

Primer Congreso de Investigación Científica en la Universidad Interamericana Recinto de Bayamón

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El pasado 4 de septiembre de 2002 se llevó a cabo en nuestro Recinto el Primer Congreso de Investigación Científica auspiciado por la Alianza para la Participación de Minorías (AMP), capítulo de Bayamón. La misma contó con la participación de dos conferenciantes invitados. El Dr. Gary Gervais, asesor de la Oficina de Ciencia y Tecnología de Fomento Económico, nos habló sobre “Desarrollo basado en conglomerados industriales de alta tecnología”, y el Dr. Carlos Tolinche, director científico de INDUNIV, disertó sobre las iniciativas actuales del llamado “Consortio industrial universitario”.

Culminadas las conferencias, los estudiantes participantes del programa de investigación sub-graduado de AMP tuvieron la oportunidad de presentar sus proyectos a miembros de la facultad, estudiantes y público en general que se dieron cita en el Salón de Usos Múltiples. Esta actividad es la primera de su categoría que se celebra en el Recinto de Bayamón y representó una gran oportunidad y estímulo para los estudiantes investigadores a continuar con el trabajo de

excelencia que nos caracteriza. A continuación se incluyen los compendios de los proyectos presentados por los estudiantes en el Congreso.

Agradecemos el auspicio y apoyo del Programa AMP y el personal que labora en esa entidad. De igual forma, extendemos una invitación y exhortación a todos los miembros de la facultad y estudiantes en general a que acepten el reto de participar en el programa de investigación de AMP y sientan el orgullo y la satisfacción de pertenecer a este selecto grupo de ganadores.

IDENTIFICATION AND EXPRESSION ANALYSIS OF ABC TRANSPORTERS IN PLASMODIUM YOELII. Torruella-Thillet C[§], Ferrer-Rodríguez I[§], Szeto AC*, Pérez-Rosado J*, Vega J* and Serrano AE*[§]. Department of Natural Sciences and Mathematics, Inter American University, Bayamón Campus and *Department of Microbiology and Medical Zoology, University of Puerto Rico School of Medicine, San Juan, P. R.

Malaria is one of the world's most important parasitic diseases in history. The rapid emergence of multidrug resistant *Plasmodium* is a major health problem worldwide. Several ATP-binding cassette (ABC) transporters have been associated with the drug resistance phenotype in a variety of cells ranging from bacteria to multicellular organisms. The ABC transporters are one of the largest evolutionary conserved families. We are interested in identifying ABC transporters present in *Plasmodium* sequences. We queried the *P. yoelii* genome database at the PlasmoDB Internet site with the ABC signature motif and identified fourteen contigs containing the ABC transporter motif. These ABC transporter sequences were classified into five ABC subfamilies by multi-alignment of the conserved ABC domains. To ascertain if these ABC genes are expressed in the intraerythrocytic stages of the parasite, RT-PCR was performed on total RNA isolated from *P. yoelii* 17XNL infected mouse blood. Products of the expected size were observed for nine out of the ten contigs analyzed.

IDENTIFICATION OF THE SECRETORY – EXCRETORY COMPONENTS OF ASCARIS SUUM. Jacqueline Flores Otero, Juan M. Barbosa. Department of Natural Sciences and Mathematics, Inter American University of Puerto Rico, Bayamón Campus.

A*scaris suum* is a parasitic nematode whose adult stage lives in the pig intestine. The purpose of this research relies on the identification of the secretory–excretory (S/E) components of *A. suum*. The adults were obtained from pig's intestine that were sacrificed in the slaughterhouse “La Muda”, in Caguas, P. R. Once in the laboratory, the adults were rinsed several times with 0.85% saline solution and then their uterus were

dissected with the purpose of obtaining their fertilized eggs. These were dispersed in a solution of formaline to avoid contamination and growth of other microorganisms. In a period of two weeks, we observed the different stages of the eggs development. Subsequent to the larvae's development, these were rinsed with sterile 0.85% saline solution and were homogenized to obtain its soluble products by extracting at 4°C overnight. The larvae were cultured for two weeks in sterile saline to obtain the S/E products.

OBSERVATIONS OF RADIO WAVE INTERACTIONS WITH ELECTRONS IN THE IONOSPHERE. César Otero de Santiago[§], Brett Isham*. [§]Engineering Department and *Department of Natural Sciences and Mathematics, Inter American University, Bayamón Campus.

Interferometric measurements were made of radio waves interacting with electrons in the ionosphere using the European Incoherent Scatter (EISCAT) high power, high frequency (HF) transmitter and a two-antenna receiving station. The signal was received separately on the two antennas, digitally sampled, and then processed. The HF wave reflected from the ionosphere at about 300 km in altitude. We are searching for stimulated electromagnetic emission (SEE) in order to measure variations in the SEE spectrum versus incidence angle.

IDENTIFICATION OF CROSS-REACTING ANTIGENS BETWEEN PLASMODIUM FALCIPARUM AND ASCARIS SUUM. Yma I. Escalona Meléndez, Juan M. Barbosa. Department of Natural Sciences and Mathematics, Inter American University of Puerto Rico, Bayamón Campus.

Plasmodium falciparum, a parasitic protozoan of the blood, is the cause of malaria, with a high number of cases and mortality. In the endemic areas where malaria can be found, it can co-exist with other parasitic infections endemic in the same region, as in the case with the intestinal nematode of man *Ascaris lumbricoides*. Since it is well known that *A. lumbricoides* share many antigenic components with other species of parasitic organisms, and is quite difficult to obtain samples from persons infected with this parasite, instead we are using the intestinal nematode of pigs *A. suum*. The life cycle of both *A. lumbricoides* and *A. suum* are quite similar, eggs are ingested, the larvae migrate to the lungs, after two weeks are re-ingested and the adults live in the small intestine. Both share common antigenic components and *A. suum* is easily obtained from slaughterhouses. The purpose of this study is the identification of homologous antigenic components between *P. falciparum* and *A. suum*. SDS-PAGE, Western blot and silver stain techniques were used to attain this. The advantage of identifying the antigenic components shared between *P. falciparum* and *A. suum* can help to identify specific components, so a more sensitive diagnostic procedure could be applied in the future.

APLICACIÓN DE SERIES Y POLINOMIOS DE TAYLOR A LA CURVA NORMAL ESTÁNDAR. Zunilda L. McDougal[§], Javier Sierra Padilla*. Departamento de Ingeniería y *Departamento de Ciencias Naturales y Matemáticas, Universidad Interamericana de Puerto Rico, Recinto de Bayamón.

El propósito de esta investigación es encontrar un polinomio de Taylor cuyos valores sean muy semejantes a los de la

curva normal estándar. Para cumplir nuestro propósito utilizaremos la ayuda de la calculadora gráfica y de la computadora para lograr ir comparando los valores de cada polinomio a través de su tabla, gráfica y un programa que nos ayudará a calcular la diferencia que existe entre cada polinomio y la curva normal estándar. Luego de encontrar el mejor polinomio se irán cambiando los coeficientes para lograr encontrar un polinomio con unos coeficientes que sean fáciles de memorizar. Se usará la tabla de curva normal estándar y se irán comparando con los valores del polinomio encontrado con sus nuevos coeficientes.

COMPARACIÓN DE LOS COMPONENTES ANTIGÉNICOS DE FASCIOLA HEPÁTICA Y ASCARIS SUUM. Glorymar Ortiz, Chalyris Burgos, Juan M. Barbosa. Departamento de Ciencias Naturales y Matemáticas, Universidad Interamericana de Puerto Rico, Recinto Bayamón.

Fasciola hepática un tremátodo parasítico de hígado de la res y *Ascaris suum*, un nemátodo parasítico intestinal del cerdo, son infecciones parasíticas de cuidado en la industria ganadera. Ambos parásitos poseen ciclos de vida distintivos y son de importancia médica, ya que pueden parasitar al hombre. El objetivo de esta investigación es extraer los componentes solubles de los adultos de cada parásito, determinar que componentes son compartidos y cuáles son específicos, por medio de la técnica de SDS-PAGE e Inmunoblot. ■

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