting the size of unerupted permanent canines and premolars, might not be as accurate for a contemporary Puerto Rican population as they are for a North American population of Northwestern European Ancestry. Further study, with a larger sample size, is necessary to establish a record of the mean values obtained and determine which modifications, if any, should be done to commonly used mixed dentition space analyses (prediction tables and formulas) when used in a contemporary Puerto Rican population.

B-13 **Fidelity of two elastomers in the transfer of dental implant position: A Three-dimensional Analysis.** Fernández, O., University of Puerto Rico, School of Dentistry.

Dental implants have demonstrated to be a good restorative option to rehabilitate those patients that present total or partial edentulism. When a rigid system, like a fix B detachable prosthesis is employed, the passive fitness of the superstructure becomes a clinical issue; obligating the dentist to sectionate the metal structure, to construct a soldering index and to modify the master model in order to secure that passivity. The purpose of this study was to compare the accuracy of two-monophasic elastomeric impression media, polyether and an addition silicone, in transferring the position of implants, from a master model to a working cast. The two different elastomeric materials ((Impregum7-ESPEE and Aquasil7-Dentsply) were used to take impressions from a five implant mandibular model, simulating a clinical situation (Phillips and Nicholls, 1994). The accuracy of the impression material in transferring the three dimensional position of the implant position, from the master model to a working cast, were measured by the distortion concept (Nicholls, and Phillips, 1977), using a three dimensional measuring machine (Mitutoyo7, Japan). The exploratory analysis of the results suggest that both materials behaved in a similar way, with regards to distortion. The implant positions #2 and #3, apparently have more distortion than positions #4 and #5. Further analysis, using a multivariate analysis of variance (MANOVA), will be used to verify the preliminary findings.

B-14 **Mutans Streptoccocci Prevalence in Hispanic Babies with Cariogenic Feeding Behaviours.** L. López, R.J. Berkowitz*, M.E. Moss, P. Weinstein, University of Puerto Rico, University of Rochester, University of Washington, USA.

Prevalence of mutants streptococci(ms) infection in children varies among different populations. This report

details the prevalences of ms infecction i a chort of Hispanic Puerto Rican babies (n-60;28M/32F; mean age 15.05mos; age range 12-18mos) who were all healthy, caries free, and slept with a nursing bottle that contained a cariogenic substrate (NB+). Pooled maxillary incisor plaque and saliva samples were obtained and immediately placed in RTF; they were serially diluted and plated onto MSB and Blood agar plates within 4 hours of collection; the plates were incubated in a anoerobic environment for 48h, at 37C prior to examination, representative ms colonies were isolated and subjected to mannitol and sorbitol fermentation test for tasonomic verification. Plates with colony counts between 20 and 300 were utilized to determine the % of ms in each sample. 51 of the 60(85%) babies harbored ms in at least 1 of the 2 samples. The 95% confidence interval for the proportion of subjects with detectable levels of ms was 72.9% - 92.5%. Fishers exact test showed that babies 16-18 mos age were more likely to have detectable levels of ms that babies 12-15 mos age (p=0.01). Levels of ms in plaque and saliva were as follows: <0.1% (plaque 27/51 mean age 15.14 mos sd 1.77; saliva 28*51 mean age 15.25 mos sd 1.76); 0.1%-1.0% (plaque4/51 mean age 14.4 mos sd 1.5; saliva 6/51 mean age 14.8 mos sd 1.46); >1.0% (plaque 14/51 mean age 15.85 mos sd 2.1; saliva 11/51 mean age 15.63 mos sd 1.91). The density of infection did not vary by age for plaque (p=0.32) or saliva (p=0.64). These finding support the concept that NB+ is a strong indicator for ms infection in Hispanic Puerto Rican babies; that prevalence of infection increases with age; and that density of infection did not vary with age in this population. Supported by NIH grants R03 DE 12053 and IP20RR1126.

B-15 **Is the Lifetime Risk of Developing Breast Cancer similar between Puerto Rican Females and US Females?**. Cruz María Nazario, PhD*, Nayda Figueroa-Vallés, MD, MPH†, Rosa V. Rosario, MS‡. *Graduate School of Public Health, Medical Sciences Campus, University of Puerto Rico. †School of Medicine, Medical Sciences Campus, University of Puerto Rico. ‡Universidad Central del Caribe, School of Medicine, Bayamón, PR.

The purpose of this study was to estimate the lifetime risk probability of developing breast cancer for Hispanic females using cancer data from Puerto Rico and compare it to US females. The age-adjusted breast cancer incidence rate (per 100,000) in Puerto Rico increased from 15.3 in 1960-1964 to 43.3 in 1985-1989. The age-adjusted breast cancer mortality rate (per 100,000) increased from 5.7 to 10.6 comparing the same two time periods (1960-1964 vs1985-1989). Nevertheless, in 1985-1989 breast cancer incidence rate was higher in US White females (110.8 per 100,000) compared to Puerto Rican females (51.4 per 100,000; age-adjusted to the 1970 US standard population). The breast cancer mortality rate was also higher in US White females (27.4 per 100,000) than in Puerto Rican females (15.1 per 100,000; age-adjusted to the 1970 US standard population) during 1985-1989. A multiple decrement life table was constructed applying age-specific incidence and mortality rates from cross-sectional data sets (1980-1984 and 1985-1989 data for Puerto Rican females and 1987-1989 SEER data sets for US White and Black females) to a hypothetical cohort of 10,000,000 women. The lifetime risk of developing breast cancer was 5.4% for Puerto Rican females, compared to 8.8% for US Black females and 13.0% for US White females. Lifetime risk for Puerto Rican females increased from 4.5% in 1980-1984 to 5.4% in 1985-1989. Lifetime risk of breast cancer appears to be increasing in Puerto Rico, but remains lower than the probability for US White and Black females. Therefore, the application of lifetime probability of developing invasive breast cancer estimated for the US female population will over-estimate the risk for the Puerto Rican female population.

B-16 **Estudio Epidemiológico Caso-Control sobre la Infertili-dad y el Cáncer de Ovario en Puerto Rico.** Miriam Vanessa Ramos Colón, MS, Cruz María Nazario, PhD, Josúe Guzmán, PhD. Escuela Graduada de Salud Pública, Recinto de Ciencias Médicas, Universidad de Puerto Rico.

El propósito de este estudio fue examinar la relación entre el uso de medicamentos para tratar la infertilidad y el riesgo de desarrollar cáncer de ovario. Además se estudió la asociación entre factores como los años de ovulación, el uso de anticonceptivos orales, la paridad, la infertilidad y el cáncer de ovario. El diseño epidemiológico utilizado para el estudio fue caso-control. La información fue obtenida a través de entrevistas personales realizadas a los sujetos de estudio o a sus familiares más cercanos. Los casos fueron mujeres de 20 años o más de edad, diagnósticadas con cáncer de ovario entre abril de 1996 a marzo de 1998 y cuyo lugar de residencia fuera en el área geográfica seleccionada. Los controles fueron mujeres de 20 años o más de edad, vecinas inmediatas de los casos o amigas recomendadas por los casos y que no tuvieran un diagnóstico de cáncer de ovario al momento de la entrevista. Participaron en el estudio 33 casos y 33 controles. En la presente investigación se encontró que el tener un período de ovulación de 30 años o menos disminuye en 82% el riesgo de cáncer de ovario (OR = 0.18, IC 95% = 0.04 - 0.79), controlando por el uso de anticonceptivos orales, el no haber tenido abortos, la paridad, el no haber tenido períodos de infertilidad y no

tener historial familiar de cáncer. Otros factores de aparentan conferir protección contra el cáncer de ovario fueron: la edad de la menarquía antes de los 13 años, haber estado embarazada alguna vez, tener menos de dos abortos, y tener más de 2 partos, aunque estas asociaciones no fueron estadística-mente significativas. El cáncer de ovario aparenta ser un problema de salud pública en Puerto Rico y sólo se conoce la magnitud de éste problema hasta el 1991. Es importante determinar los factores que aumentan el riesgo de cáncer de ovario en la población de mujeres puertorriqueñas, para así identificar medidas de prevención más específicas. Esto además, podría tener un gran impacto en la detección temprana, la incidencia, la sobrevivencia y la mortalidad del cáncer de ovario en Puerto Rico.

B-17 **Inhibition of Human Breast Carcinoma Cell Proliferation by Ascorbate and Copper.** M.J. González[1], E.M. Mora[2], J.R. Miranda Massari[3] and J. Matta[4] RECNAC II Project, School of Public Health[1], School of Medicine[2], School of Pharmacy[3], Medical Sciences Campus[4], UPR and Ponce School of Medicine[5]

Effective treatment of solid tumors and their metastasis has been elusive, inconsistent and extremely toxic. Moreover, in the last two decades different combination protocols have not changed disease free survival and total survival. We are studying a different form of therapy based on a nontoxic metabolic approach. This innovative model consists on changing the cellular environment as a mean of controlling malignant cell growth. We tested the effect of different concentrations of ascorbate (50, 100, 250, 500 mg/dL) and copper sulfate (10 mcg/dL) on human breast carcinoma cell proliferation in-vitro. Cell proliferation was measured using a colorimetric assay (Cell Proliferation Kit II XTT, Boehringer Mannheim) The results of the mean absorbance of the tissue culture at different ascorbate concentrations and a constant copper concentration were as follow: 0.82 ±0.03 SE (control), 0.64 ± 0.02 SE (Cu alone), 0.48 ± 0.03 SE (50 mg/dL of ascorbate), 0.21 ± 0.02 SE (100 mg/dL), 0.08 ± 0.01 SE, 0.60 ± 0.05 SE. These preliminary results show that a combination of ascorbate and copper inhibits human breast carcinoma cell proliferation in vitro. This cell proliferation inhibitory effect is directly proportional to the ascorbate concentration. This synergistic chemotherapeutic effect was optimally enhanced when ascorbate was added at a concentration of 250 mg/dL. The ascorbate concentration of 500 mg/dL had a biphasic effect on tumor cell proliferation. This study provides preliminary evidence that ascorbate and copper can be use as biological response modifiers of tumor growth, thus a potential conceivableuse as chemotherapeutic agents.

B-18 **Regulation of Bcl-xl expression in bone- metastatic breast carcinoma cells after exposure to IL-3.** Mora, E.M, Cancer Biology Laboratory, Department of Surgery and Pathology, School of Medicine, Medical Sciences Campus, UPR, San Juan, P.R.

Bone metastases are the second most common site of metastasis in breast cancer patients. The mechanism by which breast cancer cells invade and grow in the bone is unknown. We had previously shown that bone-metastatic breast carcinoma cells selectively grow after exposure to bone marrow conditioned medium. IL-3 is the major growth factor that increased the growth of the cells. On the other hand, we had shown that the expression of the antiapoptotic protein Bcl-xl is enhanced in bone-metastatic breast carcinoma cells. Based on these findings we hypothesize that IL-3 enhances the expression of Bcl-xl in bone-metastatic breast carcinoma cells. To test this hypothesis we exposed the MDA-231 bone-metastatic cells to IL-3 for 24hrs. and 48 hrs. Controls included exposure of the parental pleural-metastatic breast carcinoma cells (MDA-231) to IL-3 and protein extracts from both cell lines not exposed to IL-3. After protein extraction, western blotts were performed. The expression of the Bcl-xl protein was detected by immunoblotting using the Vectastain system. The results showed that in the unexposed cells the expression of the Bcl-xl protein was enhanced only in the bone-metastatic cell line. Exposure of the cell lines to IL-3 enhances the expression of the Bcl-xl protein in the pleural-metastatic cell line after 24 hr. exposure. We concluded that Bcl-xl does not mediates the growth effect of IL-3 in bone-metastatic breast carcinoma cells.

B-19 **The Contribution of Immunohistochemistry in the Diagnosis of Pediatric Neoplastic Lesions.** Negrón, D., González-Keelan, C., Vélez-Rosario, R., Correa, M.S., Colón, L. Department of Pathology, University of Puerto Rico, Medical Sciences Campus.

Immunohistochemistry has revolutionized the field of diagnostic pathology in the past fifteen years. Immunohistochemical stains are increasingly being used as an adjunct to morphological diagnosis. The purpose of this retrospective analysis is to examine the value of this technique in the diagnosis of pediatric neoplastic lesions. Fifty pediatric cases, collected between January 1998 to March 1999, were referred to our laboratory due to diagnostic difficulties and subjected to immunostains. The clinical history, gross and microscopic findings and the results of immunohistochemistry were analyzed and assigned to one of five categories. The immunohistochemical analysis confirmed the morphological diagnosis in 17 cases (34%): 7

(14%) neuropathological cases, 6 (12%) hematological cases and 4 (8%) general pediatric cases. Immunostains provided the definite diagnosis from a list of preferred diagnosis in 24 (48%) cases: 11 (22%) hematological cases, 9 (18%) general pediatric cases and 4 (8%) neuropathological cases. These stains were contributory by exclusion of other possible entities in 5 (10%) cases: 4 (8%) general pediatric cases and 1 (2%) hematological case. The immunostains were non-contributory in 4 (8%) cases due to technical difficulties. In this study, we conclude that the immunohistochemical analysis provided useful and, in many cases, essential information for the correct diagnosis of the lesion, especially in the tumors of lymphoid origin.

B-20

Increasing Communities Accessibility through Assistive Technology: A Needs Assessment Report

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ABSTRACT: A total number of 374 persons were surveyed for a study designed and developed by the Puerto Rico Assistive Technology Project (PRATP) to identify the existing needs of people with disabilities in terms of assistive technology services and equipment. The primary objective of this study was to explore and determine the social and cognitive conditions that increase or decrease the utilization and integration of assistive technology in the daily life of the persons with disabilities as well as services providers. A self-administrated questionnaire consisting of 18 items distributed in three sections was used to collect the data. The content evaluated in this questionnaire was to measure the perception of knowledge of the surveyed persons regarding assistive technology and the existing needs to improve the inclusion of this population in today's society. The studied group was selected from the personnel of the different organizations and agencies trained by the PRATP staff. The majority of the people surveyed in this needs assessment (87.3%) was representing the education sector. In terms of disability groups, the results of the survey indicated that the most common impairments represented in the sample, in descending order, were speech problems (51.2%), motor problems (31.8%), Down syndrome (29.1%), and mental retardation (28.1%), and autism (26.5%), among others. The general perception of knowledge level was described as not too high but not too low for the following areas: assistive technology services, assistive technology equipment and legal aspects, represented by a 43.2%, 38.2% and 37.2% respectively. The average of knowledge was estimated at 4.7 points for each person. The knowledge level of more than half of the population (55.5%) was over the estimated average, while little less than two quarters of this group (45.5%) resulted in a knowledge level below average. As an interpretation of the survey's results, it is necessary to continue offering trainings to the Department Education personnel as well as other agencies to improve not only the independency and self-advocacy of persons with disabilities, but also the inclusion of this population in the Puerto Rican society as well as in the rest of the world.

Poster Presentations

ABSTRACTS

"Health 2000: Unraveling the Hereditary and Cellular Mysteries"
XXI Annual Research and Education Forum

Dentistry

P-1 **Fourth Year Dental Students: Oral Hygiene Knowledge and Periodontal Patient Motivation.** C. Machuca, B. Goberna, C. Vela, G. Machuca, L. López Del Valle, P. Bullon. (University of Seville School of Dentistry, Spain and University of Puerto Rico School of Dentistry).

The purpose of this study was to determine and evaluate the knowledge of oral hygiene of fourth year dental students and their ability to motivate periodontal patients to practice good oral hygiene. The study was conducted during the year 1998-1999 and included 39 senior dental school students who answered a 20 item questionnaire before their class (BC) on the subject of Oral Hygiene in Periodontal Patients, after the class (AC), and after the examination (E). Statistical analysis was performed using ANOVA and Student's t-test for paired samples. A level of $p < .05$ was established as a significant difference between groups. The results showed an score mean in BC of 4.52 " 1.69, in AC of 9.35 " 0.83, and in E of 8.5 " 1.24. This study showed that 53% of the students did not know the basic elements of oral hygiene motivation for periodontal patients, and 8% of the students know specific brushing techniques for patients with periodontal condition as gingival recession and 13% for periodontal disease. There was statistically significant difference in mean score between BC and AC (P=0.000), between BC and E (P=0.000), between AC and E (P=0.001). The study suggests that the students obtained the requisite knowledge after the teaching class. In conclusion, this data indicated a deficient of knowledge by students in oral hygiene and motivation for periodontal patients before the class. The oral communication of knowledge is more effective than the acquire knowledge by written methods of teaching. Study Supported by the Educational Science Institution (ICE).

P-2 **Dental School Periodontal Patients: Their Knowledge of Oral Hygiene and Their Oral Hygiene Status.** C. Machuca, B. Goberna, L. López Del Valle, Y. Velázquez-Quintana, G. Machuca, P. Bullon. (University of Seville, School of Dentistry, Spain and University of Puerto Rico, School of Dentistry).

Instructions in oral hygiene is important for the successful management of periodontal disease. A study was designed to evaluate the oral hygiene status and oral hygiene knowledge of dental school periodontal patients who attended the Seville School of Dentistry during the year 1998-1999. Two hundred and thirty one patients were examined: 98 periodontal patients (PP) and 133 non periodontal patients (NPP). Plaque Index (O'Leary) and Bleeding Index (Van der Velden) were determined. A questionnaire about oral hygiene habits and knowledge was answered by all patients prior to treatment, PP mean age was 51 years " 14 and the NPP mean age was 33 years " 15. A statistical analysis was performed using chi-square, ANOVA and Student's t test for paired samples. The level of $p < 0.05$ was established as a significant difference between groups. The results demonstrated a mean Plaque Index in PP of 76 " 20 and in NPP of 68 " 21 and a mean Bleeding Index in PP of 47 " 29 and in NPP of 28 " 21. There was statistically significant differences with the NPP by age ($p < 0.0000$), by plaque index ($p < 0.0076$) and by bleeding index ($p < 0.0000$). The questionnaires indicated that 38% of PP knew about dental plaque (48.9% of NPP), 21.4% knew about calculus (29.3% of NPP); 17.3% reported the oecasional use of disclosing tablets (13.5% of NPP); 9.2% used proximal brushes (2.3% of NPP), 24.5% used dental floss (36.8% of NPP), 42.9% knew about the need of dental floss (65.4% of NPP), 57. 1% reported brushing their teeth to avoid caries and periodontal disease (61.7% of NPP). There was a significant statistical difference with the NPP in the use of proximal brushes ($p < 0.0086$). These results indicate that the majority of PP had poor oral health (worse than NPP) and none had adequate habits and knowledge about oral hygiene. It could be concluded that patients who have periodontal disease require reinforcement in their motivation to observe good oral hygiene. Study Supported by Educational Science Institution (ICE).

P-3 **Mutans Streptoccocci Prevalence in Hispanic Babies with Cariogenic Feeding Behaviours.** L. López, R.J. Berkowitz*, M.E. Moss, P. Weinstein, University of Puerto Rico, University of Rochester, University of Washington, USA.

Prevalence of mutants streptococci(ms) infection in children varies among different populations. This report details the prevalences of ms infecction i a chort of Hispanic Puerto Rican babies (n-60;28M/32F; mean age 15.05mos; age range 12-18mos) who were all healthy, caries free, and slept with a nursing bottle that contained a cariogenic substrate (NB+). Pooled maxillary incisor plaque and saliva samples were obtained and immediately placed in RTF; they were serially diluted and plated onto MSB and Blood agar plates within 4 hours of collection; the

plates were incubated in a anoerobic environment for 48h, at 37C prior to examination, representative ms colonies were isolated and subjected to mannitol and sorbitol fermentation test for tasonomic verification. Plates with colony counts between 20 and 300 were utilized to determine the % of ms in each sample. 51 of the 60(85%) babies harbored ms in at least 1 of the 2 samples. The 95% confidence interval for the proportion of subjects with detectable levels of ms was 72.9% - 92.5%. Fishers exact test showed that babies 16-18 mos age were more likely to have detectable levels of ms that babies 12-15 mos age (p=0.01). Levels of ms in plaque and saliva were as follows: <0.1% (plaque 27/51 mean age 15.14 mos sd 1.77; saliva 28*51 mean age 15.25 mos sd 1.76); 0.1%-1.0% (plaque4/51 mean age 14.4 mos sd 1.5; saliva 6/51 mean age 14.8 mos sd 1.46); >1.0% (plaque 14/51 mean age 15.85 mos sd 2.1; saliva 11/51 mean age 15.63 mos sd 1.91). The density of infection did not vary by age for plaque (p=0.32) or saliva (p=0.64). These finding support the concept that NB+ is a strong indicator for ms infection in Hispanic Puerto Rican babies; that prevalence of infection increases with age; and that density of infection did not vary with age in this population. Supported by NIH grants R03 DE 12053 and IP20RR1126.

P-4 **Case Report Prótesis parcial fija tipo Groper en la dentición primaria. Diego Solis*** (Programa Post- Doctoral de Odontopediatría, Recinto de Ciencias Médicas, Universidad de Puerto Rico).

La pérdida prematura de dientes primarios anteriores puede conllevar a problemas estéticos y masticatorios. El diseño Groper es una forma efectiva para restablecer estética y función. Este diseño consiste de bandas adaptadas a los molares primarios de la cual se une un arco lingual en el cual van adaptados los dientes primarios a reemplazar. Una característica única del diseño groper es que en la superficie palatina de los pónticos va incorporado un refuerzo metálico para así obtener mayor resistencia a fracturas. La ventajas del diseño groper son: estética , manejo clínico fácil, mayor resistencia a la fractura y major aceptación por los padres y los pacientes. Se presentarán dos casos clínicos exitosos con este tipo de prótesis primaria y se explicará con detalle el manejo clínico.

P-5 **Regeneración Tisular: Método no Convencional.** Alicea, L. A. Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Odontología, Programa Graduado de Prostodoncia.

La regeneración tisular de defectos óseos verticales se han tornado en un reto con pocas expectativas de éxito. En especial en casos post-traumaticos, donde la falta de tejido blando es una de las limitaciones para cerrar adecuadamente el colgajo. Con el advenimiento de regeneración tisular, utilizando la distracción osteogénica, se ha logrado aumentar verticalmente hueso, músculos y tejido blando. **Objetivos:** Regenerar verticalmente un defecto oseo vertical y horizontal mente. Regenerar tejido blando. **Ventajas:**

-El hueso utilizado es autógeno
-Distrae hueso, músculos y tejido blando
-Se pueden colocar los implantes inmediato a la remoción del distractor.

P-6 **Selección del tipo de Poste en Restauraciones Cementadas sobre Implantes Dentales Oseointegrados.** Dra. Erika Alfaro B Residente Prostodoncia Avanzada Recinto Ciencias Médicas- UPR.

La selección del poste para restauraciones cementadas sobre implantes dentales oseointegrados es crucial para lograr excelencia. Una mala elección podría comprometer el resultado final, representando gastos adicionales elevados o complicaciones posteriores en la restauración. En el mercado se presentan dos grupos básicos de postes: los colables al sistema de acople y los torneados de fábrica. Los objetivos son:

1.identificar las indicaciones y contraindicaciones de cada tipo de poste
2.recomendar la selección de poste más apropiada.

P-7 **Alargamiento de Corona: Interrelación Periodoncia-Prostodoncia.** Daniel Bravo Residente Prostodoncia, Recinto Ciencias Médicas- UPR.

La insuficiente estructura dentaria disponible sana, dificulta el lograr una rehabilitación fija funcional, estética y que cumpla con los requisitos biomecánicos.
El restaurar piezas dentarias afectadas por caries extensas, desgaste excesivo, restauraciones defectuosas, alteraciones de la erupción dentaria y/o fractura radicular o coronal, es un reto que enfrenta el dentista restaurativo. Objetivos:

1. Destacar el papel del restaurador en la planificación de una cirugía de alargamiento de corona o Acrown lengthening@.
2. Indicar los parámetros anatómicos de referencia para este procedimiento.
3. Identificar indicaciones y contraindicaciones.
4. Recomendar el período de temporización y toma de impresión final.

P-8 **Manejo protésico de amelogénesis imperfecta previo al tratamiento ortodóntico:** Ottón Fernández Residente Prostodoncia, Recinto Ciencias Médicas- UPR.

Los casos de amelogénesis imperfecta son casos que implican un problema estético importante. Además , y debido a la pérdida de substancia dental, se presenta por lo general, maloclusión (apiñamiento dental); por tal motivo el paciente , aún con dentición mixta, requiere la intervención correctiva de la ortodoncia. La cementación de los aditamentos conlleva una problemática, por las dificultades de adhesión al tejido dental. La rehabilitación de estos pacientes con coronas completas transitorias de resina, le da ventajas substanciales como lo son:

a) estética
b) adhesión
c) preparaciones conservadoras
d) fáciles de reparar
e) reducción de la microfiltración versus coronas de acero cromado

P-9 **Evaluación Dento-Facial. La Clave Estetica.** E. Reyes* Residente Prostodoncia, Recinto Ciencias Médicas- UPR.

INTRODUCCION: La evaluación dentofacial pretende establecer un plano estético en el cual la posición de los bordes incisales maxilares y los niveles gingivales se concilian en forma armónica con la sonrisa del paciente. Además, se toman en cuenta otros aspectos como: línea media dental y facial, orientación del plano oclusal, arreglo y morfología dental, dimensión vertical, relación con la línea interpupilar. OBJETIVOS: Destacar a la evaluación dentofacial como a una parte primordial de ayuda en el diagnóstico clínico del paciente. Graficar los componentes de la evaluación dentofacial. Resaltar la importancia estética de cada componente. CONCLUSION: Los pacientes cada día son más demandantes en el aspecto estético. Para poder conciliar la función y la estética debemos de tomar como punto de partida a la evaluación dentofacial, en especial en casos de rehabilitaciones completas.

P-10 **Solución Ortodóntica a Problemas Estructurales.** Ysidora Torrealba Residente Prostodoncia, Recinto Ciencias Médicas- UPR.

La necesidad de conservar los parámetros biomecánicos como la convergencia de las paredes de la preparación para lograr retención y resistencia, el festoneado normal de la encía, el ancho biológico, estético, entre otros; requiere la aplicación de diversas técnicas ortodónticas, entre lo más usado tenemos la Erupción Ortodóntica, la cual es el tratamiento de elección de un diente individual para exponer estructura radicular. Por otra parte, al mejorar la arquitectura o el contorno dentario, el elemento estético se facilita al momento de la rehabilitación protésica. Objetivos:

1. Resolver la importancia de conservar los parámetros biomecánicos de un diente.
2. Mencionar las ventajas que ofrecen las técnicas Ortodónticas al momento de una rehabilitación prostética.
3. Conocer las limitaciones.

P-11 **Técnica para Construcción de Obturador Maxilar en Paciente con Maxilectomia.** Torres, B. L. Residente Graduado de Prostodoncia, Recinto Ciencias Médicas- UPR.

La rehabilitación oral y maxilofacial para pacientes con historial de cáncer y remoción de estructuras faciales es uno de los aspectos mas retantes de la prostodoncia.Este tipo de pacientes presentan muchas limitantes en fonética, función y estética y cada caso varía según su severidad. Por ende, es de suma importancia poder brindarle a éstos un servicio dental que ayude a superar todas sus limitaciones y que pueda como individuo reincorporarse en la sociedad. Este trabajo pretende pesentar la técnica para un obturador maxilar de un paciente de 55 años de edad con historial de ameloblastoma del lado izquierdo diagnosticado en 1995 y el cual fue sometido a cirugías en la que sufrió maxilectomía, estructuras de cavidad nasal, zigomático y enucleación. El paciente fue tratatado en 1997 en el programa de Prostodoncia de la Escuela de Odontología del Recinto de Ciencias Médicas.

P-12 **The Treatment of Anterior Crossbite to Alleviate a Traumatic Occlusion: Case Report.** Jiménez, P.F. University of Puerto Rico, Medical Sciences Campus, School of Dentistry, Department of Pediatric Dentistry.

Eight year old, female patient with a history of anterior cross bite in to tooth #8. She presents a mesocephalic face, no gross asymmetry, lip competency on rest position and straight profile. Intra-orally she presents cross bite of tooth #8, 2 mm of over bite, 1 mm of overjet, bilateral molar and canine Class 1 and normal spacing. Radiographic findings show normal eruption pattern and skeletal Class 1. The treatment plan was a posterior bite plane appliance with finger spring. The progress at three weeks show correction of the cross bite, and at four months the treatment was completed.

Primary Tooth Pulmonary Aspiration. M. Colón
P-13 Torrado* (Recinto de Ciencias Médicas, Programa Postdoctoral de Odontopediatria, P.R.).

Foreign body aspiration is a dramatic event with serious and potentially lethal sequelae.Ninety percent of foreign body aspiration cases are patients 15 y/o or younger. Foreign body aspiration is the leading cause of home related deaths in children younger than 6y/o. Tooth aspiration is relatively uncommon, with an incidence of about 4%.(Wisman W.E.) This is the case of a 11y/o female patient with history of Pfeiffer's syndrome and atrial septal defect who aspirated a primary tooth while her mother was brushing her teeth. She developed aspiration pneumonia, with tooth occluding completely right main brochi. Tooth removed in OR after four bronchoscopic attempts.

Pink Teeth: A sign of Horrible Agony? Ortiz
P-14 González, Iris B. Students II Year, School of Dentistry, Medical Sciences Campus - UPR.

Pink teeth could determine death was not instant. Pink teeth have been seen in corpses whose deaths have been associated with compression of chest due to severe trauma, in cases of drowning, individuals that have been buried alive and in some known cases of perimortem torture. That poses the question: Can the phenomenon of pink teeth be associated with a terrible agony? It is known that the coloration is caused by extravasation of blood into the dentinal tubules; thus, that rules out that the person died immediately upon the trauma, because a high increase in blood pressure is needed to have extravasation of blood from the vascular channels of the pulp into the dentinal tubules.

At Home Vital Bleaching Case Report. Damaris
P-15 Molina D.M.D., Pediatric Dentistry Postgraduate Student, UPR Medical Science Campus

A 10 y/o girl from Loíza, P.R. came with her mother to the Pediatric Dental Clinic at UPR Medical Science Campus with the chief complain of " My front teeth are to yellow". After dental caries control, the bleaching regimen with 15% carbamine peroxide was started. The patient and her mother were instructed to place the bleaching material in the maxillary mouth guard and to wear it every night for three hours after thoroughly brushing and flossing the 10 y/o patient teeth. Pre-treatment photographs were taken comparing her teeth with a Vita shade guide. Treatment was terminated after one week. After seven days the patient changed from A-3 to A-1 from the vita shade guide. No symptoms of sensitivity were apparent during the procedure. The patient will be re-evaluated after the eruption of all the permanent dentition to decide if a second bleaching therapy will be necessary.

Microbiology

Analysis of the gamma-glutamyl cysteine synthetase gene in drug resistant lines of *Plasmodium berghei.* Perez-Rosado, J., Gary W. Gervais,
P-16 and Serrano, A.E. Department of Microbiology, University of Puerto Rico School of Medicine, San Juan, PR.

Malaria, a parasitic disease caused by *Plasmodium spp.* is a problem in the tropical and sub-tropical areas of the world. The re-emerge of drug-resistant strains of *P. falciparum* is a great concern to public health authorities. Despite the magnitude of the problem, the mechanisms involved in this phenomena are not well understood. The similarities in biochemical changes giving rise to drug resistance in parasites and cancer cells indicate that common mechanisms may be involved. Some tumor cells detoxify chemotherapeutic agents by covalently binding the drugs to glutathione (GSH) and subsequently metabolizing and/or exporting them. Similarly, chloroquine resistance in some *P. berghei* and *P. falciparum* is accompanied by an increase in glutathione content and alterations in GSH-related enzymes. We are studying the role of gamma-glutamylcysteine synthetase (*ggcs*), the rate-limiting enzyme in *de novo* synthesis of GSH, in drug resistant strains of the murine malaria *Plasmodium berghei*. We have identified and characterized a *P. berghei ggcs* homologue (*pbggcs)*. The gene is located in chromosome 8 and is expressed in four parasite lines of *P. berghei* with different drug resistance profiles. In addition we demonstrated an increase in gene copy number associated with drug resistance, as well as elevated levels of the *pbggcs* mRNA. This work establish for the first time a molecular link between GSH metabolism and parasite drug resistance. This work has been supported by NIGMS/ GM08224, RR-03051 of NCRR/NIH, The Office of the Dean of Students, NIH-Fogarty 1T37TW00046, SMPR award as well as RCMI RR03051.

Equine Leishmaniasis in Puerto Rico? Morales-
P-17 Vélez, R., Gervais,G., Ortiz B, and Serrano A.E. University of Puerto Rico, School of Medicine, Department of Microbiology and Medical Zoology, San Juan, P.R. Caguas Veterinary Hospital, Caguas, P.R.

We had previously reported two cases of equine leishmaniasis in horses, one of which had never left the island of Puerto Rico, a non-endemic zone. A thorough review of the literature shows that local transmission of veterinary Leishmania had not been reported previously. In 1996, parasites were liberated from biopsy punches taken from

a third horse which had never left the island; these parasites have been maintained in culture in our lab ever since. The morphology of the parasites, both *in vitro* as well as in biopsied tissues, is consistent with *Leishmania sp.* In addition, results of molecular diagnostic PCR using *Leishmania sp.* specific primers and genomic DNA from cultured parasites were positive. Furthermore, the kinetoplastid mini-circle DNA was sequenced and showed significant homology to various Old and New World *Leishmania spp*. The horse immune sera reacted with the cultured parasites as well as with cultured *L. donovani* (DA 700 strain) promastigotes by indirect immunofluorescence. Both *L.tropica* and *L. hertigui* monoclonal antibodies, (from a panel of *Leishmania spp.* specific reagent kindly provided by the WHO) recognized the cultured parasite by indirect immunofluorescence studies. These results are being confirmed by ELISA. We are currently screening 33 dog sera from the area were Leishsmaniasis was detected by indirect immunofluorescence. This project has been partially supported by The FIPI program of the University of Puerto Rico, as well as RCMI award RR03051 of the NCR-NIH, and MBRS grant S06GM08224-12 of the NIH

P-18 **Expression of a Pgh1 homologue in *Plasmodium yoelii*.** Ferrer-Rodríguez I., Pérez-Rosado J., Gervais G.W., Villegas V. and A.E. Serrano. University of Puerto Rico, School of Medicine, Department of Microbiology and Medical Zoology.

The *Plasmodium falciparum mdr1* gene product, the P-glycoprotein homologue (Pgh1), has been associated with an increased resistance to quinoline containing antimalarial drugs. However, the mechanisms by which the parasite has evolved resistant are still poorly understood. In order to better understand the role of this gene in resistance, we are using the murine malaria model *P. yoelii*, which is naturally resistant to chloroquine, as well as four related lines with different profiles of drug resistance. A DNA fragment (528 bp) from the *mdr1* gene of *P. yoelii* was amplified by PCR and cloned into pCR2.1 TOPO-TA vector (Invitrogen). In addition, a 700 bp fragment of the *pymdr1* was cloned by inverse PCR using primers specifically designed based on the 528 bp *pymdr1* gene fragment. Sequence analyses showed that this fragment contains an open reading frame that shares 92% identity at the amino acid level with the *pbmdr1* gene and 71% homology with the *pfmdr1* gene. The 528 bp *pymdr1* gene fragment was cloned into the expression vector pDS56E. The recombinant protein (21 kda) was purified and inoculated into rabbits in order to produce specific antibodies. The antisera was used to determine the subcellular location of the MDR homologue protein by indirect immunofluorescence. Slot blot analyses of genomic DNA showed an increase in the *pymdr1* gene copy number in *P. yoelii* ART, when compared to the NS parental line. Furthermore, a competitor molecule was generated to assess the *pymdr1* gene copy number by competitive PCR. This project was partially supported by NIH/MARC Fellowship 1F34GM19557-01, NIH/MBRS grant GM08224, RCMI Award PR03051 of the NCRR-NIH and by the Associate Deanship of Biomedical Sciences and Graduate Studies of the Medical Sciences Campus, University of Puerto Rico.

P-19 **Effects of Environmental Changes on the Fluorescence Response of the EGFP Calibration Standards.** Y. Gerena, J. Meléndez, G. Santiago, I.Hernández, A. Schwartz and E. Fernández-Repollet. Dept. of Pharmacology, UPR School of Medicine, San Juan, PR.

Enhanced Green Fluorescent Protein (EGFP) expressed in living cells can be quantitate by flow cytometry using EGFP calibration standards. When performing quantitative fluorescence measurements by flow cytometry it is important to know whether the calibration standards are responsive to environmental changes (i.e. pH, osmolality, and temperature). Recently, flow cytometry revealed that the fluorescence intensity (FI) of the EGFP calibration standards increased in a sigmoidal fashion (Bead 1: 24% - Bead 4: 40%) from pH 5.0 to 9.0. To complete the characterization of the EGFP standards it is necessary to analyze the FI of these standards as a function of osmolality and temperature. These issues were investigated in a set of experimental EGFP calibration standards (FCSC, San Juan, PR) which were equilibrated in suspension solution having different osmolalities in a range (100-600mOsm/kg), including the physiological plasma osmolality (~300mOsm/kg). The EGFP standards were also equilibrated in Coulter Balanced Electrolyte Solution at a range of temperatures that covered from 2°C to 80°C. The FI of the EGFP calibration standards was analyzed on a FACSort flow cytometer (BDIS, San Jose, CA). Only slight changes in the fluorescence intensity of the EGFP standards were observed when they were exposed to different osmolalities. The fluorescence intensity of the standards remained relatively constant from 2°C to 65°C, then it decreased sharply with higher temperatures. These data are of importance since EGFP is used to assess protein and gene expression in the cell, where different compartments have been reported to have variations in both pH and osmolality. In addition, temperature may differ in different preparative protocols. Supported in part by RCMI Grant No. G12-RR-03051 and MBRS Grant No. 5-S06-GM08224.

P-20 **Cyclin E Expression as Marker of TNF-a Induced Apoptosis in Chronically HIV-1 Infected Cells.** R. Delgado, G. Rosario, M. Roche, A.M. del Llano and J.A. Lavergne. School of Medicine, Univ. of Puerto Rico, San Juan PR 00936-5067

Cyclins are essential proteins for eukaryotic cell cycle control. We examined the kinetics of apoptosis and cyclin expression in the HIV-infected J1.1 T cell clone compared to that of uninfected Jurkat cells. Cells were treated with rTNF- a, a relevant cytokine in AIDS, and cultured for 72h. Cells were harvested at 24, 48 and 72h post treatment and examined for cyclin expression (E, A, B1) and DNA content. Results show that J1.1 cells undergo a significant decline only in cyclin E (G_0G_1 cyclin) expression after 48h (from 79% at 48h to 42% at 72h). This correlates with an increase in the susceptibility of J1.1 cells to undergo apoptosis (from 6 to 15%) at the G_0G_1 checkpoint. After 24h, Jurkat cells undergo a significant decline only in cyclin A (S/G_2M cyclin) expression (from 14% at 24h to 6% at 48h) which correlates with increased apoptosis (from 30% to 44%) at the G_2 checkpoint. Based on differences in the cyclins involved (E vs. A), our results suggest that HIV-1 manipulates the cell cycle to protect J1.1 cells from undergoing apoptosis at the G_2 checkpoint, which is known to be critical for viral replication; thus, apoptosis prevention at this point is beneficial for infecting viruses. We conclude that analysis of cell cyclins is useful to characterize the time and the specific point at which apoptosis is induced in HIV-1 infected cells. Moreover, it could be used as a powerful tool to evaluate effects of antiretroviral drugs. Supported by NIH-RR03051, NIH-S06-GM08224 grants and Grad. Sch. Biomed. Sci, Sch., Med., UPR.

P-21 **Production, Purification and Characterization of Monoclonal Antibodies against *Blomia tropicalis*.** M.E. Collazo, A.M. Díaz. Department of Microbiology and Medical Zoology, Medical Sciences, Campus, UPR.

The mite *Blomia tropicalis* (BT) has been identified as an important source of allergens in tropical and subtropical regions. BT has, at least, 25 allergens ranging between 11 and 85 KDa. Most of them are species-specific. Monoclonal antibodies (mAbs) have been produced against the major allergens of the mites species *Dermatophagoides pteronyssinus*, *D. farinae* and *Lepidoglyphus destructor*. Since BT does not contain any of these allergens, these mABs cannot be use to detect its allergens. Our objective is to produce, purify and characterize mAbs against whole body extracts of BT. The mAbs were produced using standard techniques. To determine the presence of antibodies against BT, culture supernatants from hybrids were tested by ELISA. Two antibodies producing hybrids, CIB and C6, were obtained. They were subcloned twice by limiting dilution in order to ensure monoclonality. CIB produced 14 clones identified as IgM mAbs producers by ELISA. Six of these mAbs were concentrated by ascitic fluid technique. Thirteen C6 subclones were identified as IgG mAbs producers. The 3 more reactive IgG clones were concentrated by the ascitic technique. The ascitic fluids of 3 IgG clones and 3 IgM clones were purified by Thiophillic gel antibody purification (Pierce) and desalted by excellulose columns. The purified IgG mAbs were positive to BT by ELISA and the IgM mAbs reduced their reactivity after the purification. The purified mAbs were tested by Western blot technique to identify and define the antigens recognized by them. All mAbs produced were able to recognize a protein of approximately 33 Kda. These results demonstrate that (a) IgM and IgG mAbs against BT were produced, (b) the Thiophillic gel antibody purification process was more effective for IgG antibodies than for IgM antibodies, (c) the purified antibodies recognized a protein that has the same molecular weight of an isolated trypsin-like protein of BT. These mAb will be used for delineating cross-reactivity between BT and other mites and detecting species-specific antigens as well as localizating antigens in the body of mites by microscopy.

P-22 **Sequencing of a PHOA/PHO85-like, Cyclin-Dependent Kinase, in *Sporothrix schenckii*.** Marisol De Jesus-Berrios* and N. Rodriguez-Del Valle. Dept. of Microbiology, Univ. of PR-Med. Sci. Campus, San Juan P.R.

Dimorphism in *S. schenckii* responds to environmental factors such as pH, temperature and aeration, and to effector molecules present in the medium such as calcium ions and 3',5'-dibutyrylcAMP. In this work, we address the question of whether *S. schenckii* has cyclin-dependent kinases (CDKs) other than the CDC28/CDC2 kinase, that could be involved in the response of the fungus to the environment. The PHOA and PHO85 CDKs have been related to the response of *Emericella nidulans* and *Saccharomyces cerevisiae,* respectively to the phosphate concentration in the environment. A characteristic of these CDKs is the presence of a specific PSTAIRE motif. Western Blot analysis of proteins from yeast and mycelium extracts of *S. schenckii* using anti-PSTAIRE antibodies showed 3 bands of approximately 36, 38 and 40 kDa when using 10% polyacrylamide. These results evidenced the presence of at least 3 proteins containing the PSTAIRE motif in this fungus. PCR using *S. schenckii* genomic DNA as template and primers specific for ATP binding site and kinase domain of *S. cerevisiae* PHO85 was carried out. A 500bp fragment was obtained, cloned and sequenced. The derived amino acid sequence

had 83% and 75% identity with *E. nidulans* PHOA and *S. cerevisiae* PHO85, respectively. Based on this sequence, specific primers were designed to obtain the cDNA coding sequence using Rapid Amplification cDNA Ends (RACE) technique. The results showed a 1454bp cDNA with a 921bp coding sequence for a PSTAIRE protein kinase. The derived amino acid sequence was 81% and 64% identical to the PHOA and PHO85 respectively. The calculated molecular weight was approximately 35.05kDa. These results evidence the presence of a CDK-like gene in *S. schenckii*, homologous to the PHOA/PHO85 genes. Supported by the Minority Biomedical Research Support (MBRS) Grant S06GGM08224 and Grad. Sch. Biomed. Sci, Sch., Med., UPR.

Neurobiology

P-23 **Effects of FMRFamide Related Peptides onthe Heartbeat of the Caribbean Lobster *Panulirus argus*.** Jary Delgado, Vivian Colón, Aidyl Figueroa, Yamilka Serrano, and Mark W. Miller. Institute of Neurobiology and Deptartment of Anatomy, Univ. of Puerto Rico, Medical Sciences Campus, 201 Blvd del Valle, San Juan, PR 00901.

The neuropeptide Phe-Met-Arg-Phe-NH2 (FMRFamide) was originally isolated from the nervous system of the clam *Macrocallista nimbosa* (Price and Greenberg, 1977). This peptide has since been shown to belong to a very large family that spans several phyla. We are investigating the actions of two FMRFamide-related peptides (F1 and F2) that were isolated from the lobster *Homarus americanus* (Trimmer et al., 1987). We are examining the effects of these peptides on the cardiac system of the Caribbean lobster *Panulirus argus*. The neurogenic heartbeat of decapod crustaceans is driven by a peripheral ganglion that lies within the wall of the heart. This cardiac ganglion (9 neurons) is one of the simplest known central pattern generator (CPG) circuits. The organization of this system allows us to simultaneously record muscle tension, motor nerve activity, synaptic output of motor neurons (excitatory junction potentials: EJPs), and intracellular activity of motor neuron cell bodies. Both of the neuropeptides were found to increase the frequency and force of the heartbeat at sub-nanomolar concentrations. The increases in force appear to be partially attributable to long-lasting increases in EJP amplitude. The increases in frequency reflect direct actions of the peptides on the motor neurons of the cardiac ganglion. These effects include increased frequency of bursting and an increase in the number of impulses per burst that are generated by the ganglion. All of these effects are slow in onset and require prolonged wash to achieve reversal. Support: NSF: CAREER Award (IBN-9722349); NIH: MBRS (GM-08224), PO1 (NS07464-32).

P-24 **Colocalization of NPY and GAD65 or GAD67 in Neurons of the Intergeniculate Leaflet of the 13-Lined Ground Squirrel.** L. Vidal, L. Camacho and N. Lugo. Institute of Neurobiology and Dept. of Anatomy, Univ. of Puerto Rico Med. Sci. Campus.

The suprachiasmatic nucleus of the hypothalamus (SCN) houses the principal pacemaker of the mammalian circadian visual system. The SCN receives direct visual information from a specific population of retinal ganglion cells, and indirect retinal information from the intergeniculate leaflet (IGL) of the ventral thalamus. Among the neuroactive substances reported in these nuclei, GABA appears to be the principal neurotransmitter, found in both cell bodies and axon terminals in both the SCN and the IGL. In addition, an NPY projection originating in the IGL exerts a modulatory influence on SCN cells. We were interested in comparing GABA- and NPY-like neurons in the IGL of a diurnal, wild-caught rodent, the thirteen-lined ground squirrel (Spermophilus tridecemlineatus). To identify NPY- and GABA-like cells, 30 mm thick coronal sections through the thalamus were incubated with antibodies against NPY and/or one of the two isoforms of GABA's synthethizing enzyme, GAD65 and GAD67. NPY-like immunoreactive soma profiles in the IGL were round or oval in shape, with diameters ranging 6-20 mm (average 14 mm). GAD65-like profiles were also round or oval. Their diameters ranged 4-15 mm, (average 9 mm). They were sparse and lightly stained. GAD67-like profiles were more numerous and deeply stained. Their diameters ranged 3-20 mm (average 10 mm). The overlapping size ranges of NPY-like cells and GAD-like cells suggested the possibility of co-expression by some cells. In fact, when co-localization experiments were performed, cells immunoreactive for both NPY and GAD65, as well as for NPY and GAD67 were found. These findings suggest a functional interaction between NPY and GABA in some IGL cells. (Supported by NIH grants MH-48190 and RR-03051.)

P-25 **Immunolocalization of BDNF, NT-3 and trkB Receptors in the Control and Regenerating *Rana pipiens* Retina.** M.V. DUPREY and R.E. BLANCO. Institute of Neurobiology and Department of Anatomy, University of Puerto Rico, Medical Sciences Campus.

The frog optic nerve regenerates successfully after injury and the animals recover vision. We are interested in un-

derstanding the role of neurotrophins during this process, and therefore we are studying the changes in the distribution of brain-derived neurotrophic factor (BDNF), neurotrophin-3 (NT-3), and trkB receptors during regeneration. Retinas, optic nerves and tecta from control and operated *Rana pipiens*, whose optic nerve had been crushed, were examined by immunohistochemistry. Reconnection to the target was verified by staining experimental optic nerves with neurofilament antibody. In control retina, BDNF was mainly in the nerve fiber layer (NFL), in sublaminas 1 and 3 of the inner plexiform layer (IPL), and in some vertical neuronal fibers ending at the outer plexiform layer (OPL). TrkB receptors were mainly localized in the NFL, IPL and OPL. NT-3 immunoreactivity was observed in a subpopulation of large retinal ganglion cells (RGCs), cells in the inner nuclear cell layer (INL), NFL, IPL, and in the OPL. In control tectum, BDNF was found in layers 9 and 7. NT-3 was observed in a superficial sublayer of layer 9, whereas trkB full-length immunoreactivity was detected in the apical dendrites of some cells in layer 6. After optic nerve crush, BDNF immunoreactivity appeared in some large cells in the GCL. Müller cells stained with NT-3 and trkB antibodies shortly after axotomy. An increase in the BDNF staining of 7 was observed in the tectum of axotomized animals. BDNF immunoreactivity is normally found in vertical neuronal processes in the retina, but after nerve injury it also appears in a small group of large RGCs. After injury, both NT-3 and trkB are observed in Müller cell processes. In control tectum, BDNF is basically observed in layer 9, which include the incoming fibers of the optic nerve, and in some sparse fibers in layer 7, a layer composed of afferent fibers. TrkB was found in the apical processes of some pear-shaped cells in layer 6 of the tectum. BDNF expression increases in layer 7 of the tectum after axotomy. (Supported by NIH MBRS S06 08224 and G12RR-03051.)

P-26 **Dystonia patients in a Movement Disorders Clinic in Puerto Rico.** Maruquel Castillo,MD, Damaris Torres, MD, Maritza Arroyo, MD. Movement Disorders Unit, Department of Neurology, University Hospital, San Juan, P.R.

Abstract: Dystonia is a disorder dominated by sustained muscle contractions that frequently cause twisting and repetitive movements or abnormal postures. Little is known about the phenotypic variation among ethnic groups, and no epidemiological studies have been previously done in a Latin Caribbean population. With this in mind, a questionnaire was designed to assess the demographics and phenotype of our dystonia population in the Movement Disorders Unit in San Juan, PR. Preliminary results of this ongoing research study (1998-2000) with 40 interviewed patients are as follows: As expected, primary are more common than secondary cases in our population (77.5% versus 22.5%). All primary cases are sporadic. Of these, focal dystonias are the most common type and constitute 61.3% of all primary cases. The mean age of onset in primary dystonias is 45 years old (range 5 to 73). A female predominance is suggested in primary segmental and focal dystonias. In the primary focal type, a tendency for an earlier onset is observed in males (mean age 39.2 versus 49.6 in females). In the primary, early onset group (<20 yrs. old), a limb onset predominates(50%). Cranial and cervical onsets each constitute 25%. In the primary late onset group (>20yrs old), initial sites in order of frequency are laryngeal (30.4%), cranial (26.1%), cervical (21.7%) and limb (21.7%). As for the 9 cases of secondary dystonias, the etiologies are chronic neuroleptic use with 3 cases, and Parkinson=s Disease, neuroacanthocytosis, olivoponto-cerebellar atrophy, cerebral palsy, dopa- responsive dystonia, and cord compression, all with 1 case each. When compared with the recent literature, the data does suggest a later age of onset and differences in predominant sites of onset in primary cases when compared with the Ashkenazi Jews, non-Jewish Caucasians and African-Americans. We have for the first time described the phenotype of dystonia patients in a Latin Caribbean population. Though our numbers are preliminary results of an ongoing study, they do point to some differences compared with other ethnic groups.

P-27 **Possible Increase of Astrocytes in Ganglion Cell Layer of Retinas of Aging Monkeys from Puerto Rico.** E. Kicliter and N. Lugo. Department of Anatomy and Institute of Neurobiology, Medical Sciences Campus, University of Puerto Rico.

Increased cell density has been observed in the retinal ganglion cell layer of aged rhesus monkeys who lived in Puerto Rico. These increments were observed in Nissl stained wholemounts and increases were greater in central as opposed to peripheral retina. Cells 6-9 ìm in equivalent circle diameter were increased. Some of this increase may be due to increased number of cells in the adjacent optic fiber layer. As a step toward identifying these cells, we have stained retinas with an anti-GFAP antibody to ascertain whether some of the increase might be due to proliferation of astrocytes. In two aged rhesus macaque (20-25 years) retinas stained as wholemounts we observed cells and processes stained with the anti-GFAP antibody. These cells were located in the optic fiber layer and/or the adjacent ganglion cell layer. In radial sections GFAP positive somata were observed in the ganglion cell layer as well as the optic fiber layer. Analysis of GFAP-positive cells in the wholemounts (n= 100 in retina 1, 23 in retina 2)

revealed that these cells had a mean equivalent circle diameter of 7.8 ìm ("2.7ìm SD) in the first retina and 6.7 ìm (" 1.5 ìm) in the second. Thus an increase of astrocytes could form part of the population increase in the ganglion cell and optic fiber layers of these aging monkeys. Supported by NIH grants AG-16057, MH 48190, RR-03640 and RR-03051 .

P-28 **Comparison of 5-HT Receptor mRNA Expression in the Ventral Nerve Cord of the Male Morphotypes of the Giant Tropical Freshwater Prawn.** M. Grafals[1] M.A. Sosa*[2,3], D.J. Baro[2,4], and W. Medina[2]., School of Medicine Institute of Neurobiology[2] and Depts. of Anatomy &[3] Biochemistry[4], UPR RCM

Crustacea such as the lobster and crayfish have been used as model systems for studying the neural basis of aggressive behavior. In these animals, status as dominant or subordinate during agonistic encounters is established on the basis of body size and experience The giant freshwater prawn *Macrobrachium rosenb rgii* is a type of clawed caridean shrimp that has characteristics similar to the lobster and crayfish concerning general body plan, internal anatomical organization and some aspects of behavior. Sexually mature males develop through three distinct morphological types (blue, yellow and small claws) that differ in their claw to body length ratio, their growth rate, and their claw color and morphology. Each of these morphotypes represents a level in the dominance hierarchy of the population. Status as dominant or subordinate is defined first on the basis of morphotype, irrespective of relative body size. We are using this model system to study the neural mechanisms involved in the modulation of aggression. Serotonin (5-HT) has been found to play a role in setting the gain of synapses and circuits involved in the control of crustacean agonistic behavior (Edwards & Kravitz, Curr. Opin. Neurobiol. 7:812-819, 1997). It has been suggested that differences in distribution or sensitivity of 5-HT receptors may also play a role in how responses like the tailflip escape reflex are modulated according to the animal's status (Yeh et al., J. Neurosci. 17:697-708, 1997). We have shown in the prawn that there are no differences among the three male morphotypes in the distribution of neurons within the central nervous system that contain 5-HT (Sosa & Hernández, Soc. Neuro. Abs., 24:361, 1998). We want to determine whether there are differences in the type or number of 5-HT receptors expressed in the ventral nerve cord of the freshwater prawn that can be correlated with the hierarchy of dominance established by the three male morphotypes. We have employed degenerate primers and RT-PCR to amplify segments of DNA coding for the prawn's receptor, using ventral nerve cord RNA. These segments have been sequenced and specific primers are being used in quantitative RT-PCR experiments to determine relative amounts of the prawn's 5-HT receptors in ventral nerve cord ganglia of each male morphotype. Support: RCMI G12RR 03051, PR EPSCoR.

P-29 **Fotosíntesis de 2-Nitropromazina;** Alejandra Arroyo, Luis E. Piñero y Carmelo García*; Universidad de PR - Humacao; Departamento de Química; Humacao PR 00791-4300

Las drogas de promazinas 2-substituidas son utilizadas como sedante en el tratamiento de la esquizofrenia. El potencial de la droga y sus efectos secundarios dependen en gran medida de su estructura. La 2-cloropromazina (CPZ) es el tranquilizante más potente y también es el más fototóxico. Promazina, sin embargo, no tiene actividad tranquilizadora ni fototóxica. La fototoxicidad, uno de los efectos secundarios menos entendidos, produce en los pacientes que se exponen al sol, inflamación y manchas azul-grisácea en la piel. Para entender este efecto secundario, estudiamos la fotoquímica de las drogas en función de su estructura. Para este propósito se sintetizan derivados de la promazina con diferentes substituyentes en la posición dos. La 2-nitrofenotiazina 3 es uno de los precursores que no puede obtenerse por métodos tradicionales de tionación o rearreglo Smiles. Sin embargo, este derivado se obtiene fotoquímicamente a partir de la azida correspondient. Este trabajo es sufragado por NIH-MBRS S06 GM08216-12 y PR-AMP (Río Piedras)

P-30 **Excited State Properties of Neuroleptic Drugs: Fluorescence and Quantum Theoretical Studies.** Carmelo García[1], Rolando Oyola[1] and Rafael Arce[2]; 1-University of PR - Humacao, 100 Road 908, UPR-HUC-Chemistry, Humacao, PR 00791-4300 and 2-University of PR - Rio Piedras Department of Chemistry, Rio Piedras, PR 00936

Neuroleptic drugs are primarily used for the treatment of schizophrenia, mania, anxiety, dementhia and drug abuse. Most of the members of the tricyclic antidepressant families produce serious side effects, including the extrapyramidal syndrome (EPS), tardative dyskinesia, parkinsonism, allergy and photosensitization. Small changes in the structure of the derivatives, change the mode of action of the drugs, the potency and the spectrum and severity of the side effects. Our studies on absorption and emission spectroscopy show that the excited state properties of these compounds are also very sensitive to their structure. The properties for the ground and excited states were also obtained using MM+/PM3 combined quantum chemical calculations. This Work is supported by NIH-MBRS Grant GM 8216-11 to UPR-Humacao

P-31 **Comparison of Culture Media for the Enumeration of Fungal Spores Using the Andersen Air Sampler.** W. Perdomo and B. Bolaños*. Dept. Microbiology, MSC, UPR

Several culture media have been used for detection of fungal contamination. Some of these media, such as Dextrose Phosphate Yeast Agar (DPYA) and Rose Bengal Agar (RB), restrict the fungal growth in order to prevent overlap of the recovered colonies that may interfere with the colony counts. To determine the optimal culture media for the enumeration of fungal spores present in the outdoor air, air samples were taken simultaneously in Malt Extract Agar (MEA), DPYA and RB using three single stage (N6) Andersen Air Samplers (AAAs). The AAA allowed us to enumerate the concentration of fungal spores in air. Higher concentration of fungal spores were detected with MEA compared to DPYA and RB. Fungal spores per cubic foot of air was twice in MEA compared to RB and DPYA. This is probably due to fungi such as: *Arthrographis* sp, *Bipolaris* sp, *Memnoniella* sp, *Rhizopus* sp, *Rhodotorula* sp *Scolecobasidium* sp recovered only with MEA and not with DPYA and RB. We are in the process of modifying MEA in order to restrict the diameter of the fungal colonies, to facilitate the enumeration, without the inhibition of fungal growth observed with DPYA and RB. This work have implications for monitoring fungal contamination in the pharmaceutical industries, the diagnosis of the sick building syndrome and air microbiology.

OB/GYN

P-32 **Beta-adrenergic Receptor Blockade and Shrotening of Labor: Mechanism of Action.** Bravo, M., Talavera, I., Adamsons, K. Department of Obstetrics and Gynecology, University of Puerto Rico, San Juan, Puerto Rico

We have reported to the World Congress of Perinatal Medicine (Buenos Aires, 1999) that the elimination of the inhibitory effect of the myometrial adrenergic beta-receptors with propranolol reduces the duration of labor to an unprecedented degree. In our present series, the shortest labor in primigravidas, receiving 2 mg of propranolol I.V. at the onset of labor, has been 1.2 hrs. The purpose of this report is to describe the uterine activity after the administration of propranolol. Uterine contractions were recorded with external tocograph. There was no significant change in the frequency, the duration, nor in the amplitude of uterine contractions after administration of propranolol. The best evidence that beta adrenergic blockade of the myometrial receptors did not produce excessive activity of the uterus, impairing fetal oxygenation, was given by the observation that the short episodes of hypoxic bradycardia following a uterine contraction (the so called "late decelerations") were less frequent among patients who had received propranolol than in the reference population. The mean Apgar scores were similar in patients treated and not treated with propranolol. We conclude that beta-adrenergic receptor blockade of the myometrium shortens the duration of labor by preventing the myometrial cell to return to the precontractual length (a process which is facilitated by epinephrine), thereby accelerating the reduction of the volume of the uterine cavity required for the expulsion of the fetus.

P-33 **Oxytocin Induced Uterine Isutractions Accelerate Fetal Maturation.** de la Vega, A., Diaz, T., Adamsons, K., Department of Obstetrics and Gynecology, University of Puerto Rico, San Juan, Puerto Rico, USA

We and other investigators have shown that suppression of preterm labor with agents that do not inhibit fetal breathing (diazoxide, terbutaline) for 2 to 4 days reduces significantly the relative frequency and severity of respiratory distress syndrome. The proposed mechanism of accelerated maturation is fetal TRH release brought about by fluctuating, and lower than normal, P02 of the fetus. This explanation is consistent with the well known clinical observation that newborns of mothers with preeclampsia have a lower relative frequency of RDS than expected for their gestational age. It is a policy of our Department to accelerate fetal maturation with intra-amniotic thyroxine in patients with gestational diabetes, and to deliver the fetus before the 36th week, to minimize macrosomia, and the potentially permanent sequelae of fetal hyperinsulinemia, such as increase in myocardial and fat cell numbers. When a patient with a macrosomic fetus at the 34th week of gestation, and an L/S of 1.17, refused intra-amniotic T4, we offered to try to accelerate fetal maturation with daily infusions of oxytocin of 6 hrs. duration. After 2 days the L/S had progressed to 2.20, and after 2 more days L/S was 3.25. Delivery by cesarean section (patient had 2 previous CS) was performed the next day. A 3450 g fetus with Apgar score of 7-9 was delivered. The neonatal course was entirely uneventful. Our studies with oxytocin induced acceleration of fetal maturation are continuing.

P-34 **Folic Acid in the Prevention of Neural Tube Defects. Are we targeting the correct population?** de la Vega, A., Salicrup, E. Department of OBGYN, University of Puerto Rico, School of Medicine.

A Nationwide program for pre-conceptual use of folic acid (FA) for the prevention of neural tube defects has been in effect in Puerto Rico for the last 3 years. The merit of the program, after millions of dollars have been spent in publicity to motivate the women, has not been determined. A questionnaire is currently being administered to our patients referred for routine sonographic evaluation during pregnancy. Preliminary results are presented of the 138 questionnaires reviewed. The average age was 28 (range 17-41). A 68% of the pregnancies were unplanned. A Hundred and nine (109) patients (79%) reported knowledge of importance of preconception use of FA. However, only 38 (32%) used it. Of 71 patients who knew about the importance of FA, but did not use it, 55 (77%) had heard about it through the national campaign. Among 27 patients who had talked to a physician about use of FA, 16 (59%) used it. After expenditure of millions of dollars in publicity to encourage the use of preconception FA, a dismal 32% of patients use it. However, 59% of patients who discussed this subject with a physician used it prior to pregnancy. Reevaluation of current strategies should consider directing the campaign to physicians rather than patients. A program for instructing all physicians (not only obstetricians) about the importance of informing and prescribing FA to patients may be a much more effective allocation of limited funds.

P-35 **Association of Spondylocostal Dystosis to First Trimester Nuchal Translucency: a case report.** de la Vega, A., Torres, E. Dept. of OBGYN, UPR.

The increased thickness of soft tissue in the nuchal area, also known as nuchal translucency (NT), of the fetus, is a screening feature for chromosomal anomalies. Multiple reports have described its usefulness in identifying patients at risk of aneuploidy when performed between 9 and 14 weeks. It is not clear why fetuses with chromosomal anomalies develop nuchal edema. Lymphatic or cardiac anomalies have been implicated in the pathogenesis of this phenomenon. We report the first case of an autosomal recessive skeletal dysplasia in which NT was identified in the first trimester. A 25 year old G2P1 with a previous stillborn diagnosed with spondylocostal dystosis was referred to our institution for evaluation at 9.5 weeks of gestational age. Sonographic evaluation showed an NT of 4mm. No other anomalies were detected at that time. Reevaluation at 20.3 weeks showed a markedly shortened, dysplastic spinal column, ribs and neck. The long bone measurements were within the normal range, but CRL was markedly shortened. No nuchal edema was identified. Findings were consistent with a diagnosis of spondylocostal dystosis. Nuchal translucency is a nonspecific marker of many conditions in which lymphatic circulation may be affected. In most cases, it is a transient finding during the late first and early second trimester. Early diagnosis of skeletal dysplasias is frequently impossible. If an association between NT and certain types of skeletal dysplasias is established, it may serve as a potential early marker of great diagnosis value.

P-36 **Post Partum Hemorrhage as a Cause of the So Called Hemolytic Uremic Syndrome (HUS).** Diaz, T, Talavera, I, Adamsons, K. Dept of OBGYN, UPR, School of Medicine

The etiology of the so called hemolytic uremic syndrome (HUS) is poorly understood. It is characterized by impaired renal function, sometimes require hemodialysis, anemia, and lowering of platelet count. It is described mostly as a disorder of children, but there are also reports that it can occur in women post partum, and in women taking systemic contraceptives. We are presenting a case where underestimation of post partum blood loss in a healthy patient produced a clinical picture mimicking HUS. A 16 year old patient g 1 p 0 had an uneventful delivery, which resulted in larger than usual blood loss. The hemoglobin prior to delivery was 12.5 g and 6 hrs post partum was 10.5 g. She had tachycardia, but otherwise was stable, and was discharged home on post partum day two. At home she reported progressive weakness and appeared very pale. She returned on post partum day 5, and upon admission was found to have hemoglobin of 4.1 g. The BUN was 72 mg %, and creatinine 4.1 mg %, and platelet count was 25,000. She was treated with 8 units of PRBC's and plasma exchange. Her platelets increased to over 100,000 and her liver function normalized. The renal function, however, remained abnormal still requiring hemodialysis. We propose that the so called hemolytic uremic syndrome in this case resulted from an exceptional ability of the young patient to tolerate large blood loss by an extreme reduction in hepatic, renal and bone marrow perfusion resulting in renal failure and abnormalities in liver function. The risk factor could be excessive hyperadrenergic activity, which masked the true post partum hypovolemia.

P-37 **Antihypertensive Therapy Causes Dramatic Reduction in Fetal Growth in a Patient with Renal Failure.** Fines, V., Rodriguez, L., Adamsons, K. Dept of OBGYN, UPR, School of Medicine.

The value of antihypertensive therapy in the pregnant patient is debatable at best. Vasodilators (minoxidil, diazoxide) and alpha adrenergic blocking agents might

disrupt the weak junction between the spiral artery and the cotyledon, thus reducing IVS perfusion. ACE inhibitors, not inactivated by the liver, have been recognized as hazardous in pregnancy, and calcium channel blockers, which have slow inactivation by liver, are likely to affect fetal cardiac output. The only agents that are relatively safe in pregnancy are beta adrenergic blocking agents of high hepatic inactivation rate such as propranolol. An18 year old g 1 p 0 was admitted to the University Hospital at the 21 gestational week because of progressive deterioration of renal function. Because of her hypertension she was placed on calcium channel blockers, and later also on antiadrenergic medications. Evaluation of the fetus during hospitalization revealed poor fetal growth, and progressive cardio and hepatomegaly. Deterioration of renal function required initiation of hemo-dialysis. At 29 gestational weeks, because of episodes of hypoxic bradycardia the decision was reached to deliver the patient by cesarean section. A 650 g fetus was delivered, and after intubation, the newborn was transferred to the Neonatal Intensive Care Unit under mechanical ventilation. After delivery the myocardial performance was judged to be normalizing, with echocardiograms within normal limits of a preterm newborn. The oxygenation of the newborn, however, progressively deteriorated, and newborn expired 2½ days after birth with bilateral pneumothorax. This case illustrates the potential drawbacks of antihypertensive therapy in pregnancy causing marked impairment of fetal growth, and ultimately fetal heart failure. Renal failure of the mother did not lead to acceleration of fetal maturation.

P-38 **Compression of the Intervillous Space Causes Fetal Death in Patients with Gestational Diabetes.** Colon, I., Singer, D., Burgos, R., Adamsons, K. Department of Obstetrics and Gynecology, Harvard Medical School, Boston. Women and Infant's Hospital, Providence, Rhode Island. Department of Obstetrics and Gynecology University of Puerto Rico, San Juan, Puerto Rico.

There is no scientifically validated explanation for fetal death in late gestation among diabetic mothers. We propose that fetal hyperinsulinemia causes structural changes in the fetal liver, which produces umbilical venous hypertension, thus resulting in edema of villi, and compression of the intervillous space (IVS). Initially the diminution of the IVS perfusion is tolerated, because of the facilitated means of the fetus of anaerobic glycolysis, but ultimately the fetus dies of progressive hypoxia. To test this hypothesis, hyperinsulinemia was produced in 10 fetal Rhesus monkeys by implanting insulin ejecting micropumps between 113 and 120 days of gestation (term= 167 days). After 3 weeks the fetuses were delivered by hysterotomy. Three fetuses had died on day 19, 20 and 21. Organs were subjected to morphometric and histologic examination. The hyperinsulinemic fetuses, as compared to controls had 34% increase in body weight, 61% increase in liver weight, and 67% in placental weight. Examination of liver revealed extensive infiltration with erythroblasts, cytoplasm of hepatocytes partly filled with neutral fat, and reduction of portal vessels. There was marked diminution of the IVS due to crowding and edema of villi, and proliferation of the throphoblast. We conclude that structural changes in fetal liver, and increased proliferation of the throphoblasts, caused by hyperinsulinemia, are responsible for umbilical venous hypertension, edema of villi, and a progressive decrease in the perfussion of IVS, leading to fetal death.

P-39 **Beta-adrenergic Blockade and Pain Relief During Labor and Delivery.** Ramirez, E. Comas, A., Adamsons, K. Departments of Anesthesia, Obstetrics and Gynecology, University of Puerto Rico, Puerto Rico, U.S.A.

Epidural analgesia has become one of the most popular means in the United States to relieve pain during labor and delivery. In some hospitals the relative frequency of epidural analgesia among primigravidas exceeds 50%. There is, however, the risk of dural perforation, intravascular injection of the anesthetic agent, and impaired expulsive efforts of the patient during the second stage of labor. The other aspect of epidural analgesia to be considered is the cost for the services rendered by the anesthesiologist. We have reported to the Forth World Congress of Perinatal Medicine that the elimination of the inhibitory effect of the myometrial adrenergic beta-receptors with propranolol reduces dramatically the duration of labor in primagravidas (mean 3.9 hrs., range 1.2 to 6.2 hrs.). Blockade of the central nervous system adrenergic receptors also has reduced the need for systemic hypnotics and analgesics. The combined effect of the short duration of labor, and that of the CNS adrenergic receptor blockade, has virtually eliminated epidural analgesia as a method of choice among our primagravidas who were given propranolol at the beginning of labor. At present we are offering epidural analgesia to patients having received propranolol only in cases of induced labor.

P-40 **Propranolol to Reduce the Duration of Labor Does Not Alter the Reactivity of Fetal Heart Rate.** Burgos, R., Santiago, R., Adamsons, K. University of Puerto Rico, School of Medicine

Endogenous release of epinephrine inhibits progression of labor through the activation of the myometrial beta receptors, which increase the post contraction relaxation

of the myometrial cell. We have demonstrated that blocking the beta receptors with propranolol (1 to 2 mg. i.v.) results in unprecedented shortening of labor. In our present series the shortest labor in primagravidas has been 1.2 hours. The purpose of this communication is to comment on the reactivity of fetal heart rate after administration of propranolol to the mother. According to our working hypothesis, reactivity of the heart should not be affected because propranolol undergoes extensive inactivation by the liver, and since the fetus obtains virtually all the blood returning form the placenta through the portal circulation, little or no intact propranolol should reach the fetus. Examination of heart rate recordings by a fetal cardiotachometer prior and after the administration of propranolol (2.0 mg i.v.) were performed on 25 patients. Indicators of reactivity where the short lived accelerations of fetal heart rate, baroreceptor mediated bradycardia associated with cord or head compression, and changes in the mean heart rate. The ongoing study has confirmed our hypothesis that propranolol administration to the mother does not alter the cardiovascular reactivity of the fetus.

P-41 **Uterine Contractions Accelerate Maturation of the Fetus.** de la Vega, A, Adamsons, K, Dept of OB GYN, University of Puerto Rico, Sch of Med, San Juan, Puerto Rico

We have reported previously that suppression of preterm labor of more than four days with diazoxide, a tocolytic agent which does not affect fetal breathing, virtually eliminate RDS among newborns weighing 800 to 1300 g. The proposed mechanism was fetal TRH release brought about by fluctuating and lower than normal P02 of the fetus. This explanation was consistent with the well known clinical observation that newborns of mothers with preeclampsia had a lower relative frequency of RDS than that expected for their gestational age. It is a policy of our Department to accelerate fetal maturation with intra-amniotic thyroxin in patients with gestational diabetes, and to deliver the fetus before the 36th week, to minimize the sequelae of fetal hyperinsulinemia, (macrosomia and increase in myocardial and fat cell numbers). When a patient with a macrosomia fetus at 34th week, and an L S/of 1.17, refused intra-amniotic T4, we offered to try to accelerate fetal maturation with 4 daily infusions of oxytocin of 6 hr. duration. After 2 days the L S/had progressed to 2.20, and after 2 more days L S/was 3.25. Delivery (by CS) was performed next day. A 3,450 g fetus with AS 7 & 9 was delivered. The neonatal course was entirely uneventful. Our studies with oxytocin induced acceleration of fetal maturation are continuing .

P-42 **Universal Neonatal Hearing Screening Project: Final Report to the Puerto Rican Department of Health.** R.E. Quiñónez Ph.D., G.A. Owen Sc.D., A. Rodríguez Quiñónez M.A., Audiology Program - College of Health-Related Professions, Medical Sciences Campus, University of Puerto Rico.

Approximately 3 million American children have a hearing loss; 1.3 million of these are under the age of three. Incidence studies performed in the United States estimate that 1-3 newborns per 1000 well babies have a severe bilateral hearing loss. Undetected hearing loss can lead to delayed speech and language development, result in social and emotional disturbances, and impair academic performance. Proposed universal hearing screening involves the testing of all newborns (including those at risk) for hearing impairment prior to release from the hospital. The goal of universal hearing screening is to identify those newborns with a hearing loss as early as possible and implement early intervention (amplification/habilitation). Unfortunately, universal hearing screening is not a standard practice among the majority of hospitals in the United States or Puerto Rico. The purpose of the present study was to compare test results among three types of screening devices, Natus Algo 2 AABR, Otodynamics EchoCheck TEE, and Bio-logic AuDx DPE, evaluate which variables, internal and external, affect those results, and determine test duration. Thirty-two full-term newborns from the well-baby nursery of the University Hospital at the University of Puerto Rico, participated in the present study. The results indicate that the Natus Algo 2 AABR had the highest pass percentage for the right and left ears at 97% and 91%, respectively. The passing percentages for the TEE for the right and left ear were 31% and 53%, respectively and the DPE passing percentages for the right and left ears were 41% and 56%, respectively. Test duration for the AABR was much longer than for either of the otoacoustic emission screeners. Based on these preliminary findings the use of the Natus Algo AABR is recommended over the otoacoutics emission screeners used in this study.

P-43 **Prolonged Maternal Hypotension causing lethal Preeclampsia.** Osorio, O., Santiago, P., Adamsons, K., Department of OBGYN, UPR, School of Medicine.

Preeclampsia, in our opinion, is caused by the hypoxic trophoblast, which releases substances most likely polypeptides, stimulating various contractile proteins in the maternal organism. In most cases the cause of low P02 is small placenta, excessive adrenergic reactivity of the mother, or avulsion of spiral arteries. Rarely it is caused by

maternal hypotension. We present a case of undiagnosed, lethal preeclampsia caused by persistence of a hypotensive state of the mother. The patient was a 22 y/o, g 3, p 1 with negative medical history. She was admitted at 25.5 weeks of gestation from a community hospital because of respiratory failure requiring mechanical ventilation. The cause of her hypotension and pulmonary edema was thought to be septicemia from UTI. She developed generalized edema, oliguria and progressive hypotension. Treatment consisted of inotropic drugs, and norepinephrine. Sonographic evaluation revealed normal fetus and normal volume of amniotic fluid. Our plan was to perform hysterectomy to remove the hypoxic throphoblastic population, which had previously rescued a moribund hypotensive patient. However, before this could be carried out the patient suffered cardiac arrest. This is only the second case in our experience where preeclampsia is not expressed in hypertension. Maternal hypotension, of whatever cause, in a pregnant patient can produce hypoxia of the throphoblast, therefore, initiating the sequence of events leading to preeclampsia.

P-44 **Small Placenta of a Twin Causes Reappearance of Previously Cured Preeclampsia.** Torres, R., Osorio, O., Adamsons, K. Department of OBGYN, UPR, Sch of Med.

According to our views preeclampsia is caused by a yet to be identified substances, most likely polypeptides, released by the throphoblast when P02 of the IVS falls below 30 torr. In most cases the correction of the low P02 is possible for only short periods, except in cases of fetal syphilis, hemolytic disorders of the fetus, and twin pregnancy with normal size of placentas in patients in whom excessive adrenergic activity leads to reduction of uterine blood flow in upright position. A 28 y/o gravida 3 para 1 was admitted with twin pregnancy of 32 weeks. Family history revealed essential hypertension. Her first pregnancy was complicate by preeclampsia. On admission she had a BP of 160/100, blurred vision, proteinuria, non dependant edema. Intravascular volume was expanded, and plasma oncotic pressure was elevated with albumin. She became asymptomatic with normal BP. She was hospitalized for two weeks, when she suddenly showed symptoms of preeclampsia with BP of 150/100. Sonographic evaluation revealed that one fetus was in the 5% percentile for gestational age. Because of her symptoms and impared fetal growth CS was performed. Fetus A weighed 4 lbs 9 oz. with Apgar score 7/8. Fetus B weighed 2 lbs. 8 oz. Apgar score 6/7. The second fetus had a small placenta. Both newborns were discharged home from nursery without complications. This case illustrates that progressive decline in 02 supply to one placenta might produce preeclampsia in a patient in whom the initial expansion of intravascular volume produced an apparent cure of preeclampsia.

Pharmacy

P-45 **pH-Sensitive Liposomes as a New Drug Delivery System for Glipizide.** L.M. Del Valle, E.S. Ghaly: School of Pharmacy, Medical Sciences Campus, University of Puerto Rico.

Liposomes are considered as ideal drug carriers. In this investigation pH-sensitive liposomes (pH-SL) have been studied as a glucose-responsive glipizide delivery system. The objectives of this investigation is to enhance the solubility of glipizide using a hydrophilic polymer (Poloxamer 108), study the effect of different drug:lipid ratios and stirring time on the physical properties and on the entrapment efficiency of the drug into the liposomes. pH-sensitive liposomes were prepared by reverse evaporation method using a lipid composition of dioleoylphosphatidyl-ethanolamine (DOPE):Oleic acid (OA):Cholesterol. The three variables: percent Poloxamer, drug:lipid ratio and stirring time were studied at different levels to determine the best formulation. In order to develop pH-SL as a glucose-triggered glipizide delivery system, glucose oxidase (GOD) and glipizide were coencapsulated in the liposomes. GOD act as a sensor for glucose by converting the permeated glucose to gluconic acid that led to the destabilization of the liposomal membrane and releasing the glipizide. pH-sensitive liposomes without including Poloxamer 108 but with high drug:lipid ratio and short stirring time (3 hours) gave the highest encapsulation efficiency of the drug (34%) compared to formulations containing low percent of Poloxamer, low drug:lipid ratio and short stirring time which gave percent entrapment of 1.32. This study indicated that the presence of Poloxamer 108 interfere with the encapsulation efficiency of glipizide. pH-sensitive liposomes encapsulating both glipizide and GOD have potential to be developed as glucose-triggered glipizide delivery systems.

P-46 **Lubrication Properties of Two Different Microcrystalline Cellulose Based Excipient.** M. Andino, J. Camacho, E.S. Ghaly: School of Pharmacy, M.S.C., U.P.R.

The availability of new excipient as diluents has led to the use of the direct compression method for manufacturing of tablets. The objective of this investigation is to evaluate the lubrication properties of two microcrystal-

line cellulose based excipient and to study the effect of lubricant and type of excipient on the physical properties and drug release. The drug (theophylline) level was held constant at 20% percent of lubricant (magnesium stearate) varied (0% -1%) and two excipient were used, Avicel PH-102 and Prosolv 90. Tablets were prepared by direct compression using Korsch EKO instrumented tablet press at target weight and hardness of 400 mg 5% and 9-11 Kp respectively. In general tablets prepared with Prosolv 90 showed lower ejection force , lower elastic work and higher net work than tablets of the same composition but prepared with Avicel PH-102. However Prosolv tablets gave higher frictional work and die wall friction than Avicel PH-102 tablets. All tablet formulations were within the specified limit and no significant difference in uniformity of weight, thickness, hardness, disintegration and dissolution between formulations prepared by Prosolv 90 and those prepared with Avicel PH-102. However Prosolv tablets showed trend to lower disintegration time than Avicel PH-102 tablets. Avicel PH-102 tablets prepared without lubricant appears to stick on tooling and gave 1.2% friability while Prosolv 90 tablets did not stick to tooling and friability was less then 0.8%. As the percent of lubricant increased from 0.75% to 1%, Prosolv tablets gave higher friability while Avicel PH-102 friability did not change. This study demonstrated that different excipient can affect tablet properties.

P-47 **Vitamin E Polyethylene Glycol Succinate Liposomes for Targeting to Cancer Cell.** W. Santiago, E.S. Ghaly: School of Pharmacy, Medical Sciences Campus, U.P.R.

The discovery of liposomes led to a new alternative of delivery systems for drugs in pharmaceutical field.. The objectives of this research is to design and develop a formulation for the encapsulation of vitamin E polyethylene glycol succinate (TPGS) that produce liposomes of high entrapment efficiency. Liposomes were prepared by hydrating the lipids layer in the presence of organic solvent. The lipid phase composed of hydrogenated egg phosphatidylcholine : dicetyl phosphate : cholesterol at a molar ratio of 5:1:4. The drug lipid ratio varied (1:1, 3:3, 5:1, 1:5 , and 1:2), percent Poloxamer 108 varied (0% to 20%) and stirring time varied from 3 hours to 12 hours. Liposomes prepared with drug:lipid ratio of 1:1 containing 20% poloxamer 108 and stirred for 7 hours during hydration of the dry lipids layer with the aqueous phase gave 3.7% entrapment efficiency while liposomes of the same composition but prepared without Poloxamer 108 gave 24.5% entrapment efficiency. Liposomes prepared with drug:lipid ratio of 1:1 without Poloxamer 109 and stirred for 12 hours gave 9% entrapment efficiency while liposomes of the same composition but stirred for 3 hours gave 4% entrapment efficiency. Liposomes without Poloxamer 108, containing ratio of drug to lipid (5:1) and stirred for 7 hours gave 6.1% entrapment efficiency. These data indicated that that optimum liposome formulation contains drug: lipid ratio of 1:1, without Poloxamer 108 and stirred for 7 hours. Increasing the stirring time, increasing drug lipid ratio or including Poloxamer 108 decreased the entrapment efficiency of the drug, This study showed that it is possible to modify the drug release from liposomes.

P-48 **Prediction of Drug Stability Using Calorimetric Method.** S. Rivera, E.S. Ghaly: School of Pharmacy, Medical Sciences Campus, University of Puerto Rico.

The solid-state degradation rate of a drug candidate during the initial stages of its development is an important consideration in determining if it can be successfully developed. In this investigation a novel method using differential scanning calorimetry (DSC) for calculation of activation energy (E_a), degradation rate constant at room temperature and to solve problems associated with acceleration stability testing using Arhenius equation. The heat output was measured by DSC at several temperatures (25°C 90°C) and the E_a at room temperature was calculated. The rate constant K_2 at one single high temperature was calculated using HPLC method to determine concentration of drug remaining at high temperature (T_2). Four drugs were used: tetracycline HCl, triamterine, theophylline and phenytoin. All plots of 1/T versus natural log of enthalpy gave straight lines and the activation energy was 30.713 Kcal/mole , 18 Kcal/mole, 16.992 Kcal/mole and 20.923 Kcal mole for tetracycline, phenytoin, theophylline and triamterine respectively. Tetracycline was stored at 60 °C, 70, 80 and 90 °C and assayed at different time intervals using HPLC and Ea obtained by extrapolation at room temperature from accelerated stability testing was 25.978 Kcal mole while E_a obtained from DSC using enthalpy value at room temperature (without extrapolation) was 30.713 K cal/mole. This study demonstrated that calorimetry method using DSC is rapid, accurate and can be used as alternative method for prediction of drug stability.

P-49 **Effect of Viscosity and Levels of Ethylcellulose Polymer on Drug Release.** S. Ramos, E.S. Ghaly: School of Pharmacy, Medical Sciences Campus, University of Puerto Rico.

Sustained release dosage forms have received great attention because of their advantages in clinical use. The objectives of this study are to investigate the effect of viscosity grades of ethylcellulose, a water insoluble poly-

mer on the physical properties and drug release from different matrices. The drug selected was chlorpheniramine maleate and the level of the drug was held constant at 10% w/w. Three different viscosity grades of ethylcellulose (7 cp, 10 cp and 100 cp) and three different types of diluent (lactose, dibasic calcium phosphate and microcrystalline cellulose) were used. The level of polymer varied (10%, 30 and 50%). The direct compression method was used to prepare the matrices and the matrices were tested for dissolution in three different dissolution medium (distilled water, 0.1 N HCl and phosphate buffer pH 7.4) and at three different rotational speed (5 rpm, 100 and 150 rpm). The results showed that the pecent drug release decreased with the increase of polymer level and also percent drug release decreased with the increase of the ethyl cellulose viscosity. Tablets containing lactose, and 10% ethyl cellulose (viscosity 100 cp) at 2 hours of testing dissolution released 89.4% drug, tablets prepred with 30% ethylcellulose (viscosity 100 cp) released 61.6% while tablets prepared with 50% ethylcellulose (viscosity 100 cp) released only 48.3% of drug. Tablets prepared with lactose and 30% ethylcellulose (viscosity 7 cp) released 98.1% drug at 2 hours while tablets prepared with 30% ethylcellulose (viscosity 10 cp) released 71.9% and tablets prepared with 30% ethylcellulose (viscosity 100 cp) released 61.1 % drug. Additionally types of diluent used appear to affect drug release, tablets prepared with 50% ethylcellulose (viscosity 100 cp) and lactose released 63% drug at 3 hours while tablets of the same composition but prepared with dibasic calcium phosphate released 50.2% and tablets prepared with microcrystalline cellulose released all drug. Matrices prepared by incorporation of ethylcellulose and direct compression have potential for controlling the drug release.

P-50 **Zero Order Release from Polyox WSR Polymer Matrix.** F. Estremera, E.S. Ghaly: School of Pharmacy, Medical Sciences Campus, University of Puerto Rico.

Polyox WSR are hydrophilic polymeric species of particular interest due to their biodegradable, water soluble and non-toxic characteristics. However, their application for the development of a simple zero-order controlled release device has been precluded by the anomalous drug liberation profile displayed. In this research work, a novel method is used for preparing matrices of water soluble drug where the polymer was added extra-granular. Water soluble chlorpheniramine maleate was selected as a drug model, five levels (10%, 20, 30, 40 and 50%) of high molecular weight Polyox WSR coagulant ($5X10^6$ g/mole) and four different diluents (lactose impalpable, Avicel PH-101, dibasic calcium phosphate and mannitol) were used. The dissolution testing was carried in distilled water, 0.1 N HCl and phosphate buffer pH 7.4. and the fraction of drug released was calculated using the following equation: $\ln (M_t / M_0) = \ln K + n \ln t$. The n value estimated was used to determine the release mechanism. Also the hydrodynamic effect was investigated by testing the dissolution at different rotational speed: 50 rpm, 100 and 150 rpm. The results indicated that formulations containing 40% and 50% polyox levels showed "n" value of 0.912 and 1.04 respectively indicating zero order release over 24 hours.. Inspite of obtaining anomalous release in 0.1 N HCl, phosphate buffer and under extreme hydrodynamic conditions, a careful analysis of the dissolution data showed a zero order release at most of the time interval . However optimization of the formulations is necessary. This study demonstrated that the use of Polyox WSR coagulant as a polymer has potential for controlled release formulations.

P-51 **Stability Prediction for New Drugs using Differential Scanning Calorimery** Suzette Rivera, BS and Evonne Ghaly, PhD, University of Puerto Rico, Medical Sciences Campus, School of Pharmacy

The solid state degradation rate of a drug candidate during the initial stages of its development is an important consideration in determining if it can be successfully developed. The conventional technique for stability prediction by means of Arrhenius law has several limitations. In this research study a new method based on calorimeric analysis has been developed to calculate rapidly and accurately room-temperature degradation rate of drugs solving the limitations found with the conventional technique. The method utilizes measurements of the initial rate of heat output at several temperatures using differential scanning calorimetry (DSC) for calculation of activation energy (E_a) and the degradation rate of the drug determined at a single elevated temperature using high performance liquid chromatography (HPLC). The drugs studied were tetracycline, triamterene, theophylline and phenytoin. All plots of natural log of enthalpy versus 1/T gave straight lines and the activation energy was 30.713 kcal/mol, 19.480 kcal/mol, 16.992 kcal/mol and 20.923 kcal/mol for tetracycline, phenytoin, theophylline and triamterene respectively. Tetracycline was stored at 60°C, 70°C, 80°C and 90°C and assayed at different time intervals using HPLC. Activation energy obtained by extrapolation at room temperature from accelerated stability testing was 25.978 kcal/mol while activation energy obtained from DSC using enthalpy values including room temperature (without extrapolation) was 30.713 kcal/mol. The applicability of calorimetric analysis by DSC to determine room-temperature degradation rates and activation energies of several pharmaceutical compounds was demonstrated. For all the compounds

studied, the activation energy was accurately determined. The new technique demonstrates advantages over the conventional technique. This technique is simple, accurate and short time is needed to perform the study.

P-52 **Problems Associated with Prescriptions for Extemporaneous Liquid Preparations for Oral Use Received in Community Pharmacies in Puerto Rico.** SI Lugo, HA Monsanto, School of Pharmacy, University of Puerto Rico.

Objective: To evaluate the appropriateness of prescriptions for extemporaneous liquid preparations for oral use received in community pharmacies. Methods: Prescriptions for extemporaneous liquid preparations for oral use were obtained from community pharmacy practice sites affiliated with the School of Pharmacy experiential program and analyzed on the basis of type of liquid dosage form, compatibility of active and inactive ingredients, and dose per unit of measurement. Results: Forty-four prescriptions were obtained. Ten were selected for analysis because complete information was available on all ingredients. Five prescriptions presented compatibility as well as dose problems. The remaining five prescriptions presented only a dose problem. The most common compatibility problems were volume contraction, phase separation and salting-out or precipitation of ingredients. The most common dose problem was that the amount of active ingredient per unit of measurement (teaspoon or tablespoon) was below the recommended dose for the active ingredients. Conclusions: Prescriptions for extemporaneous liquid preparations for oral use are commonly received in the community pharmacy setting. These prescriptions contain vehicles that are not necessarily compatible with each other which results in poorly elegant formulations. In addition, the dose of the active ingredients per unit of measurement is affected by the total volume of the formulation resulting in the majority of cases in subtherapeutic doses. In both cases, the effectiveness of the prescribed therapy may be affected. Further study is needed to investigate the stability, compatibility and appropriateness of prescriptions for extemporaneous liquid preparations. It is important that physicians and pharmacists consider compatibility and dosing issues when prescribing or dispensing extemporaneous liquid preparations for oral use.

P-53 **Screening, Monitoring, and Educating Diabetic Patients in a Community Pharmacy.** F.J. Jimenez, H.A. Monsanto. School of Pharmacy, University of Puerto Rico, PO Box 365067, San Juan, PR 00936-5067

Diabetes Mellitus (DM) is one of the most prevalent diseases in Puerto Rico. It is estimated that one-half of the diabetic patients have not been diagnosed. A one-day diabetes clinic was conducted in *Farmacia San José* in Lares, Puerto Rico to screen, monitor and educate the diabetic population in this small town located in the center of the Island. Medical technologists from *Laboratorio Tecnológico y Bacteriológico Lares* conducted fasting blood glucose tests using capillary or venous blood. Over 200 patients participated in the clinic, which exceeded our expectations. Most participants were female and reported having DM. The average age was 60 years old. Venous blood was drawn in 89 patients, 62% of which reported having a diagnosis of DM. Another 140 patients, 46% of which reported having DM, were tested using capillary blood. Two-thirds of the fasting patients had glucose levels higher than 140 mg/dl. Four fasting patients with no diagnosis of DM had glucose levels higher than 140 mg/dl and were referred to see their physician as soon as possible. Seventy-nine percent of the diabetics did not know about the glycosilated hemoglobin test and only two patients knew the most recent value of this test. Educational activities included printed material and presentations about nutrition and proper glucose control to prevent diabetic complications. It is evident from these findings that there is a great need to provide care and education to diabetic patients. Two-thirds of the patients were not reaching their fasting blood glucose goal. Most of these patients expressed interest to learn more about how to manage their condition. They need to understand that good serum glucose control decreases significantly diabetic complications, which may lead to a better quality of life. Community pharmacists are in an excellent position to collaborate with other health professionals in screening, monitoring and educating diabetic patients to prevent complications.

P-54 **Atypical Vancomycin Pharmacokinetics in a 2 Year Old Child: A Case for Clinical Interdisciplinary Teaching.** W. Maldonado, H. García, I. Esquilín; School of Pharmacy and School of Medicine, University of Puerto Rico

Vancomycin is a glycopeptide antibiotic with a narrow therapeutic index. Its use requires careful dosing and therapeutic monitoring in order to document that serum drug concentrations are maintained within the desirable range. The usual starting dose for vancomycin is around 40-60 mg/kg/d for children from 1 month to 16 years old. **Objectives:** (1) Discuss a case of atypical vancomycin pharmacokinetics in a pediatric patient; (2) Emphasize the value of the teaching and learning of scientific concepts through the clinical application of these principles by an interdisciplinary healthcare team. **Methods:** We report the case of a two year old child treated with vancomycin for osteo-

myelitis. Several serum peak and trough concentrations were obtained to characterize the patient's pharmacokinetic parameters in order to optimize the dosing regimen. The serum concentrations, dose adjustments, and treatment monitoring were discussed and acted upon by an interdisciplinary healthcare team. **Results:** Various sets of serum vancomycin concentrations were obtained which documented the atypical pharmacokinetics of the drug in the patient, requiring several dose adjustments until serum concentrations were optimized. The volume of distribution was larger than expected, as well as the total body clearance of the drug, requiring a dose of 90 mg/kg/d. This case served as a teaching tool for physicians, pharmacists, medical residents, pharmacy students and medical students. **Conclusions:** (1) The clinical care of patients by an interdisciplinary healthcare team can contribute to the optimization of the therapeutic regimen of drugs with a narrow therapeutic range. (2) Patients on drugs with a narrow therapeutic range benefit from therapeutic drug monitoring, specially when patients exhibit atypical pharmacokinetic parameters. (3) The clinical application of scientific principles to patient specific situations facilitate the teaching and learning of these concepts.

P-55 **A Rare Species from family Icacinaceae as a Potential Source of Anticancer Agents.** E.S. Díaz, M.D. Antoun: School of Pharmacy, Medical Sciences Campus, University of Puerto Rico.

Cancer, a group of many related diseases, is the second leading cause of death. Bearing in mind the pandemic nature of cancer, a proposal is put forth to create cancer drug formulations capable of preventing or inhibiting the process of carcinogenesis. Natural product drugs play a dominant role in pharmaceutical care. Alkaloids have served as models for the chemical synthesis of many anticancer agents. This investigation is trying to isolate a very promising active alkaloid cytotoxic to cancer cells. A very rare species from the family Icacinaceae, *Mappia racemosa*, is a small native tree rare found in Puerto Rico. Methanol and Ethanol extracts of leaves and stems of *M. racemosa* collected from Puerto Rico, have been assessed for cytotoxic activity against a cancer cell line, P388 D1 (leukemia), using [3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. Significant cytotoxic activity was exhibited by the extracts of both leaves and stems on that cell line. Both extracts were first run on a Sephadex LH-20 column using methanol. A preliminary MTT assay was carried out. The most active fractions were then run on a Silica Gel 60 column using an elution system of 100%chloroform -100%methanol. Activity-directed fractionation led to the isolation of the most active fraction for both extracts. Cytotoxic activity was then tested and compared with camptothecin (CPT), a plant alkaloid with known antitumor activity. Results showed a high correlation between the active fractions of the plant extracts and CPT for the most active fractions and an interesting comparison in terms of the physical properties of these compounds and CPT. Our studies indicate that this rare native tree exhibits very potent anticancer activities and as a result very promising expectations for the modern medicine.

P-56 **Use of Complementary and Alternative Medicine by Cancer Patients in Puerto Rico.** L Hernández, PharmD, MPH, R O Guerrero, PhD; University of Puerto Rico, School of Pharmacy.

The use of medicinal plants by ambulatory patients in Puerto Rico has been previously reported. Objectives: The purpose of this study is: a) to describe the prevalence of use of complementary and alternative medicine (CAM), and of non-prescription drugs by cancer patients; b) document the most frequently used medicinal plants (herbs), their mode of preparation, and use; and c) describe selected health system variables. **Methods:** A cross - sectional study was conducted at the I. G. Martínez Hospital between March1996 to February 1997. Consecutive patients were interviewed at the clinics after obtaining informed consent. Eligibility criteria included patients older than 18 years of age with cancer in whom physical or cognitive difficulties did not prevent the completion of the interview. **Results:** Two hundred and ninety nine patients from five health regions completed the interview. The prevalence of use of complementary and alternative medicine follows: herbs (medicinal plants), 67.2%; spiritual aid, 13.4%; exercise, 13.0%; special diet, 7%; support groups, 5.7%; religion, 3.7 %; megavitamins, 2%; acupuncture, 1%; chiropractor, 7.4%. The prevalence of use of herbal medicine by disease type ranged from 59.3% to 87.5% for colorectal and lung cancer patients respectively. Seventy per cent of patients reported that their physician did not know about their herb intake. Herbs were frequently obtained in gardens without cost to the patients. CAM was recommended to patients by family (66), friends (52), other patients (22), physician (11), and other healthcare personnel (10). **Conclusion:** The use of complementary and alternative medicine is prevalent among cancer patients in Puerto Rico. Healthcare personnel should be aware and knowledgeable about CAM to better serve patients.

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P-57 **Inhibitors of Aldose Reductase and Their Role in the Prevention of Cataracts.** D. Plá*, N. Rodríguez*, A. Guzmán*, and R. Guerrero**. *San Juan Bautista School of Medicine, Caguas, Puerto Rico. **School of Pharmacy, University of Puerto Rico. San Juan, PR 00936.

Diabetic complications may result in the formation of cataracts. To prevent this problem, the use of aldose reductase inhibitors (ARI) has been proposed by some authors. The purpose of this investigation was to screen plant extracts from Puerto Rico for ARI, and to investigate their possible influence in the prevention of diabetic cataractogenesis. Twenty five plants were selected mainly from the Myrtaceae family (*Myrcia* and *Eucalyptus* genera). The leaves of these plants were collected and extracted with each of these solvents: EtOH, water and dichloromethane (DCM). The extracts were assesed for the inhibition of aldose reductase. The enzyme was obtained from bovine lenses homogenates. A spectrophotometrical assay was utilized in which oxidized NADP is produced, and its absorption read at 340 nm. Quercetin was used as standard. *Eugenia borinquensis* and *Syzygium malaccense*, both from the Myrtaceae family were among the best inhibitors. Another plant, *Eucalyptus deglupta* from the same family showed a 72% inhibition. Its effect in preventing cataract formation in diabetic rats was assessed in our laboratories. Streptozotocin induced diabetic rats were given an acqueous extract of the leaves of this plant (30g/500 ml) to drink *ad libitum* while the control group had water. Three months later those animals that had the extract were the only ones that had not developed cataracts. It is hoped that the positive results found in this study will be an incentive to continue to analyze thoroughly the active principles of these species.

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P-58 **Comparison of the Cost-effectiveness of Clindamycin Vaginal Cream, Metronidazole Vaginal Gel and Metronidazole Oral Tablets for the Treatment of Bacterial Vaginosis.** BA Torres, RPh, AJ García-Ortiz, MS, HA Monsanto, PhD, L Lai, PhD, College of Pharmacy, NOVA Southeastern University and School of Pharmacy, University of Puerto Rico.

A retrospective study was conducted with the objective of comparing the cost-effectiveness of clindamycin vaginal cream (CLDM), metronidazole vaginal gel (MTN) and metronidazole oral tablets (MTZ) for the treatment of bacterial vaginosis (BV) in women evaluated in a center for sexually transmitted diseases from February to October 1999. Records of patients evaluated in the Latin-American Center of Sexually Transmitted Diseases (CLETS), diagnosed with BV and treated with CLDM once daily for 7 days (32 records), MTN twice daily for 5 days (66 records), or MTZ 500mg orally twice daily for 7 days (44 records) were studied. Comparisons were made in terms of effectiveness (cure of the condition or therapeutic failure, compliance and adverse reactions reported), and direct medical costs measured in dollars (value of resources consumed by therapy). Preliminary results show cure rates higher for the CLDM group (50%) when compared to MTN and MTZ groups (43.9% and 20.4%). Failure rates were higher to the MTN and MTZ groups (10.6% and 15.9%) than for CLDM (3.1%). Recurrence rates were also higher for MTN and MTZ (24.2% and 13.6%) when compared to CLDM group (6.3%). However, when comparing dollar cost of patient evaluation and treatment (physician visit, laboratory work-up and medications), MTZ was somewhat less expensive alternative ($152.62) than CLDM and MTN ($165.68 and $166.10). Even though MTZ appears to be less expensive than CLDM and MTN from the provider's perspective, its lower cure rate and higher recurrence rate may suggest that it is not necessarily the most cost-effective alternative. Further analyses will consider the clinical and economic significance of these results. These results may be used by CLETS to develop therapeutic guidelines for the treatment of BV.

P-59 **A Rare Species from the Family Icacinaceae as a Possible Source of Antituberculosis Bioactives.** E. Babilonia[2], O.R.Guerrero[2], I. Oquendo[2], G.R.Proctor[3], S.G.Franzblau[3], A.D.Kinghorn[4], M.D.Antoun[1], School of Pharmacy, Medical Sciences Campus, University of Puerto Rico, San Juan, [2]Department of Natural Resources, Government of Puerto Rico, San Juan, [3]Laboratory Research Branch, GWL Hansen's Disease Center,Louisiana State University Baton Rouge, Louisiana [4]College of Pharmacy, UIC, Chicago, Illinois

As part of a broad screening program of the flora of Puerto Rico, an extract of Ottoschulzia rhodoxylon Icacinaceae demonstrated high activity in an in vitro bioassay against tuberculosis. A bioactivity guided fractionation of the ethanol extract of the leaves on a Silica Gel 60 column using a gradient of chloroform/methanol was carried out. The active fractions were pooled, and further fractionated on the chromatotron using a Silica rotor and a gradient of chloroform/methanol. Two active compounds were isolated. The

activity against tuberculosis was measured using two methods: the Microplate Based Alamar Blue Assay and the Direct Drug Susceptibility Test. There was a high correlation between the two methods. An MIC_{50} of 32mg/ml was found for the first compound, and 128mg/ml for the second compound. Structural characterization of both compounds is underway. Supported in part by a "Research Centers in Minority Institutions'award, RR-03051, from the National Center of Research Resources, NIHE. Babilonia gratefully acknowledges financial support by the Deanship of Academic Affairs of the Medical Sciences "Students' Assistantship Program"

Public Health

P-60 **Perfil Operacional de un Personal de Enfermería con la Regla de OSHA: Exposición Ocupacional a Sangre (29 CFR 1910.1030).** Stewart Torres. Tel. 791-6083. 620-2277 x 2480 x 2488. stiwi@hotmail.com. Depto. Salud Ambiental. Escuela Salud Pública. RCM. UPR.

Los objetivos de esta investigación fueron: Determinar el cumplimiento con los métodos para el control de los riesgos, los procedimientos post-exposición con sangre y los adiestramientos requeridos en el 29 CFR 1910.1030. Evaluar el conocimiento sobre el equipo para la protección personal, los procedimientos post-exposición y el plan para el control de la exposición. Investigar las exposiciones ocupacionales. Participaron 77 profesionales de la enfermería. La mayoría eran mujeres vacunadas contra el HBV que trabajaban en algún hospital del gobierno. El estudio fue descriptivo y la muestra era en el 56% de los estudiantes de un programa de maestría en enfermería. A este grupo se le ofreció un cuestionario para que lo llenaran. Los objetivos del estudio se analizaron a través de estadística descriptiva simple porcentual. Se encontró que un 70% ó más del grupo realizaba 16 de 20 actividades que definían el cumplimiento con el 29 CFR 1910.1030; que no más de 55% conocían el equipo para la protección personal requerido en algunos procedimientos clínicos; y que 60% habían tenido de 1 a 4 razones principales para no usar este equipo. Se encontró que un 81% del grupo habían tenido algún tipo de exposición a sangre en su vida laboral; que 62% de las exposiciones no fueron informadas al patrono; y que el patrono brindó tratamiento a un 86% de las exposiciónes informadas. Un 80% ó más de los informantes sentían que conocían los procedimientos post-exposición; que el patrono cumplía con los adiestramientos requeridos, y que el patrono tenía el plan para el control de la exposición. En general se concluyó que el grupo había tenido exposiciones ocupacionales con sangre, no se había protegido de las exposiciones y cumplía con la mayoría de la regla. Se recomienda la afinación del cuestionario e investigaciones para conocer que aspectos del 29 CFR 1910.1030 afectan estas exposiciones.

P-61 **Atrazine, Alachlor and 2,4-D Levels in Water Samples Of Jobos Bay National Estuarine Research Reserve -JBNERR** C.E. Altieri[1], C.J. Rodriguez Sierra[1,2], [1]Department of Environmental Health-School of Public Health, [2]Center for Environmental and Toxicological Research, Medical Science Campus, University of Puerto Rico, San Juan, Puerto Rico.

ABSTRACT: Baseline information about levels of pesticides that may enter Jobos Bay National Estuarine Research Reserve (JBNERR) located in Guayama-Puerto Rico, was determined in surface and interstitial water samples. U.S. Environmental Protection Agency (EPA) water maximum contaminant levels (MCL) for atrazine, alachlor and 2,4-D are 3mg/L, 2mg/L and 70mg/L, respectively. Interstitial water samples obtained from 8-46 cm deep PVC piezometers, located in 2 transects along two agricultural drainage water channels that discharge into the JBNERR, were frequently found with higher concentration of atrazine and alachlor near the agricultural area. Elevated levels of 2,4-D were found in piezometers located farther into the mangrove forest. Atrazine concentrations in piezometers near the agricultural area ranged from 0.14mg/L – 1.04mg/L, while atrazine levels in piezometers installed in the mangrove forest of the JBNERR were 0.02mg/L - 1.33ug/L. Alachlor concentration near the agricultural zone and the mangrove were 0.26mg/L – 3.53mg/L and 0.07mg/L – 2.98mg/L, respectively. Levels of 2,4-D adjacent to the agricultural area ranged from 0.15mg/L – 5.25ug/L, while 2,4-D levels in piezometers in the mangrove forest, JBNERR were 0.37mg/L – 7.85mg/L.. Pesticide levels in surface water samples obtained from 2 irrigation agricultural channels were significantly higher with atrazine achieving concentration as high as 3.29mg/L and alachlor with 2.69mg/L.. These concentrations exceed the MCL. We have shown that atrazine, alachlor and 2,4-D are present in water samples from JBNERR. We found an association between the concentration of pesticides along two drainage water channels and irrigation events. Acknowledge: NOAA, JBNERR.

P-62 **La Deteminación de Metales Pesados en Varios Tejidos de Mojarras (Gerres cinereus) capturadas en el sistema estuarino de la Bahía de San Juan.** Luis Raúl Maldonado Moll, BS, Escuela Graduada de Salud Pública, RCM, UPR

El sistema estuarino de la bahía de San Juan en la isla de Puerto Rico está siendo estudiado con el propósito de restaurarlo a su estado natural. Como parte del proyecto, se realizaron análisis para metales pesados en tejidos de la especie de pez comestible más común en un área del estuario. La determinación por espectrometría de absorción atómica de arsénico, cadmio, cinc, cobre, mercurio, plomo y selenio en músculo, piel, agallas, hígado, hueso y tejido adiposo de mojarras fue llevado a cabo en los laboratorios del Departamento de Toxicología, RCM, UPR. Se utilizo la digestión por horno de microondas para la preparación de las muestras excepto para el músculo utilizado para la determinación de Hg. En este último caso se llevó a cabo la preparación hirviendo las muestras en un baño de agua, utilizando una solución de permanganato como oxidante. Hg afecta los terminales nerviosos, siendo el músculo el único tejido utilizado para el análisis de este elemento. Los resultados obtenidos para músculo fueron en promedio 667 ug kg de As, 9 ug kg de Cd, 0.8 mg kg de Cu, 69 ug kg de Pb, 36101 ng kg Hg, 1948 ug kg de Se y 19 mg kg de Zn. Para hígado se obtuvieron 972 ug kg de As, 41 ug kg de Cd, 6 mg kg de Cu, 296 ug kg de Pb, 5157 ug kg de Se y 131 mg kg de Zn. En hueso los niveles alcanzaron 10 ug kg de Cd, 0.5 mg kg de Cu, 1.1ug kg de Pb, 8421 ug kg de Se y 179 mg kg de Zn. Los valores de As no fueron estadísticamente aceptables. En piel, promedios de 676 ug kg de As, 1.3 ug kg de Cu, 344 ug kg de Pb, 876 ug kg de Se y 71 mg kg de Zn fueron establecidos, con los resultados de Cd estadísticamente inaceptables. Las agallas arrojaron unas concentraciones de 17 ug kg, 2.6 mg kg de Cu, 1628 ug kg de Pb, y 100 mg kg de Zn. Las cifras para As ni Se fueron estadísticamente aceptables. El tejido adiposo, extraído por la preparación Soxhlet de músculo, tuvo promedio de 215 ug kg de As y 668 ug kg de Se. Las concentraciones de los otros metales no fueron estadísticamente aceptables. Se puede concluir que las concentraciones de estos elementos en el área estudiada están por debajo de los niveles establecidos por ley para consumo humano.

P-63 **El Uso de un Módulo Instruccional como Estrategia para la Enseñanza de Conceptos Básicos de Nutrición.** Centeno Suazo, Juanita; Rodríguez, M. y Soto Jessica.

Hoy en día la nutrición ha tomado un auge en nuestra sociedad por lo que la población está más receptiva a educarse con respecto a ésta. Los profesionales de la salud y los educadores tienen un rol importante en cuanto a la educación en nutrición, ya que están expuestos a esta directo o indirectamente. No todos estos profesionales reciben o toman cursos de nutrición. En algunos casos es difícil tomar cursos por lo que es necesario buscar nuevas estrategias para la enseñanza de conceptos básicos de nutrición. El módulo instruccional es una estrategia que puede utilizarse para cumplir con el objetivo de que profesionales y estudiantes puedan adquirir conocimientos sobre este tema. Es importante para los estudiantes, profesionales de la salud y otros profesionales, tener una noción basica sobre nutrición para así poder prestar un mejor servicio a los pacientes / clientes que atiendan y para su bienestar personal. Es por esto que se preparo un modulo para proveer aquellos conceptos básicos que se necesitan para entender la necesidad de una buena nutrición y su relación con la salud. Además se preparó una hoja con 11 criterios para evaluar si éste módulo podía utilizarse como estrategia para la enseñanza de nutrición. De los 48 participantes, contestaron el módulo y la hoja de evaluación 42, esto es 87.5%. Para evaluar los criterios se utilizó una escala en rangos del 0 al 5. La escala era la siguiente: Muy bueno 4.5 5.0; Bueno 3.5 –4.49; Satisfactorio 2.5-3.49; Pobre 1.5-2.49; Necesita mejorar 1.49- 0.0. Los 11 criterios incluídos fueron poder de atracción, veracidad, organización, cantidad de contenido, tono, características físicas, vocabulario, facilidad para leerlo, ilustraciones, reglas de ortografía y objetivos. Al analizar los resultados se encontró que el módulo obtuvo una aceptación buena, los grupos la calificaron entre bueno y muy bueno comprobando que puede ser utilizado para la enseñanza de nutrición. Los maestros y estudiantes de educación en salud evaluaron el módulo en términos generales muy bueno (4.7 y 4.5 en promedio) respectivamente y los estudiantes de enfermería como bueno (4.4 en promedio). Los criterios de reglas de ortografía, objetivos, facilidad para leerlo y vocabulario obtuvieron rangos de 4.7 a 4.9, considerado muy buena. El criterio de características físicas (tono, acomodo y armonía) fue el que obtuvo la puntuación más baja de 3.9; calificado como satisfactorio. En general el módulo fue evaluado como muy bueno y que se puede utilizar como estrategia de enseñanza de nutrición. El módulo va a ser utilizado como una actividad educativa del Programa de Educación Continuada y Adiestramiento del CPRS.

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P-64 **Environmental Biomarkers in San Jose Lagoon.** W. F. Ortiz[1], C.J. Rodríguez[1] and B.D. Jiménez[2], [1]Environmental Health Department – School of Public Health, [2]Department of Biochemistry - School of Medicine, Center for Environmental and Toxicological Research, Medical Sciences Campus, University of Puerto Rico.

A biomarkers profile for the stripped mojarra (*Diapterus plumieri*) in San Jose Lagoon at the San Jaun Bay Estuary System has been obtained to determine the effectiveness of the clean up operation proposed for this area and to evaluate this specie as a biomonitoring tool. A suite of biochemical responses including Cytochrome P-450, cytochrome b_5, NADH cytochrome b_5 reductase, NADPH cytochrome P-450 reductase, cytosolic and microsomal Glutathione-S-Transferase (GST) together with Liver Somatic Index (LSI) were examined in fish collected throughout the San Jose Lagoon. A reference site in the south coast (La Parguera, Puerto Rico) was selected for biomarker comparisons. The induction of cytochrome P-450IA1 was determined by immunoblot assay and other enzymatic activities by spectrophotometric assays. Of all parameters measured, cytosolic GST and Liver Somatic Index were found to be indicators of pollution. Immunoblot analysis reflected cytochrome P-450IA1 induction in most of the fish from the san José Lagoon. Microsomal GST, cytochromes P-450 and b_5 content, NADPH and NADH reductase activities were also sensitive in the order stated, but not at the same level as cytosolic GST and LSI. The liver somatic index was found to be considerably lower (1/2) at the reference site than any of the experimental stations from San Jose Lagoon, this was found statistically significant for all stations. These findings indicate that the mojarra fish is a potential indicator of pollution in the San Jose Lagoon. This data has been gathered as a baseline study for comparison after remedial action of this system has been performed and also provides data for comparison of enzyme activities between temperate and tropical species.

P-65 **La movilidad de los ancianos; necesidad de una política pública de transportación para una sociedad que envejece.** AI Moscoso[1,2], R López [2], M Santiago [2], U Santiago[2]. [1]Centro Mujer & Salud y [2] Programa de Gerontología, Escuela Graduada de Salud Pública, R.C.M, Universidad de Puerto Rico.

El crecimiento urbano y rural en Puerto Rico no ha ido a la par con el desarrollo de servicios de transportación colectiva que atiendan efectivamente las necesidades de la población a lo largo de todas las etapas de la vida. El aumento en el número y proporción de adultos de edad mayor constituirá en el futuro un sector importante de la población total que demandará sistemas de transportación que respondan a sus necesidades. La falta de movilidad en la vejez promueve el aislamiento, afecta la participación plena en la sociedad y la utilización de los servicios de salud, disminuye el nivel de autonomía y produce cambios en los estilos de vida del adulto de edad mayor. En Puerto no existe una política pública de transportación que incorpore las necesidades de los viejos. Urge tomar los pasos necesarios para desarrollar y implementar una política pública que atienda las necesidades de transportación de todos los sectores poblacionales especialmente de los viejos para el 2020 cuando se estima que los adultos de 65 años o más representarán el 18 porciento de nuestra población. Este trabajo consiste de 1) la descripción de los elementos biosicosociales que afectan la independencia y movilidad de los viejos y aumentan la demanda por mejores sistemas de transportación, 2) la situación relativa a los sistemas de transportación individual y colectivos existentes que se estan desarrollando sin tomar en cuenta las necesidades de los viejos, 3) recomendaciones para el desarrollo de una política pública que atienda las necesidades identificadas.

P-66 **Conocimientos, Creencias y Prácticas de de Detección de Cáncer de Mama en Mujeres Residentes en Vieques.** Acevedo, E.*, Vélez M.*;Vázquez, L., Cibeis, B., Albarrán, Y., Nevárez, Y.; Oquendo, Y.

El cáncer de mama se ha identificado como el de mayor incidencia en la mujer con síndrome de postmenopausia (Sociedad Americana del Cáncer, 1992). De ser detectado a tiempo, se podrían reducir las muertes debido a este enfermedad. Este estudio se propuso identificar los conocimientos, las creencias y las prácticas de detección de cáncer de mama en mujeres de 40 años o más residentes en la Isla de Vieques, Puerto Rico. Para recopilar los datos se utilizó un diseño descriptivo en el cual se administró un cuestionario a muestra integrada por 47 mujeres residentes de los barrios Luján y Destino de Vieques durante los dìas 13 y 14 de abril de 1999. El cuestionario se construyó con el asesoramiento de investigadoras de la Escuela Graduada de Salud Pùblica y del Colegio de Profesiones Relacionadas con la Salud del Recinto de Ciencias Médicas. En su diseño se utilizó como referencia dos instrumentos previamente validados para los mismos propósitos de esta investigación. Más de tres cuartas partes de las encuestadas reconoció como necesario que las mujeres de 50 años se realicen una mamografía cada año. Una proporción similar consideró el cáncer de mama como hereditario y que la mamografía es la prueba más adecuada

para detectarlo. Para el 74% golpear, magullar o lastimar el seno puede causar cáncer, mientras que un 62% señaló que el cáncer del seno siempre ocasiona la muerte. Las prácticas de detección temprana mayormente utilizada por las encuestadas fueron el autoexamen y la mamografía. Se concluyó que una proporción considerable de las mujeres participantes necesitan adquirir mayor conocimiento sobre el cáncer de mama. El bajo nivel de ingreso, la escasa cobertura de los planes médicos, el bajo nivel académico y los problemas de transportación de las encuestadas fueron algunas de las barreras influyentes en la detección temprana de esta enfermedad.

P-67 **Diagnóstico de necesidades de salud de la población de adultos viejos de la comunidad de Puerto Nuevo Norte.** Barbra M. Ramírez Cordero, Caroline Figueroa Negrón, María del C. Pérez Vigo, Denise Anadón Vázquez, Marlén Oliver Vázquez, Programa de Gerontología, Departamento de Desarrollo Humano, Escuela Graduada de Salud Pública, Recinto de Ciencias Médicas, Universidad de Puerto Rico

Objetivo: Identificar las necesidades de salud de la población de 65 años o más, no institucionalizada, de la comunidad de Puerto Nuevo Norte. **Metodología:** Se utilizó la técnica de "snowball" para identificar a todos los residentes de 65 años o más del sector mencionado. Se entrevistó a un total de 85 personas de edad avanzada, utilizando un cuestionario para recopilar información sobre: características sociodemográficas, condiciones de salud, medidas preventivas, actividades del diario vivir (ADL, IADL), aspectos sociales, aspectos psicológicos, conocimiento y utilización de programas y servicios de salud para personas de edad avanzada. Los datos fueron procesados en Epi Info 6 y analizados mediante estadísticas descriptivas como distribución de frecuencias, porcientos, promedios y prueba de independencia entre variables "Ji cuadrada". **Resultados:** Los entrevistados demostraron un promedio de escolaridad e ingresos mayor comparados con la población vieja en P.R. Los mayores de 75 años reflejaron una mayor dificultad en las ADLs e IADLs lo que es indicativo de una mayor necesidad de servicios de salud. Las mujeres presentaron mayor desventaja al compararlas con los hombres. Exhibieron un bajo nivel de educativo, mayor por ciento de viudas, mayor porciento vivían solas y mayor dificultad para realizar las ADLs e IADLs. En cuanto al apoyo social, mas del 90% expresó que contaba con apoyo en caso de necesitarlo. La mayoría expresó sentirse satisfecho con sus vida familiar y social. Expresaron conocer los servicios disponibles para la población de edad avanzada, pero hacían muy poca utilización de ellos.

Conclusiones: Es necesario brindar orientación con relación a los servicios disponibles y atención integrada al grupo de las personas mayores, especialmente, a los de 75 años o más, para mejorar su nivel de función y calidad de vida.

P-68 **La Población de Edad Avanzada y la Falta de Servicios en Puerto Rico.** R. López León, MSG. Programa de Gerontología, Escuela Graduada de Salud Pública, Recinto de Ciencias Médicas, Universidad de Puerto Rico

El crecimiento acelerado de la población de edad avanzada en Puerto Rico no ha ido a la par con el desarrollo de servicios que pretenden atender efectivamente las necesidades de esta población. El aumento en el número y proporción de las personas de edad avanzada constituirá en un futuro una gran demanda de servicios por parte de esta población. La disponibilidad de servicios junto a las características de esta población deberán ser una de las prioridades de la política pública de nuestro país. Los objetivos primordiales del estudio fueron en primer lugar investigar y corroborar la cantidad de servicios y programas disponibles por pueblo, la disponibilidad de servicios según las necesidades de esta población por pueblo y la creación de recomendaciones para el desarrollo de servicios nuevos, necesarios según las características de la población por cada pueblo. El estudio de los servicios destinados a la población de edad avanzada por cada pueblo fue realizado mediante la investigación y corroboración de visitas, comunicación telefónica y clasificación de los mismos bajo los títulos de (centros, instituciones, vivienda, empleo, salud y bienestar social (Departamentos gubernamentales, programas y servicios, seguridad, servicios legales, recreación, arte, cultura y viajes)). El estudio pudo comprobar la falta de los servicios disponibles para la población de edad avanzada en Puerto Rico, la justificación para el desarrollo de recomendaciones que ayuden a la creación de servicios según las características de esta población por pueblos y la creación del primer directorio de servicios por categorías y pueblos.

P-69 **Estudio Longitudinal de los Estilos de Aprendizaje de los Estudiantes de Enfermería de la Universidad de Puerto Rico Recinto Universitario de Mayagüez.** Margaret Toro, RN, MSN & Rose M. Méndez, RN, MSN

El propósito de este estudio descriptivo es determinar los estilos de aprendizaje entre los estudiantes de enfermería de la Universidad de Puerto Rico -Recinto de Mayagüez por un período de 3 años académicos. El marco conceptual se fundamentó en el Modelo de los Estilos de

Aprendizaje de Dr. Richard Felder y Linda Silverman. El instrumento utilizado fue el Índice de Estilos de Aprendizaje diseñado por el Dr. R. Felder y la Dra. Barbara Soloman. Este modelo consiste de cuatro dimensiones dicótomas, éstas son: percepción (sensorial/intuitivo), entrada (visual/verbal), procesamiento (activo/reflexivo) y comprensión (secuencial, global). En la muestra estratificada participaron 118 estudiantes de primer a cuarto año. En la dimensión de percepción todos los grupos tuvieron una preferencia moderada hacia la categoría sensorial. Los demás grupos resultaron con una preferencia balanceada en las dimensiones de: modalidad de entrada, procesamiento y comprensión; con excepción del grupo de cuarto año, que en la dimensión de entrada resultó con una preferencia moderada hacia lo visual. El estudio sugiere implicaciones en la educación en enfermería. Subvencionado por el Centro de Enrequecimiento Profesional del Recinto de Mayagüez -Universidad de Puerto Rico.

P-70 **Use of Music Therapy to Control Pain Level in Diverse Populations.** Dr. Evelyn Crouch Ph.D.; Sandra Rodríguez BSN, SRNA; Iris Rodríguez BSN, SRNA; Laura Alvarado BSN, SRNA; Magda Rosario BSN, SRNA Y Myrna Hernández BSN, SRNA.

The purpose of this cuasi-experimental design is to examine the effects of music therapy on pain tolerance level of diverse populations. The study is based on the Betty Newman theory. The samples consisted of 30 subjects from each population: conscious patients with ventilators, cancer patients with radiotherapy treatments, abdominal post-op patients, primigravidas in the first stage of labor and pediatric patients during IV therapy for a total of 150 sujects. After obtaining IRB and agencies approvals subjects are assigned randomly to the control or experimental group, where the experimental group is given the treatment which consists of music of their preference. The visual analog scale is used to determine the level of pain before the treatment and after the treatment. The inferential statistics t test will be used to analyze whether there is a significant difference between groups before and after the music therapy in their pain level.

P-71 **Uso del Mapa Conceptual en el Aprendizaje Basado en Problemas-Hacia una Mayor Integración de Conceptos.** Valerie Wojna,MD[1]; Philip Specht, PhD[1], Dora Mendoza, RN, MSN[1]; Ana Isabel Moscoso, MLS, MPH[2]. Universidad de Puerto Rico, Recinto de Ciencias Médicas, [1]Escuela de Medicina, [2]Centro Mujer y Salud.

El aprendizaje basado en problemas (ABP) estimula al aprendizaje activo mediante la discusión de tópicos nuevos y la integración de conocimientos utilizando un estímulo o problema discutido en grupos pequeños. En ocasiones queda la duda de sí estos conocimientos están siendo codificados y correlacionados en la memoria para uso futuro. La introducción del Mapa Conceptual en la discusión de temas en el ABP ofrece varias ventajas. Es una forma visual de representar los temas discutidos, entrelaza, ordena e integra conocimientos haciendo relaciones entre ellos, ofrece una forma de codificación cerebral diferente y permite la auto-evaluación de conceptos erróneos. Este trabajo presenta la evaluación de las experiencias obtenidas en un proyecto piloto en que se introdujo el uso del Mapa Conceptual en el análisis de un caso como parte del curso de ABP de estudiantes de segundo año de Medicina.

Pediatric

P-72 **Characterization of the Hermansky-Pudlak Syndrome in the Puerto Rican Population.** A.E. Maldonado[1], P.J. Santiago-Borrero[2], A. González[3], R.A. Spritz[4], and C.L. Cadilla[1] Depts. of [1]Biochemistry, [2]Pediatrics and [3]Pathology; UPR School of Medicine, San Juan PR and [4]Human Medical Genetics Program, University of Colorado

Hermansky-Pudlak Syndrome (HPS) is an autosomal recessive disorder consisting of oculo cutaneous albinism (OCA), an accumulation of ceroid-like products in different tissues and a bleeding tendency due to storage pool-deficient platelets. HPS is frequently found in the Puerto Rican population and a village in the Swiss Alps. Using these two populations the first gene associated with HPS (HPS1) was found by linkage dissequilibrium mapping and positional cloning. A 16-bp duplica-tion frameshift mutation in the HPS1 gene's exon 15 was found in the Puerto Rican patients, which serves as a molecular diagnostic tool as well as analysis of platelets' d granules by Electron Microscope. A second HPS gene (HPS2) was identified which codes for the b3A-adaptin subunit of the AP-3 Adaptor Protein Complex. We have screened a total of 65 Puerto Rican patients for the 16-bp duplication and identified 47 positive homozygotes, 9 heterozygotes and 32 individuals who lacked the duplication. Electron Microscope analysis of some of the duplication-negative patients revealed a wide spectrum of dense bodies abundancies ranging between 0 to 8 dense bodies. Based on the molecular and clinical data, we selected 11 duplication-negative patients whose bleeding times ranges from 7'30" to 15' to perform Exon Screening by SSCP/HDX analysis, DNA Sequencing and Genotyping. The SSCP/HDX analysis showed no pathologic mutations, only naturally occuring polymorphisms for the HPS1 gene. The genotyping data obtained from a polymorphic marker close to the HPS1 gene (D10S184), exclude the possibility of having another non exonic mutation in the same locus. Similar results were obtained for the *ruby-eye* (*ru*) and *reduced pigment* (*rp*) homologous regions in the human genome equivalent to mouse HPS models. Initial genotyping efforts focused in candidate gene regions is currently being performed to these patients in an effort to

establish linkage to a chromosomal region harboring a new HPS gene. We acknowledge support from NIH RCMI-G-12-RR-0305, NIH-RO1-AR-39892, and UPR School of Medicine.

P-73 **Jarcho-Levin Syndrome: Determination of Outcome Using Ventilatory Predictors.** Luis M. Rodríguez MD, Inés García MD, Carmen B. Concepción MD, Marta Valcárcel MD-Neonatology Section, Department of Pediatrics, University of Puerto Rico School of Medicine

Jarcho-Levin Syndrome or spondylothoracic dysplasia is an autosomal recessive inherited disorder reported predominantly in Puerto Rico. Vertebral anomalies and short trunk dwarfisim (crab-like rib cage) with subsequent restrictive pulmonary disease characterize this condition. Death during the first year of life occurs if there is severe pulmonary compromise. Ventilatory indicators of pulmonary hypoplasia have been used to determine the severity of conditions like congenital diaphragmatic hernia, to predict outcome and consider alternative ventilation strategies. In this study we want to demonstrate if those same ventilatory indicators can be used to assess prognosis in patients diagnosed with Jarcho-Levin Syndrome. **Methods:** We reviewed medical records of six patients with the diagnosis of Jarcho-Levin Syndrome admitted to the neonatal intensive care unit at the University Pediatric Hospital in the last four years. We calculated the oxygen index, ventilatory index, A-a DO_2 and CO_2 from the first arterial blood gases and ventilator parameters upon arrival to the unit. All patients had radiographic and physical exam findings compatible with Jarcho-Levin Syndrome. **Results:** Of the six patients one never required mechanical ventilation, one had ventilator for 72 hours. Both were discharged on supplemental oxygen. Two died; one of them in less than 48hrs. Two patients are currently admitted and have required mechanical ventilation for more than 20 days. The two survivors had significantly lower oxygenation index and required lower ventilator parameters. **Conclusion:** High oxygenation index and high ventilatory parameters may be useful indicators of prognosis in Jarcho-Levin Syndrome patients.

P-74 **Polyhydramnios, Thin Ribs and Hypotonia: Hallmarks of a Neuromuscular Disorder in the Newborn.** Sanchez V.1 , M.D., Pratts I. 2 , M.D., Valcarcel M. 1, M.D., Belen B.1, M.D. Department of Pediatrics, Neonatology Section 1, Department of Physical Medicine 2, Medical Sciences Campus, University of Puerto Rico.

The main cause of central hypotonia in the newborn is a result of perinatal insult to the central nervous system. Other entities to be considered are infectious, endocrine, autoimmune, metabolic and the less frequent neuromuscular disorders. Centronuclear Myotubular Myopathy (CMM) is a rare hereditary disorder with unknown incidence, characterized by generalized hypotonia and muscle and facial weakness. Diagnosis is confirmed by the presence of central nuclei on muscle biopsy which is a result of the persistence of cytoskeletal proteins (Vimentin and Desmin) in the developing fetal myotube and subsequent maturation arrest at 8-15 weeks of gestation. Through this presentation the clinician is alerted to consider polyhydramnios, thin ribs and hypotonia, as valuable clinical signs suggestive of neonatal neuromuscular disease. Methods: Medical records of two patients admitted to our institution with diagnosis of CMM in a five year period were reviewed. Physical findings, Chest X-rays reports, clinical course, and biopsy results were included. Both patients were male and extensive work-up resulted negative for central nervous system , infectious, metabolic, and endocrine disturbances. In one of the cases there was a history of a previous "hypotonic" male sibbling who died at 4 months of age. The "myopathic fascies" , and the association of respiratory distress, polyhydramnios, thin ribs and hypotonia, were clues to the diagnosis through muscle biopsy. Conclusion: CMM, although rare should always be suspected in any newborn presenting this sequence, once common etiologies for hypotonia have been discarded.

P-75 **Barriers to the Proper Follow-up of NICU Graduates.** L. García MD[2], I García MD[2], J González[1], L Martínez, M Rivera[1], M Valcarcel MD[2]. UPR School of Medicine[1], Department of Pediatrics, Neonatology Section[2], San Juan, Puerto Rico.

Background: Newborns discharged from the Neonatal Intensive Care Units (NICU) are at risk of neurodevelopmental problems, such as language, learning, and school difficulties. The developing high risk infant is best served by close medical supervision, particularly during the early years. An optimal care plan includes active partnership with the parents. **Methods:** With the purpose of assessing possible barriers to the continuous medical care of NICU graduates discharged from the University Pediatric Hospital, families participating in an education program were visited at home. **Results:** A total of 112 families were visited. Sixty-eight percent of the infants were already at home. Barriers found to an effective relationship between the hospitalized infant and their parents were transportation (32°o), and distance from the hospital (32°o). A barrier found to the effective follow-up of these infants once discharged from the hospital was the lack of awareness in the parents of the high risk for

neurodevelopmental problems their babies had. Fifty-two percent of the care givers referred to know about developmental deficiencies. Only 1% of the parents considered the possibility of their baby having a developmental problem. These were true for parents of hospitalized as well as discharged infants. All the patients were referred for home visiting by nursing personnel. **Conclusions:** Newborn infants discharged from NICU's, especially if pre terms, are at high risk for developmental problems. Parents need to be aware of this fact in order for proper follow-up to be given and preventive as well as intervention measures to be instituted. Each institution needs to define their population in order for economical, physical, and/or knowledge barriers to be minimized. **Keywords:** Discharge planning, Neurodevelopmental, Neonatal intensive care unit, Newborns, Pre term

P-76 **Diabetic Ketoacidosis: Still a Challenge to the Intensivist**. Gotay F, Nieves-Rivera F,López A, Fernández-Seín A, González-Pijem L. Department of Pediatrics, UPR

A 14-y/o male presented in diabetic ketoacidosis (DKA), severe dehydration and marked metabolic derangement to our hospital (UPH). Aggressive measures had to be undertaken to overcome and revert disturbances. A 14-y/o obese male was referred to UPH because of 2-wk history of polyuria, polydipsia. He was seen at a local ER with a glucose of 795 mg%, acidosis (CO_2 5 torr), and cetonuria. He received 2 liters (L) of normal saline solution (NSS) plus 10 units of regular insulin (INS) intravenously (IV) and transferred to UPH. On arrival an obese male was noted: Ht. 185 cm (>95th), Wt. 107 Kg (>95th), BMI 31 Kg/m^2, HR 129/min, RR 44/min, BP 191/80 mmHg, Temp. 36.6^{0}C . He looked acutely ill and somnolent (Glasgow 10), sunken eyes and dry oral mucosa. Skin was pale and cold with prolonged capillary filling. Initial laboratories demonstrated hyperglycemia (525 mg%), metabolic acidosis (pH 7.11, PCO_2 11 torr, PO_2 88 torr, HCO^-_3 3.3 mEq/L, BE -24), mild corrected hypernatremia (140, corrected 146 mEq/L) and a hyperosmolar state (314 mOsm/Kg). At UPH he received another 2 L of NSS and 2NSS each one given in one hour because of impending shock. He was placed on an IV drip of INS (75 units/hr) after a bolus of 50 units, and 80 mEq of HCO^-_3 in one hour. He was admitted to the ICU due to lack of improvement in his hemodynamic status and altered mental status. A low (-6cm H2O) central venous pressure (CVP) confirmed severe dehydration. Therefore, aggressive hydration was continued. By the 3rd day serum OSM went down (289) and the pH normalized (pH 7.35) along with neurological improvement. By the 4th day was started on feedings and SC INS. On the 6th day he was transferred to ward. In summary, a 14-y/o male in profound DKA and severe dehydration is presented. Further aggressive measures had to be undertaken to revert the metabolic derangement before recovery could be attained. We conclude that high index of suspicion and earlier diagnosis of diabetes mellitus should lessen the complications that may follow the metabolic derangement DKA may produce.

P-77 **Universal Neonatal Hearing Screening Project: Final Report to the Puerto Rican Department of Health.** R.E. Quiñónez Ph.D., G.A. Owen Sc.D., A. Rodríguez Quiñónez M.A., Audiology Program - College of Health-Related Professions, Medical Sciences Campus, University of Puerto Rico.

Approximately 3 million American children have a hearing loss; 1.3 million of these are under the age of three. Incidence studies performed in the United States estimate that 1-3 newborns per 1000 well babies have a severe bilateral hearing loss. Undetected hearing loss can lead to delayed speech and language development, result in social and emotional disturbances, and impair academic performance. Proposed universal hearing screening involves the testing of all newborns (including those at risk) for hearing impairment prior to release from the hospital. The goal of universal hearing screening is to identify those newborns with a hearing loss as early as possible and implement early intervention (amplification/habilitation). Unfortunately, universal hearing screening is not a standard practice among the majority of hospitals in the United States or Puerto Rico. The purpose of the present study was to compare test results among three types of screening devices, Natus Algo 2 AABR, Otodynamics EchoCheck TEE, and Bio-logic AuDx DPE, evaluate which variables, internal and external, affect those results, and determine test duration. Thirty-two full-term newborns from the well-baby nursery of the University Hospital at the University of Puerto Rico, participated in the present study. The results indicate that the Natus Algo 2 AABR had the highest pass percentage for the right and left ears at 97% and 91%, respectively. The passing percentages for the TEE for the right and left ear were 31% and 53%, respectively and the DPE passing percentages for the right and left ears were 41% and 56%, respectively. Test duration for the AABR was much longer than for either of the otoacoustic emission screeners. Based on these preliminary findings the use of the Natus Algo AABR is recommended over the otoacoutics emission screeners used in this study.

P-78 **Final Height Standard Deviation Score For Height Improved Among A Cohort Of Hispanic Children Treated With Growth Hormone.** Loza-Ruiz S, Colón V, González-Pijem L, Nieves-Rivera F. *Department of Pediatrics, University of Puerto Rico.*

Growth hormone (GH) is essential to maintain normal linear growth and to eventually attain mature height. A cohort of Hispanic children treated with rGH at our institution who have attained their mature height is presented. A total of 25 Hispanic children (20 boys and 5 girls) were treated at the University Pediatric Hospital with rGH because of proven GH deficiency. Study subjects were tested with conventional GH stimulation tests (exercise, clonidine, l-dopa, insulin and inderal) with a GH response level <10Fg/L employed as a diagnostic criteria for GH deficiency. Skeletal maturation was assessed by the method of Greulich and Pyle. Predicted height was based on the Bayley-Pinneau tables. All of them had reached mature heights as determined by deceleration of growth rate or bone age $15 yrs for females and $ 17 yrs for males. Standard deviation scores (Z-score) for height at the beginning of therapy were compared against Z-scores for final height. Z-score for predicted height at the beginning of therapy *versus* Z-score for final height were also compared among the groups. Z-score for final height was significantly improved for both females and males when compared to their Z-score at initiation of therapy; -1.8"1.1 *versus* -3.8"1.2 for the females; -1.8"0.9 *versus* -3.1"0.7 for the males; $p<0.05$. However, comparison between the mature height *versus* the predicted height Z-scores did not show statistical significant differences;-1.8"1.1 *versus* -3.2"1.1 for the females; -1.8"0.9 *versus* -1.5"1.5 for the males. We found an improved mature height among this Hispanic cohort of children with GH deficiency treated with rGH when compared to their height at the time therapy was started. These differences were sustained regardless of the subjects' sex. No significant differences were noted when compared to predicted heights. Mature height attained among our cohort of Hispanic children with GH deficiency improved with rGH therapy attaining a mature height closer to the mean as determined by the improved Z-score.

P-79 **Characterization of the Hermansky-Pudlak Syndrome in the Puerto Rican Population.** A.E. Maldonado[1], P.J. Santiago-Borrero[2], A. González[3], R.A. Spritz[4], and C.L. Cadilla[1] Depts. of [1]Biochemistry, [2]Pediatrics and [3]Pathology; UPR School of Medicine, San Juan PR and [4]Human Medical Genetics Program, University of Colorado

Hermansky-Pudlak Syndrome (HPS) is an autosomal recessive disorder consisting of oculo cutaneous albinism (OCA), an accumulation of ceroid-like products in different tissues and a bleeding tendency due to storage pool-deficient platelets. HPS is frequently found in the Puerto Rican population and a village in the Swiss Alps. Using these two populations the first gene associated with HPS (HPS1) was found by linkage dissequilibrium mapping and positional cloning. A 16-bp duplica-tion frameshift mutation in the HPS1 gene's exon 15 was found in the Puerto Rican patients, which serves as a molecular diagnostic tool as well as analysis of platelets' d granules by Electron Microscope. A second HPS gene (HPS2) was identified which codes for the b3A-adaptin subunit of the AP-3 Adaptor Protein Complex. We have screened a total of 65 Puerto Rican patients for the 16-bp duplication and identified 47 positive homozygotes, 9 heterozygotes and 32 individuals who lacked the duplication. Electron Microscope analysis of some of the duplication-negative patients revealed a wide spectrum of dense bodies abundancies ranging between 0 to 8 dense bodies. Based on the molecular and clinical data, we selected 11 duplication-negative patients whose bleeding times ranges from 7'30" to 15' to perform Exon Screening by SSCP/HDX analysis, DNA Sequencing and Genotyping. The SSCP/HDX analysis showed no pathologic mutations, only naturally occuring polymorphisms for the HPS1 gene. The genotyping data obtained from a polymorphic marker close to the HPS1 gene (D10S184), exclude the possibility of having another non exonic mutation in the same locus. Similar results were obtained for the *ruby-eye* (*ru*) and *reduced pigment* (*rp*) homologous regions in the human genome equivalent to mouse HPS models. Initial genotyping efforts focused in candidate gene regions is currently being performed to these patients in an effort to establish linkage to a chromosomal region harboring a new HPS gene. We acknowledge support from NIH RCMI-G-12-RR-0305, NIH-RO1-AR-39892, and UPR School of Medicine.