The 23rd Annual Symposium On Career Opportunities in Biomedical Sciences and Health Professions

AMHPS

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Abstract Book

Welcome!

The Association of Minority Health Professions Schools, Inc. (AMHPS), is pleased to welcome our Students, Facilitators, Faculty and Exhibitors to the 23rd Annual Symposium on Career Opportunities in Biomedical Sciences and Health Professions Hosted by Howard University, College of Medicine College of Dentistry College of Pharmacy and College of Nursing & Allied Health Sciences

Thank You for joining US!

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Monitoring Premature Babies in Intensive Care Unit

Poster 02

Zaneta Alston, Hampton University HS Eboni Mentor, BS in Biology, Langley Air Force Base 1st Fighter Wing (Nurses, Medical Assistants, Technician, Neonatal Nurse Practitioner) Investigator

Background: Researchers are right now trying to create new electronic heart monitors that could potentially improve the treatment given to hundreds of babies' every year. One in ten babies need some form of help at birth to get them breathing on their own and to ensure that their heart is beating enough to pump oxygen around their bodies to their vital organs. Almost 10 percent of all newborn babies need these monitors at birth. The technology behind these could help to improve upon the design for the apnoea monitor. Any delay in using any type of monitor can put the infant at risk of developing permanent brain damage, or in the most serious causes, death. Although all neonatal monitors are important, most of them deal with the weight of the baby.

Methods: Hospitals today have an intensive care unit for premature babies and their health. By survey, most premature babies come in because of weight. Depending on how premature the infant is, the longer the baby will be placed under monitor. These surveys asked questions from how long do most babies stay under a monitor to what dramatic change will a monitor do. In addition, advances in incubators will most likely keep a premature baby in an intensive care unit for no longer than a month.

Results: As a result, more than half of the thirty surveyed nurses, medical assistants, neonatal nurse practitioner, and the technician agreed that most premature babies are kept under monitors for three weeks and leave the hospital under ten pounds. They felt the reasons most babies are kept under monitors are for weight .although non premature babies are most likely to be put under monitors when born, most still make some kind of dramatic change. Most monitors also deal with extra oxygen.

Conclusion: The survey results from the Langley Air Force Base 1st fighter Wing nurses, medical assistants, neonatal nurse practitioner, and technician state what they know from experience form a first hand basis of a neonatal unit and how they feel about it. The monitors in the intensive care unit for neonatal mainly deal with weight issues, while at the same time respiratory. Monitors are used for many different reasons but seem to start with weight.

Association between Waist Circumference and Microalbuminuria and hsCRP independently, in Adolescent Children

Poster 04

Teni Ayo-Ariyo, King Drew Magnet High School of Medicine and Science
Mentor: Dr.Gangadarshni Chandramohan, Department of Pediatrics,Harbor-UCLA Medical Center

Persistency of obesity across all ages and ethnicities leading to cardiovascular morbidity is a public health problem in many industrialized countries today. It has been established that there is an association between obesity and the increased incidence of the cardiovascular risk factors, including hypertension, dyslipidemia, and insulin resistance (type II diabetes) in both children and adolescents. Microalbuminuria (MA) is a predictor of cardiovascular (CV) disorders in adults. It is also known to be associated with various CV risk factors such as obesity and type II Diabetes in children. Furthermore, highly sensitive C reactive protein (hsCRP) is a bio-marker of inflammation that is high in children with CV risk factors. We hypothesize that in adolescent children, there is a direct and independent correlation between microalbuminuria and hsCRP to waist circumference which is a well recognized measure of obesity. Hence, we studied this association in children between the ages of 13 to 17 years, using the National Health and (continued)

Nutrition Survey database. We identified age, gender, ethnicity, weight, height, BMI, waist circumference, systolic blood pressure (BP), diastolic BP, fasting blood sugar level, fasting lipid levels, serum hsCRP and urine microalbumin concentration using the appropriate codes and analyzed them using SAS and SUDAN software programs to determine the above correlations. We anticipated that the waist circumference will have a direct correlation to serum hsCRP level and unrinary microalbumin excretion independently in adolescent children who have CV risk factors compared to those who do not. If so, this will help to recognize children who have increased risk of developing cardiovascular disorders early in life.

Cherish Dickey, Paul Laurence Dunbar High School **Poster 06**
Mentor: Priscilla Auguste, B.A., Johns Hopkins University, Baltimore, MD

Background: Sports drinks are drinks commonly used to increase endurance during physical activities. Many of these drinks contain ingredients such as sodium, electrolytes, or carbohydrates which help to replenish the body. Accelerade, a new sports drink, also contains whey protein. There is inconsistent research on whether the protein in this sports drink increases endurance. This research project will seek to determine the relationship between the protein in Accelerade and the increased endurance of athletes. Methods: 12 female sports players ages 15-17, will be randomized to control treatment A (Gatorade, n=6) and experimental treatment B (Accelerade, n=6). A test of endurance will be performed for 6 days. Each day, players will run 2 laps before the treatment and 2 laps after the treatment. After 6 days have passed the control group will switch with the experimental group. Another test of endurance will be performed for 6 days. Each day, players will run 2 laps before the treatment and 2 laps after the treatment. Endurance will be measured by using a pedometer to obtain distance in meters. A stop watch will be used to measure time and velocity will be calculated. Results: After the tests are performed the data will show that the protein in the sports drinks will improve the endurance of the female sports players. Conclusion: These results will add to the current knowledge about the role that protein in sports drinks play in the endurance of athletes and will help sports teams make decisions on what drinks to use to replenish the body.

The Effects of Participation in Sports on the Median Nerve. Poster 08

Denise Grant, Paul Laurence Dunbar High School, Baltimore, MD
Mentor: Gabriela Cantarero , Johns Hopkins University, Baltimore, MD.

Background: Carpal Tunnel Syndrome (CTS) is a swelling of tendons in the wrist which causes a compression of the median nerve. Common symptoms include: pain, numbness, and tingling in the hands. Early detection of CTS can prevent permanent damage to the median nerve. Approximately 47% of the causes of CTS are work-related and if CTS is not treated, injured workers over the course of their lifetime lose an estimated $30,000 due to lost wages and medical bills. There has been little research to explore the relationship between CTS and participation in sports with demanding wrist involvement. This experiment will investigate the contribution of a high impact sport to the development of CTS.
Methods: Two measurements will be taken to measure the integrity of the median nerve: the tinel test and nerve conduction velocity. The tinel test uses a tendon reflex hammer to lightly tap the wrist of each subject applying acute force to the median nerve. If the median nerve is affected, tingling will occur in the first 4 fingers. Conduction velocity is measured by placing EMG electrodes over the wrist and elbow while applying a palm stimulation. If the median nerve is affected, conduction velocity of the nerve will be decreased. Ten highly trained basketball players and ten non-athletic students will be tested. Both tests will be performed three times within a five minute period.
Results: Since basketball involves a great deal of wrist movements, the expectations are that basketball players will experience more tingling and slower CV than non-athletic subjects.
Conclusion: If median nerve integrity is compromised in the basketball players, these athletes should be advised to seek treatment.

Breonna Harris **Poster 10**
Mentor: PHD Student: Isfahan Chambers Vivien Thomas Summer Research Program
Morehouse School of Medicine

Background: DNA stands for deoxyribonucleic acid, which is a double stranded helical chain that carries genetic information within a cell and is inside of the nucleus. Inside the DNA there are four nucleotides: adenine, thymine, guanine, and cytosine. One of the nucleotides does not contain the Notch 3 gene, this special nucleotide is cytosine. Notch 3 is an important gene the body needs, specifically in the vascular system to prevent harmful diseases. In the human liver cell (Hep3B) Notch 3 can not be located, and due to the fact that cytosine is the only nucleotide that can be methylated, in this study it is believed that Hep3B does not contain Notch 3 due to methylation. Methods: The cells will be cultured. They will be treated with different concentrations of Azacytidine (demethylation drug) for four days. The RNA will be extracted from the cells and cDNA synthesis will be performed. Lastly, real time PCR will be executed. Results: Due to contamination or a pipeting error, all of the amplicons were not able to melt off; therefore I was not able to rightfully conclude that Notch 3 does not exist in the human liver cell because of methylation. In future studies GAPDH house keeping gene will be ran to see if there is anything uncommon within the Hep3B cDNA. Conclusion: I am not able to conclude that Notch 3 is not found in Hep3B because of some of the errors that were made during pipeting. However, I plan to further my studies in order to determine if the human liver cell is being methylated.

A PCR Based Method To Identify Genetically Modified Foods. Poster 12

Ariel Maple , Paul Laurence Dunbar High School
Mentor: Sherri-Gae Scott, BA

Background: Many foods today have been genetically modified and are widely distributed for consumption. These foods are usually not labeled or identified as being genetically modified, which makes it difficult for consumers to make appropriate food choices. The purpose of this study is to develop a method to distinguish genetically modified foods which are typically commercially produced from those naturally grown. We hypothesize that all or most genetically modified foods contain DNA sequences that are unique to these altered foods. A genetically modified food is one in which the genome of the plant has been altered by recombinant DNA technology, to achieve certain desirable traits such as herbicide tolerance. Methods: We intend to isolate plant genomic DNA from commercially and naturally grown produce for this study. Designing primers to known genes commonly used in genetically modified foods for example cauliflower mosaic virus (CaMV) and the utilization of polymerase chain reaction (PCR) will enable us to amplify these genetic regions of interest. Results: This PCR based method will enable us to identify DNA sequences unique to genetically modified foods. We expect to amplify these sequences in commercially grown produce, that typically utilize genetically modified organisms, and not in naturally grown produce.

The Debate on Stem Cell Research Poster 14

Victoria Parker, Heritage High School
Mentor: Michelle Craig, Teacher, Donald M.D. Heritage High School, Newport News, VA.

Background: First of all, stem cells are derived from embryos. The development is quite simple. First, the sperm cell and egg cell join together, cell cleavage produces a blastocyst. The inner cell mass of the blastocyst develops into the human embryo. Biologists have cultured embryonic stem cells from both the inner cell mass and embryonic
(continued)

germ cells, which escape early differentiation. A stem cell can become any one of the 220 different cells in the body. The experimenter's hypothesis is as follows, a woman would more likely be in favor of stem cell research more than a man would. Methods: First, select 30 persons to participate in the survey. Then, ask each person the same exact questions and allow persons to respond. After the persons responded to questions asked in the survey about their various life factors, collect surveys. Next, analyze and evaluate each result. Statistical analyses of the surveyed person were undergone. Results: For the women, 53% of those surveyed responded that they were in favor of stem cell research. The other 47% said they were against it. Now, even though most of the men did not advocate stem cell research they did, however, say they agreed with the outcomes of the practice. 67% of males said they like the advancements stem cell research is making for science. Conclusion: After calculating the numbers from the surveys the experimenter has concluded that women actually advocate stem cell research more than men. To talk numbers, 40% of men who took the survey said they were in favor of stem cell research. The other 60% said were in disagreement of stem cell research. The experimenter's hypothesis was accurate.

HIGH FRUCTOSE CORN SYRUP AND ITS EFFECT ON DIABETIES.

Leticia Sandoval, Paramount HS **Poster 16**

Mentor: John Teeples, Mentor, BS Bill Sanda, Investigator, BS, MBA

Background: High fructose corn syrup is extremely soluble and mixes well in many foods. It is cheap to produce, sweet and easy to store. It's used in everything from bread to pasta sauces to bacon to beer as well as in "health products" like protein bars and "natural" sodas. High fructose corn syrup can be manipulated to contain equal amounts of fructose and glucose, or up to 80 percent fructose and 20 percent glucose. Studies on rats indicate that fructose may contribute to diabetes complications more readily than glucose.
Methods: In studies with rats, fructose consistently produces higher kidney calcium concentrations than glucose. Fructose generally induces greater urinary concentrations of phosphorus and magnesium and lowered urinary pH compared with glucose. In humans, fructose feeding leads to mineral losses, especially higher fecal excretions of iron and magnesium, than did subjects fed sucrose. Iron, magnesium, calcium, and zinc balances tended to be more negative during the fructose-feeding period as compared to balances during the sucrose-feeding period.
Results: Fructose reduces the affinity of insulin for its receptor, which is the trademark of type-2 diabetes. This is the first step for glucose to enter a cell and be metabolized. As a result, the body needs to pump out more insulin to handle the same amount of glucose.
Conclusion: Although, high fructose corn syrup provides sweetness, freshness, browning, flavor enhancement, and soft texture, the frequency of intake can cause complications for diabetics. The effect of fructose varies depending on factors such as age, insulin resistance, and the amount of dietary fructose consumed. Some people are more sensitive

Anupama Sangadala, South Cobb High School **Poster 18**

Mentor: Dr. Ijames, South Cobb Academy of Research and Medical Science,

In this study, the effects of barberry on the bacteria E. coli were observed and compared to the effects of the antibiotic Trimethoprim-Sulfamethoxazole on E. coli. Most strains of E. coli, such as those that will be used in the experiment, are not harmful. Barberry is a medicinal plant that is often used in Egyptian and Eastern medicine (Ehrlich, 2007). Berberine is a chemical component of barberry that has shown antibacterial and antiseptic properties (Villinski, Dumas, Chai, Pezzuto, Angerhofer, 2003). The following questions guided this research. 1. Does berberine, from barberry, inhibit the growth of E. coli? 2. How does barberry compare to Trimethoprim-Sulfamethoxazole as a bacterial growth inhibitor? Both barberry and penicillin were administered in controlled and equivalent amounts to agar plates containing the bacteria. The estimated result was that the barberry root extract, containing berberine, would inhibit the growth of the E. coli. (continued)

The colonies of the remaining E. coli were estimated and documented. Similar environmental factors, such as temperature and type of agar, and similar techniques, such as spread plating, were used for each medication. It was found that over the 24 hours that the effect of barberry was observed, Barberry did not affect the growth of E. coli. The bacteria surrounding the localized barberry turned yellow, while the agar remained the same color.

A Novel Method to Determine the Mechanism behind DNA-DNA Interactions using Optical Tweezers

Poster 20

Sujay Tyle
Mentor: Dr. Mara Prentiss, Ph.D. Harvard University Department of Physics

The invention of a three dimensional optical tweezers system reported here has helped define how DNA binds with other DNA in dynamic biological systems to provide an understanding of chromosomal pairing during reproduction. Single strand DNA (ssDNA) and double strand DNA (dsDNA) interactions with their complements/analogs were studied in the absence of protein. The polymer aggregation in solution was investigated using λPhage-DNA with sticky (free nucleotide) ends, representing ssDNA, and with blunt ends, representing dsDNA. A system was designed to study and manipulate DNA interactions using two optical fibers with divergent infrared lasers to create a large trap. A Poisson distribution was modeled. The results showed preferential binding at slightly larger than the radius of gyration and between 120-650 seconds, depending on the interaction and molecular structural differences. These novel results have provided access to the entire range of space covered by the dynamic DNA configuration changes that occur on nanosecond timescales and sheds light on optimal conditions for meiosis to occur. The model developed will also assist with DNA engineering and provide insight into genetic deficiencies leading to disease.

Diagnostic tests for Mild Cushing's Syndrome

Poster 22

LaTiera Zachery , King/Drew Magnet High School of Medicine and Science, Los Angeles
Mentor: Theodore C. Friedman, MD, PhD King/Drew Magnet High School of Medicine and Science, Los Angeles, CA, Charles Drew University, Los Angeles, CA.

Background: Cushing's syndrome is a rare disorder which occurs when there is an overproduction of the hormone cortisol from the adrenal glands. One cause of this syndrome is Cushing's disease which is a benign tumor located in the pituitary gland. The tumor produces excess Adrenocortocotropic Hormone (ACTH) which causes the adrenal gland to secrete excess cortisol. Some common symptoms of Cushing's syndrome include depression and thin and fragile skin that bruises easily. Our preliminary results show the night-time urine Cortisol/Creatinine Ratio is the best single test to correctly confirm Cushing's syndrome, but even this test needs to be done with other tests. Methods: This study is a retrospective study. Over a period of one year, 101 participants were evaluated; 28 of whom were Cushing's confirmed, 39 of whom were Cushing's excluded, and 34 of whom were unclear due to more test needed in order to diagnosis. The participants took the following tests: pituitary MRI, chair test, night-time free Cortisol/ Creatinine ratio, and salivary cortisol tests. Confirmed patients had at least two positive tests. The Cushing's confirmed and excluded participants were only analyzed in the study because there is no diagnosis for the unclear. Results: Twenty four of the patients had results for the Free Cortisol/Creatinine Ratio. Ten of the participants had values of the sixteen or greater. While fourteen of the participants had ratio values less than sixteen. Seven excluded participant have ratio values greater than sixteen and sixteen excluded participant have ratio values less than sixteen. All twenty eight Cushing's confirmed participant took the chair test. (continued)

The average test value was 14.4 and the median was thirteen. Similarly, all thirty nine Cushing's excluded participant took the chair test. The average test value is 15 and the median is 14. Twenty six Cushing's confirmed participants took at least one salivary test. Five participants have at least one value greater than 4.3 and twenty five participants had at least one value below 4.3. As for the Cushing's excluded participants, twenty five participants have at least one salivary test value. Three participants have test values greater than 4.3 and twenty five participants have test values less than 4.3 Seventeen Cushing's confirmed participants took an MRI. Six participants had adenomas and their sizes were 2 mm, 3 mm, and 4 mm. Twenty two Cushing's excluded participants took an MRI. Three of the participants had adenomas and the sizes were 2 mm and 3 mm. Conclusion: The 10hr urine free cortisol/ Creatinine ratio values did not compromise with our hypothesis, the Free Cortisol/ Creatinine Ratio was the best test to correctly confirm Cushing's syndrome. As a result, the pituitary MRI test was the most effective test in confirming Cushing's disease. Over 50% of confirmed had a pituitary adenoma which is one of the major causes of Cushing's syndrome. The sensitivity of the pituitary was 61.5% compare to the 41.7% sensitivity of the free cortisol/ Creatinine ratio. Furthermore, the specificity for the pituitary MRI was 30.3%. Most adenomas were small ranging from 3-4mm in size. The less effective tests included the Chair test, salivary tests, and the urine free Cortisol/Creatinine Ratio.

WOMEN AND LUPUS: A REVIEW OF THE SAFETY OF ESTROGEN IN ORAL CONTRACEPTIVES

Poster 1

Adele A. Bailes,
Mentor: Momoh A. Yakubu, Ph.D, Adebayo O. Oyekan, Ph.D, DVM
Vascular Biology Unit of the Center for Cardiovascular Diseases, College of Pharmacy and Health Sciences, Texas Southern University, Houston, TX

Background: Systemic Lupus Erythematosus (SLE) is an autoimmune disease that is prevalent in women. It has been shown that estrogen can enhance the immune cells activity and accelerate the course of SLE. Hence, estrogen containing contraceptives are not prescribed for SLE patients as it can induce lupus flares. The purpose of this research is to review clinical studies carried out on the effects of oral contraceptives on symptoms/flares in women with lupus.

Methods: Three studies were reviewed; in Study 1: 183 women, less than 40 years old, with stable or inactive SLE were randomly assigned to receive either oral contraceptives (triphasic ethinyl estradiol at a dose of 35 µg plus norethindrone at a dose of 0.5 to 1 mg for 12 cycles of 28 days each; 91 women) or placebo (92 women) and were evaluated at months 1, 2, 3, 6, 9, and 12. Study 2: 162 women were assigned to combined oral contraceptives, a progestin-only pill, or a copper intrauterine device (IUD). Disease activity was assessed at 0, 1, 2, 3, 6, 9, 12 months. The subjects used in this study have inactive or stable SLE.

Results: Study 1: 7 out of 91 women had severe flares while taking oral contraceptives and in the placebo group, 7 out of 92 women had severe flares. The 12-month rates of severe flares were 0.084 for oral contraceptives and 0.087 for placebos. Study 2: The mean score for disease activity in the combined contraceptive group was 6.1±5.6, 6.4±4.6 in the progestin-only pill, and 5.0±5.3 in the IUD group. There were no significant differences among the groups during the trial in global or maximum disease activity, incidence or probability of flares, or medication use.

Lori Gordon, Florida A & M University; E Woode, Kwame Nkrumah University of Science & Technology (KNUST); P Amoateng, KNUST Poster 3

Background & Objective: Epilepsy is the most common primary neurological disorder known, up to 50 million people worldwide, out of which 40 million are thought to be living in developing countries Current antiepileptic drugs are effective in controlling seizures in about 70% of patients, but their use is often limited by side-effects, and studies have shown that about 90% of people with epilepsy in developing countries are not receiving appropriate treatment. Several plants used for the treatment of epilepsy in different systems of traditional medicine have shown activity when tested on modern bioassays for the detection of anticonvulsant activity. The present study is aimed at evaluating the anticonvulsant properties of the whole fruit extract of X. aethiopica. Methods: An ethanolic crude extract (XAE) was obtained via cold maceration. Seizures were induced using PTZ and PIC in ICR male and female mice. XAE was compared with a control vehicle, and with diazepam (DZP) and phenobarbital (PHB). Tracking parameters included: latency to myoclonic jerks, latency to clonic-tonic seizures, duration of clonic-tonic seizures, and presence of death. Results: The results indicate that, contrary to expectations, X. aethiopica does not possess anticonvulsant properties, and in fact, appears to be proconvulsant in some instances. Discussion and Conclusions: However, further experimentation ought to be performed prior to disclaiming the traditional use of X. aethiopica for epilepsy. A more water soluble extract should be utilized and also the use of XAE at lower concentrations should be explored. The project described was supported by Grant Number T37MD001580 from the National Center On Minority Health And Health Disparities. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Center On Minority Health And Health Disparities or the National Institutes of Health.

Health Literacy Among Adults Aged 16+ Poster 5

Scotte Johnson, , Hampton University School of Pharmacy
Mentor: Deborah Hudson, MPH, Hampton University School of Pharmacy, Hampton, VA

Background: The 2003 National Assessment of Adult Literacy (NAAL) was the first widespread evaluation in the United States to measure health literacy. Health literacy is the ability to read and understand written health-related information encountered in everyday life. According to the NAAL report in 2003, the majority of adults aged 16 and older had intermediate health literacy of 53%. Additionally, 12% of adults had proficient health literacy. Among those remaining, 22% had basic health literacy and 14% had below basic health literacy. Furthermore, the study found that the national average of health-related materials was for the 11th grade although the recommended reading level is for the 5th grade. This research evaluated the reading level of health-related material available from the Cardiac Center at Sentara Hospital using a standard literacy algorithm called the Flesch-Kincaid readability test.
Method: In October 2008, health-related material were gathered from Sentara Hospital's Cardiac Center, Newport News, VA and tested using the Flesch-Kincaid readability test. The Sentara heart patient and family guide is a packet developed by physicians and healthcare providers to provide patients information about various heart conditions and treatment options. The following four topics were evaluated: Coronary Heart Disease, Non-invasive Cardiac testing, Minimally Invasive Heart Surgery and other surgeries.
Results: The average reading level of Coronary Heart Disease, Non-invasive Cardiac testing and other surgeries was 9.0. The Minimally Invasive Heart Surgery information was tested to have a reading level of 9.1.
(continued)

Conclusion: The average reading level of the materials obtained from Sentara Hospital's Cardiac Center is for the 9th grade. Although this is an improvement from the 2003 results, an opportunity still exists to make health-related material health-literacy appropriate since the recommended reading level is for the 5th grade.

Chronic Morphine Treatment on MOR-1 Gene Expression in the SH-SY5Y Cells

poster 7

Ivy Kwapong[1], R. Johnson[2], Z.-P. Zhu[2] and R. Badisa[2] and C.B. Goodman[2]
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Background: The mu receptor is one of three major types of opioid receptors (m, d, k), which are coupled to the G protein. The mu opioid receptor (MOR) accounts for many of the effects that are seen with morphine and other structurally related opioids. Chronic morphine exposure has been shown to induce tolerance with both *in vivo* and *in vitro* models, which is possibly regulated at the protein and/or mRNA levels for the MOR. The study was performed to determine the chronic effects of morphine treatment for 24 h on the gene expression of MOR-1 in undifferentiated and differentiated SH-SY5Y cells. Moreover, we examined the regulation of the MOR-1 transcript by chronic morphine involved an epigenetic influence via histone methylation.
Method: The human neuroblastoma cell line, SH-SY5Y cells were treated with retinoic acid (10 μM) to induce differentiation for 72 h. MOR-1 expression was measured using real-time RT-PCR after morphine sulfate (10 μM) was chronically administered to the undifferentiated and differentiated SH-SY5Y cells for 24 h.
Results: The results showed a 23% significant increase in MOR-1 gene expression after differentiation. Although chronic morphine treatment did not alter the MOR-1 expression in the undifferentiated SH-SY5Y cells, it produced a significant down-regulation in the MOR-1 transcript by 30% in the differentiated SHS-SY5Y cells when compared to the controls. Naloxone, an opioid antagonist was used to block the down-regulation in gene expression seen by morphine treatment.
Conclusion: These results suggest that the development of morphine tolerance involves the regulation at the gene expression level as seen by a decrease in MOR-1 mRNA level.

GENES INVOLVED IN LIPID METABOLISM FOUND IN THE DUODENUM OF OBESITY-PRONE AND OBESITY-RESISTANT RATS

Raphael A. Malbrue[1],Tuskegee University, Tuskegee, Alabama
Mentors: Stefany Primeaux[2], Douglas Braymer[2], George Bray[2]
Pennington Biomedical Research Center- Dietary-Obesity Laboratory, Baton Rouge, Louisiana

Purpose: The objective of this study was to investigate genes involved in lipid metabolism in the duodenum (upper intestine) of obesity-prone Osborne-Mendel (OM) rats and obesity-resistant S5B/Pl (S5B) rats. OM rats become obese when fed a high fat diet, however S5B rats do not become obese when fed the same diet. Based on results from a microarray analysis of the duodenum of OM and S5B rats fed either a high fat (HF) or a low fat diet (LF), five genes were selected for further analyses; LPL Lipoprotein Lipase (LPL), Solute Carrier Family 27 (fatty acid transporter) Member 2 (FAT27), Pancreatic Polypeptide Receptor 1 (PPR1), Orexin Receptor 1 (OXR1), and Gastrin Releasing Peptide (GRP). (continued)

Methods: Eight week old OM S5B rats were fed a semi-synthetic high fat (55% fat) or a low fat (10% fat) diet for 2 weeks prior to sacrifice. Body weight and food intake were measured during this period. At the time of sacrifice, fat pads were weighed to determine the level of adiposity and a 1.5 inch section of the upper intestine was removed, the enterocytes were collected, and RNA was isolated immediately. Primers selected for the genes of interest were constructed using Primer Express 3.0 (Applied Biosystems). Gene expression levels for the genes of interest were measured using Real-Time PCR.
Results: Based on microarray analysis, we expect that LPL gene expression levels in OM rats fed a LF diet will be greater than S5B rats fed a LF diet, GRP expression levels will be greater in S5B rats fed a LF diet than OM rats fed a LF diet, PPR1 expression levels will be greater in OM rats fed a LF diet than S5B rats fed a LF diet, FAT27 expression levels will be greater in OM rats fed a LF diet than S5B rats fed a LF diet as well as OM rats fed a HF diet will have the greater expression level of FAT27 than S5B rats fed a HF diet, and OXR1 expression levels will be greater in OM rats fed a LF diet than S5B fed a HF diet.

Nigeria K. McHellon[1], **Poster 11**
Mentors: Devora Simmons[2], John Cooperwood[3].
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Introduction: Breast cancer is defined as a malignant tumor that originates in the cells of the breast in women and men. It has the capability to metastasize to distant areas of the body. There are cancer cells that are dependent on estrogen that leads to cell proliferation. Estrogens are a group of steroids that are recognized as the primary female sex hormones and play a vital role in the reproductive development in the female body. Estrogen dependent breast cancer develops from estrogen binding to estrogen receptors.
Problem: To develop compounds that will have a better pharmacological profile compared to Tamoxifen that would be minus the side effects associated with the drug.
Hypothesis: We hypothesize that these aminoalkyloxy derivatives of estrone with can be successfully synthesized.
Experimental Methods: Each compound was synthesized by dissolving 2.5 equivalents sodium metal into refluxing ethanol. Upon dissolving, 1.0 equivalents estrone was added to the solution and allowed to dissolved. Once dissolved 1.2 equivalents of the appropriate salt were added and this reaction was allowed to reflux overnight. After refluxing overnight, the reaction was cooled to room temperature and diluted with dichloromethane after which, an extraction was done with 5% Sodium Hydroxide/H20 and brine (saturated Sodium Chloride/H20). The organic layer of this reaction was then dried with Magnesium Sulfate and evaporated under reduced vacuum.
Results and Conclusion: The following six derivatives of estrone were successfully synthesized and characterized as confirmed by TLC's (thin layer chromatography) and NMR's (Nuclear Magnetic Resonance):(DMAE-3-ONE, Diisoprophyl-3-ONE, DEAE-3-ONE, Morpholine-3-ONE, Pyrollidine-3-ONE, Piperdine-3-ONE). These compounds will be further tested for antiproliferative activity.
NIH Grant PR003020

Safiya A. Ransome, **Poster 13**
Mentor: Agnes A. Day, PhD, Howard University

Skin cancer is the most common form of cancer in the United States. The most deadly form of skin cancer, malignant melanoma, is expected to be diagnosed in at least 60,000 people in 2005 alone. In this study, along with malignant melanoma, three other skin diseases were examined: Cutis Laxa, Xeroderma Pigmentosum, and Keloids. The goal of this study was to establish a comparative expression analysis of RNA extracted from normal and diseased skin fibroblasts. Total RNA was extracted from diseased skin fibroblast cell lines, and normal skin fibroblast cell lines. It was then labeled and hybridized to a commercial gene array containing genes for cell adhesion molecules and proteins of the extracellular matrix. The functional gene groupings of the arrays are categorized as Cell membrane adhesion molecules (Integrins, Imunoglobulin superfamily, Cadherin and Catenins, Selectins), extracellular matrix proteins, Proteases (Matrix metalloproteinases, Serine proteinases, Cystein proteinsases, and others) and Protease inhibitors. Reverse Transcriptase Polymerase Reaction (RT-PCR) was performed to validate the findings of the gene array. A molecular profile was developed and three candidate genes that may play a role in skin disease were identified: Integrin Alpha 4 (ITGA4), Integrin Alpha 8 (ITGA8), and Integrin Alpha 9 (ITGA9.) This study has identified differential gene expression between normal skin and different forms of skin diseases. These differential gene expression profiles may be useful in future diagnostic schemes for skin cancer and other skin diseases.

MRSA AND THE EFFECTS OF PERSONAL HYGIENE ON SKIN INFECTIONS

poster 15

Crystal Spencer,
Mentor: John Redwanski, PharmD
Hampton University School of Pharmacy, Hampton, VA

Background: Methicillin-resistant staphylococcus aureas (MRSA) is an extraordinary type of bacteria that can penetrate the skin and cause infection. As a result of over prescribing antibiotics, certain strains of MRSA have developed resistance to important antibiotics, such as methicillin and penicillin. Therefore, the first line of defense against infection is to regularly engage in effective personal hygiene. The purpose of this study is to examine recent occurrences of MRSA and the effects hygiene has on skin infections.

Methods: Studies conducted by eMaxHealth.com were analyzed to determine the extremity of MRSA cases and explore the risks and preventions of MRSA skin infections. Most cases of MRSA were commonly seen in hospitals and healthcare facilities. Infection transmission was usually the result of direct skin-to-skin contact.

Results: Nonetheless, reported MRSA infections are emerging among the general population and not simply limited to hospital and healthcare facilities. MRSA bacteria can live on the skin of a person showing no signs of infection, and can also live on common surfaces, such as tables or weight-training benches in a fitness center. In 2005, nearly 2000 more people died from MRSA infections than from the AIDS virus. It has been proven that regular hand washing or using an alcohol-based hand sanitizer is extremely effective against spreading bacteria. Also, leaving cuts uncovered and sharing towels, razors, or other personal items that come into contact with the bare skin should be avoided.

Conclusion: MRSA is rapidly spreading among the general public, but can be prevented. The largest defense against contracting and transmitting MRSA is to practice efficient personal hygiene.

Marcus Stephens, Pre-pharmacy, Hampton University **Poster 17**
Mentor: Yolanda Harold, MD, Hampton University

Background: According to the American Journal of Hypertension, the average age for diagnosis of hypertension in the United states is 40 years of age. Although this is true, the onset of hypertension can occur at any age. This includes young adults. Young adults are at a high risk of developing hypertension, because of the nature of their eating habits and lack of exercise. Awareness of hypertension at a young age is an important step in managing high blood pressure. The purpose of this experiment is to find out just how many unsuspecting young adults have high blood pressure and raise awareness for this disease state. Method: This experiment was performed using a sphygmomanometer and a stethoscope. The blood pressures of fifty students at Hampton University were taken. Students ranged from ages 18-23. The pulse of each student was taken first, in order to assess a proper blood pressure range, before the actual blood pressure reading was taken. The sleeve of each student was lifted and the sphygmomanometer was placed on the arm. The blood pressure was then taken. The age, sex, systolic pressure, diastolic pressure, hypertension family history, and all food eaten by the student in twenty-four hours were also recorded. Results: Out of the fifty students, whose blood pressures were recorded, 8 students had stage 1 hypertension (140/90). Seven of these students were male and one was a female. Of the students that were not stage one hypertensive, 28 were borderline hypertensive (systolic higher than 120). The average snapshot diet of each of the students consisted of pizza, French fries, pancakes, donuts, soda, and salad. The majority of these students also had a history of hypertension. Conclusion: After reviewing the diets and hypertension family history of each individual, it is apparent that the students tested are not as proactive in the status of their blood pressure as recommended. Although only 16% of the students actually had high blood pressure, the data shows that this percentage of these students could change in the near future. This experiment proved that young adults are not as concerned with their health as they should be. This experiment also proved that hypertension is a disease state that can be found in any individual, not only older adults.

Wintana Teklehaimanot , Hillsborough Community College **poster 19**
Mentor: John Redwanski, PharmD

Lipid modification of proteins known as polyisoprenylation is the method where various proteins are modified. Poly-isoprenylation entails the addition of 15-carbon *trans, trans*-farnesyl or 20-carbon *all trans*-geranylgeranyl at carboxyl terminal end of proteins. This secondary modification of protein plays a major role in cell signaling, differentiation, and apoptosis. Then methylation/ demethylation process follows with reversible steps done by methylation dependent S-adenosyl methionine (SAM) and polyisoprenylated protein methyl transferase (PPMTase) and polyisoprenylated methylated protein methyl esterase (PMPMEase). All enzymes in this intricate pathway have been the subject for testing, except PMPMEase. Using RD-PNB, a high affinity substrate synthesized in the lab, the selectivity of PMPMEase will be tested. Various cooking oils such as Canola, Corn, Extra Virgin Olive, Peanut, and Palm oils are tested to compare and contrast the inhibition level with PMPMEase. Due to their hydrophobic nature, the oils and the substrate will compete for the active site of the enzyme. Studies have shown that the nature of PMPMEase in the liver can be a target enzyme in relation with Parkinson's disease, neuro-degeneration, antiviral treatments, and Alz-heimer's.

Purpose: Determining the inhibition level of the cooking oils with liver PMPMEase is imperative to advance to an-other pharmacological target.

Method: Distinctive measurement of various dilutions of oils with dimethylsulphoxide (DMSO), buffer, RD-PNB Substrate, and Liver PMPMEase were mixed; further hydrolysis was done using a liquid-liquid chromatography to extract the fatty acids of the oils; meanwhile, after incubating and chilling, High Performance Liquid Chromatogra-phy (HPLC) was the instrument dominantly used to determine the inhibition levels.

Results: The oils had high affinity for active site of enzyme. Palm oil showed >75% inhibition of activity of PMPMEase. (continued)

Conclusion: The active site of the hydrophobic enzyme is dominated by certain oils due to their hydrophobic character. Thus, further investigation is recommended in identifying the key ingredients that cause the inhibition of these cooking oils.

Can Cell Phones Pop Popcorn?

poster 21

Sirenia Tripp
Mentor: Christine Barrow, PhD. Prince George's Community College, Largo, MD

Background: Cell phones emit electromagnetic radiation which is a form of microwave radiation. Since cell phones generate heat it falls in the category of microwave radiation. As an individual talks on the cell phone his/her voice is transmitted using radio frequency radiation that is within 800 MHz and 1,990 MHz which is in the range of microwave radiation. This radiation is what cell phone holders are being exposed of continuously. On the other hand, microwave radiation ranges from 300 MHz to 300GHz. The purpose of this study is to examine that cell phone radiation give off enough electromagnetic radiation to pop popcorn.
Methods: There were four cell phones used in the experiment each one was from different phone companies (AT&T, Verizon, T-Mobile, and Sprint). Each of the four cell phones was placed around the six kernels which were placed in the center. Each cell phone's setting were placed on vibrate and ring. For the cell phones to ring there were 2 other individual's present to ring the cell phones continuously.
Results: Further investigation is still being performed since there were only several attempts make to pop the kernels. During the experiment it appeared that the kernels were turning a lighter color towards the tips after attempting to pop the kernels. Yet the kernels did not actually popped after several attempts.
Conclusion: Although the experiment is ongoing cell phone radiation appears to give off some radiation to cause the kernels to turn a light color. Yet one must know that prolonged exposure to cell phone radiation may cause health effects.

PPARg-Dependent Modulation of Gene Expression in SHR: Role of GRK-2 Signaling.

Poster 23

Ndidi Uwadia
Mentor: Mohammad Newaz MD, PhD Center for Cardiovascular Diseases. College of Pharmacy and Health Sciences. Texas Southern University, Houston, TX.

Background: Peroxisome Proliferator-Activated Receptors (PPAR's) are nuclear receptors that regulate gene expression. Among the different isoforms (a, db & g), PPARg has been shown to regulate blood pressure through distinctive signaling mechanisms. Reduced PPARg expression has been reported in SHR and induction of PPARg reduces blood pressure in hypertension. PPARg -dependent reduction in blood pressure involves transcriptional regulation of GPCRs and/or their function. G Protein-Coupled Receptors (GPCRs) activity are tightly regulated by G-protein coupled receptor kinases (GRKs) and for b-adrenergic vasodilatation, it is the GRK-2 that limits GPCR response. Increased activity of GRK-2 was reported in SHR and we have demonstrated that blockade of GRK-2 signaling enhances vasodilatation. Here we propose that PPARg-dependent blood pressure reduction involves reduced GRK-2 and/or increased inhibitory signaling pathway components like Raf -1.
Methods: Male spontaneously hypertensive rats (SHRs) and their WKY control were treated with GW1929, a PPARg ligand or clofibrate, a PPARa ligand or vehicle for 2months. Animals were sacrificed under anesthesia and total RNA and proteins were collected from heart homogenate. Western Blot analysis was performed to determined PPARg, GRK-2and Raf-1 protein expression while the real time PCR was done to assess PPARa, PPARg, (continued)

GRK-2 and Raf-1 gene expression, respectively.
Results: In SHR, both GW1929 and clofibrate significantly increased PPARg gene expression ($p<0.05$). GRK-2 mRNA was significantly higher ($p<0.05$) in SHR and both GW1929 and clofibrate blunted this increase. On the other hand, GW1929 but not clofibrate enhanced Raf-1 gene expression ($P<0.05$) which was reduced in SHR. PPARg protein was significantly lower in SHR compare to the WKY rats. Both GW1929 and clofibrate enhanced PPARg protein expression and this was associated with a significant reduction in GRK-2 protein. Similarly, GW1929 but not clofibrate enhanced Raf-1 protein expression in SHR.
Conclusion: PPARg transcriptionally regulate GPCR signaling via GRK-2 and Raf-1 Gene regulation

The Prevalence of Hyperstress in Indigenous Groups and Industrialized Costa Ricans and Corresponding Coping Methods poster 25

Corin White
Dept. of Biology, Spelman College
Mentor: Professor Luis Diego Gomez and Mr. Hector Castaneda, Field Ethnobiology
Duke University

Stress is a physiological and psychological bodily response to stressors that upset the body's natural equilibrium. When certain daily stressors become a threat to this equilibrium, the sympathetic nervous system initiates the "fight or flight response." The "fight or flight" response involves a secretion of hormones such as norepinephrine and adrenaline. With repeated secretion of these hormones, the many symptoms of stress or hyperstress, caused by an overwhelming amount of stressors may occur. Symptoms include anxiety, depression, memory problems, obesity, frequent agitation, constant worrying and bodily aches. Local and indigenous women ages 15-74 were interviewed with a series of open-ended questions. The interview was structured, formal and systematic in order to attain adequate data. The local women included women in the town of San Vito, Costa Rica. The indigenous women interviewed were from one of the following groups: Guaymi of the Reserva Forestal of Coto Brus, Brunka tribe in Boruca, Chorotega of Guaytil, Nicoya, Maleku of the Margarita settlement in San Rafael, Afro-Caribbean people of Cahuita and the Bribri of the Talamanca Valley. Basic statistical analysis and logistic regression were used to quantify the results obtained. Women of the Chorotega and Bribri tribes have the most significant risk of hyperstress due to the environmental stressors posed by living in these communities. However, other variables such as the number of children and marital status were not as significant as hypothesized. Overall, the presence of hyperstress was determined to be relatively low in this sample of women. Responses were generally more diverse in the more developed communities such as the Afro-Caribbean, Boruca, Chorotega and Maleku; especially when it came to the diversity of certain coping methods. The reliance of social coping methods such as talking with family or friends was present in all of the communities and overall the most common coping method. Alternative coping mechanisms such as singing, praying, listening to music or going for a walk or run were also common in women of all ages and in all communities.

Recognition Of Submitted Abstracts

AMHPS and The Research Advisory Council (RAC) would like to recognize the following students for their hard work and effort. We encourage you to continue your scientific pursuits!

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The Association of Minority Health Professions Schools (AMHPS) is a nonprofit, educational, scientific and charitable © (3) organization that provides support for professional education, research and community service that promote optimum health among minority and the under-served.

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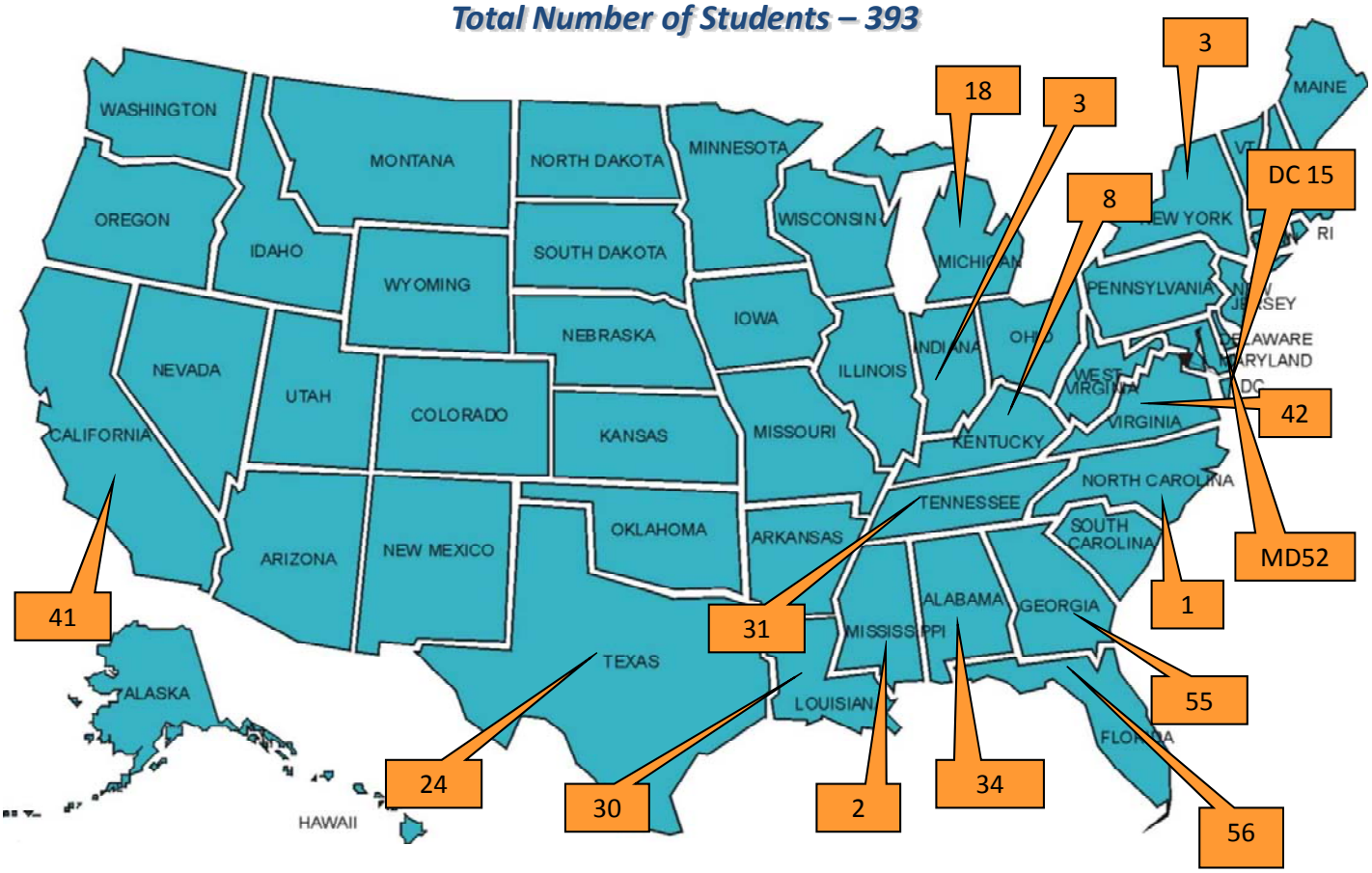

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