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2013 TSU Undergraduate Research Program

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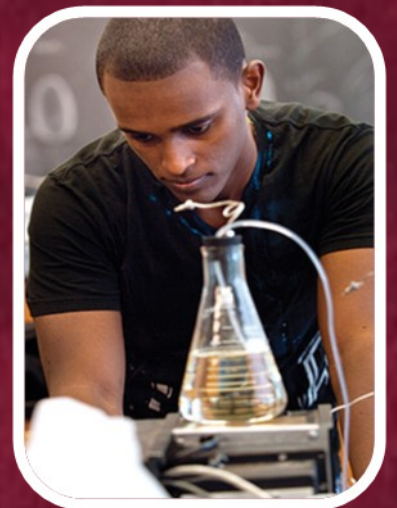
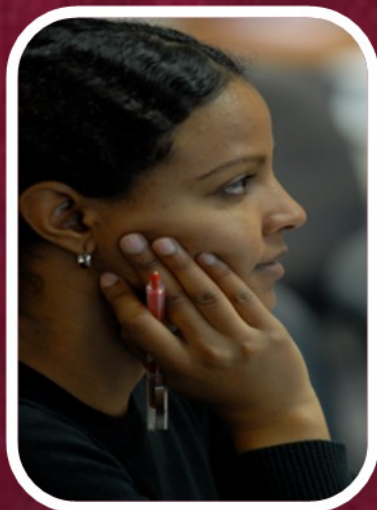
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TEXAS SOUTHERN UNIVERSITY

"EXCELLENCE IN ACHIEVEMENT"

2013 Summer Undergraduate Research Program



A Program Coordinated by the Office of Research
Texas Southern University * 3100 Cleburne * Houston, Texas 77004

2013 Summer Undergraduate Research Program

The Office of Research 2013 Summer Undergraduate Research Program (TSU-URP) along with the College of Science and Technology Summer Undergraduate Research Program (COST-SURP) provided a research experience for undergraduate students. Of the 47 TSU-URP Interns participating in this year's program, 19 were students majoring in science, health, and/or technology; 18 were students in pre-pharmacy or pharmacy; and 10 interns were majoring in humanities, education, social or behavioral sciences. All of the 16 COST-SURP fellows were students majoring in science, technology or pharmacy.

The 9-week 2013 summer program began with an Orientation on June 3rd followed with students engaging in research and scholarship with TSU faculty mentors. The research ranged from biological and technological innovations to artistic creations and scholarly inquiry with local and national implications in their fields. Under the direction of faculty mentors, fellows majoring in science, technology, and/or pharmacy fields engaged in activities that included hands-on basic research, training in laboratory technique, academic research enrichment, and field work as practiced in specific fields. Similarly, fellows majoring in the humanities, education, social & behavioral science engaged in activities that included formulating qualitative and mixed-methods research questions, training in research methods, and hands-on experience towards the creation and use of such discipline-specific research tools as surveys, bibliographies, indices, and data series.

The summer research experience concluded with student poster presentations on **Thursday, August 1st** in the New Science Building foyer from 10:00 to 12:00 and a closing ceremony on **Friday, Aug 2nd** from 10:00 to 1:00 in the Jessie Jones School of Business Auditorium (Room 113), involving 10 student oral presentations. Certificates were handed out to all participating students and faculty mentors.

2013 UNDERGRADUATE RESEARCH PROGRAM CLOSING PROGRAM

AUGUST 2, 2013

JHJ-Business School Room 113

10:00-10:15

Opening Remarks

Elizabeth Brown-Guillory, Ph.D.

Associate Provost/Associate Vice President for Academic and Faculty Affairs

10:15am - 12:00pm

Oral Presentations

- Remmington Belford** “Effect of nitric oxide on endogenous production of hydrogen sulfide in bovine neural retina”
- Du Phung** “Development of a cell migration assay method using 3-D encapsulation technology”
- Amy Oseghae** “Nanoparticle formulation of Resveratrol for intravenous administration”
- Stanley Azubike** “Database management systems (DBMS) and academic website management: a primer”
- Stephanie Mata** “Speaking of trees: an in-depth study of urban forestry and habitat at Texas Southern University”
- Demetrius Gatewood** “An Examination of Marketing Characteristics of Texas Southern University Football Consumers”
- Irma Nikicicz** "In Search of Milagros: Building a Foundation for a Novel"
- Kelly Newton and Zara Uddin** “Sustainable production of resources for extended period of stay on Mars and lengthy space travel: Hydroponic plant growth and biofuel Production”
- Muhammad Alghali** “Effects of microgravity on apoptotic cell death”
- Rebecca Villarreal** “Help me help my child learn: Parent perspectives on the role of the public school system in educating their children with autism”

12:00pm - 1:00pm

Presentation of Certificates for Interns and Mentors

Dr. David Owerbach and Dr. Hyun-Min Hwang

~End of Program~

2013 Undergraduate Research Program (URP)

Program Director: David Owerbach, Ph.D.

STUDENTS	DEPARTMENT	FACULTY MENTORS	ABSTRACT #
Andikan Akpaffiong	Pre-Pharmacy	Macaulay Akpaffiong	001
Chelsie Anthony	Administration of Justice	Ashraf Mozayani	002
Stanley Azubike	Pre-Pharmacy	Albertina Hughey	043
Zayne Belal	Physics	Mark Harvey	003
Remmington Belford	Biology	Ya Fatou Njie-Mbye/Sunny Ohia	005
Lan Bui	Pharmacy	Joshua Swan	006
Rash-Dat Danmola	Pharmacy	Kasturi Ranganna	007
Badal Dave	Pharmacy	Selvam Chelliah	009
Minh Do	Pharmacy	Kasturi Ranganna	008
Chukwunweike Ezeanyike	Biology	Momoh Yakubu	044
Chinonso Ezeudu	Pharmacy	Ya Fatou Njie-Mbye/Sunny Ohia	012
Marquesha Foreman	Mathematics	Kiran Chilakamarri	010
Fomanyi Fossoh	Pharmacy	Omonike Olaleye	013
Demetrius Gatewood	Health & Kinesiology	J. Kenyatta Cavil	014
Sara Glenn	Biology	Ayodotun Sodipe	016
Shanice Gowans	Sociology	E. Dianne Mosley	045
Carmen Gonzales	Biology	Audrey Player	017
LaMia Handy	Pharmacy	Shalondria Simpson	011
Mayte Herrera	Transportation	Maria Burns	015
Hien Huynh	Pharmacy	Omonike Olaleye	018
Tamesha Hill	Transportation	Maria Burns	020
Alex Holt	Physics	Daniel Vrinceanu	021
Jameisha Jones	Political Science	Candy Ratliff	022
Jennifer Julian	English	Albertina Hughey	023
Stephanie Mata	Public Affairs	Anthony Rodriguez	024
Afshin Nefabat	Pharmacy	Amruthesh Shivachar	025
Irma Nikicicz	English	Michael Sollars	026
Francis Ogbonnia	Biology	Ayodotun Sodipe	027
Ashley Oliver	Pharmacy	Aisha Morris Moultry	028
Destiny Omeire	Engineering	Hector Miranda	042
Amy Oseghae	Pharmacy	Dong Liang	029
Belinda Otogo	Public Affairs	Jew Don Boney	004
Enryka Payton	Pharmacy	Uche Ndefo	030

2013 Undergraduate Research Program (URP) *continued*

STUDENTS	DEPARTMENT	FACULTY MENTORS	ABSTRACT #
Du Phung	Pharmacy	Amruthesh Shivachar	031
Delon Poole	Pre-pharmacy	Audrey Player	032
BreAuna Roundtree	Health Science	Monica Rasmus	034
Kingsley Sampson	Engineering	Hector Miranda	041
Chelsea Smith	Pre-pharmacy	Flora Estes	037
Dayana Abdullah-Smoot	Biology	Ashraf Mozayani	038
Uyen Uyen Tran	Pharmacy	Dong Liang	046
Joan Tran	Biology	Momoh Yakubu	039
Zara Uddin	Biology	Hyun-Min Hwang	036
Rebecca Villarreal	Education	Shaswati N Saha	033
Ayza Ward	Computer Science	Yunjiao Wang	019
Ashley Webber	Biology	Ya Fatou Njie-Mbye/Sunny Ohia	040
Marith Williams	Engineering	Oscar Criner	035
Jennifer Wilson	Administration of Justice	Antoinette Christophe	047

COST-SURP Student Participants and Faculty Mentors

Program Director: Hyun-Min Hwang, Ph.D.

STUDENTS	DEPARTMENT	FACULTY MENTORS	ABSTRACT #
Ariam Abraham	Biology	Shodimu Olufemi	058
Muhammad Alghali	Biology	Shishir Shishodia	048
Kayla Burrell	Biology	Audrey Player	049
Mohamed Coulibaly	Chemistry	Jade Clement	050
Franchell Davidson	Mathematics	Willie Taylor	051
Damon Hall	Transportation	Fengxiang Qiao	052
Kanees Khan	Engineering Tech	Graham Thomas	053
Ray Mbonu	Chemistry	Jade Clement	061
Kelly Newton	Biology	Hyun-Min Hwang	055
Richard North	Chemistry	Audrey Player	056
Nafisat Omotayo	Pharmacy	Sodipe Ayodotun	059
Tommy Quach	Biology	Hector Miranda	057
Uchechi Ogueri	Biology	John Sapp	063
Raven Reed	Chemistry	Bobby Wilson	060
Sarah Sejoro	Biology	Fawzia Abdel-Rahman	054
Tyneshi Thomas	Biology	Hyun-Min Hwang	062

Andikan Akpaffiong
Research Mentor: Macaullay Akpaffiong
A Comparison of the Effect of Benadryl and Zolpidem in Insomnia

Abstract 001: Insomnia is a sleep disorder that is characterized by difficulty falling asleep or staying asleep. Forty-eight percent of Americans report insomnia occasionally, while 22 percent experience insomnia almost every night. This experiment was conducted to compare the effect of Benadryl with Zolpidem in inducing sleep in the spontaneously hypertensive rats (SHR). Four groups of rats weighing 325-359g were used. Groups 1 and 2 were administered respectively 10mg/kg, and 15mg/kg of benadryl. Groups 3 & 4 were administered 5mg/kg and 10 mg/kg of zolpidem respectively. Two rats were placed in cages and placed in a semi-dark room. They were observed for a total period of 6 hours for the onset of sleep and for the duration of sleep. Both Benadryl and Zolpidem induced sleep in spontaneous hypertensive rats. The onset of sleep was faster in the rats treated with Zolpidem than with Benadryl. Moreover, Zolpidem induced a longer duration of sleep. The results show that insomnia can be treated with Benadryl, although it is not indicated for insomnia and is a less expensive drug compared to Zolpidem.

Biography: Andikan Akpaffiong attended Alief Taylor High School and graduated in 2011 with honors. Currently, he is a sophomore at Texas Southern University and majors in pharmacy and minors in biology. He is a member of the Thomas Freeman Honors College and National Society of Collegiate scholars. He is also member of pre-pharmacy health organization and has participated in various volunteer services in the club. After he finishes the Doctor of Pharmacy program, his goal is to complete the required internship and work as a certified pharmacist.

Chelsie Anthony
Research Mentor: Ashraf Mozayani

Synthetic Cannabinoids: What are they? What are the metabolites? What is the demographic incidence?

Abstract 002: The aim of this research is to catalog the known and unknown chemical substances that make up synthetic marijuana and educate the public on these new drugs especially on the toxic effects they have on the human body; to provide information on the incidence of cannabinoids in different demographic groups and also illustrate how cannabinoids are identified through urinalysis to detect metabolites human of these substances. In recent years, people have found innovative ways to derive pleasurable sensations from the consumption of synthetic substances that mimic the naturally occurring plant known scientifically as *Cannabis sativa* popularly called marijuana. Tetrahydrocannabinol (THC) is the main psychoactive ingredient in the *Cannabis sativa plant*. Chemically synthesized substances called synthetic cannabinoids are mixed with dried leaves and commercially marketed brand names such as Blaze, Blueberry Haze, Dank, Demon Passion Smoke, Genie, Hawaiian Hybrid, K2, Magma, Ninja, Herbal Smoke, and Voodoo Spice. These products have been marketed as completely natural but various synthetic cannabinoids have been found to be illegal within the substance. With the complexities involving synthetic cannabinoids as to whether they are illegal or not, the unsettled legal issues has not helped as more and more young people continue to consume these hazardous substances. Some common synthetic cannabinoids include JWH-018 and AM-2201 which are detectable by the presence of their metabolites. This study adopts an explorative approach of published literature on the known and unknown chemical substances that constitute in most of these synthetic cannabinoids. It also examines the results of published urinalysis samples from known consumers of synthetic cannabinoids to identify the metabolites they produce and the resulting stimulatory or inhibitory effects of the cannabinoids on the individual. The paper further considers the demographic incidence of synthetic cannabinoids and concludes that these synthetic substances are dangerous for human consumption due to their toxic nature.

Biography: Chelsie Anthony is from Fort Worth, TX. While attending Eastern Hills High School, Chelsie was interested in pursuing a career in law and was a graduate from the special interest program in Criminal Justice. After high school Chelsie, enrolled into the Administration of Justice program at Texas Southern University and intends to minor in forensic sciences. Chelsie takes an active part in the Collegiate 100 of Black Women and the NAACP as well as the Wesley Foundation. She further plans to enroll in law school upon graduation from college.

Zayne Belal

Research Mentor: Mark Harvey

Proton and Alpha-Particle Transport in Water at Cellular Levels using Monte Carlo Simulation Techniques

Abstract 003: Water consists of roughly 70% of any human cell and thus, is a catalyst in many of the interactions that occur within the human body. The atomic and molecular constituents of water can breakup into ions (e.g., free radicals) when exposed to sufficiently high-energy radiations. Some of these charged ions are highly reactive and can pose severe risks for cellular damage. The purpose of this study was to model physical processes produced in water due to light ion irradiation using the Geant4 Monte Carlo Toolkit (version 9.6). Predictions were obtained on multiple physical processes (e.g., excitation, ionization, elastic scattering, etc.) and associated particle species produced in both single proton and single alpha-particle interactions in a 1mm³ water phantom. Calculations were performed over a wide range of incident particle energies (e.g., 5 – 75 MeV) at 5 and 10 μm (about the size of an average human blood cell). Preliminary results indicate that elastically scattered electrons were produced most frequently in the single particle interactions with water. In addition, the incident alpha-particle generally produced more physical processes on average than the proton at a given beam energy within a 5 and 10-micron slice of the water phantom. This can generally be attributed to the larger mass and size of the alpha particle compared with the proton. We also observed that the physical processes varied considerably with increasing incident particle energy. Further studies are currently underway in our computational laboratory to investigate free-radical production in water at the cellular level.

Biography: Zayne Belal was born in Minnesota and moved to Texas when he was seven. In high school, Zayne was an All-American water polo player and later enrolled at USC with a scholarship to play and his team won three consecutive national championships. Zayne graduated from USC with a degree in economics in May 2012. That summer he enrolled at TSU and is pursuing a degree in health physics. Zayne’s ultimate goal is to enter medical school within two years and eventually become a physician specializing in the treatment and care of athletes.

Belinda Otego

Research Mentor: Jew Don Boney

Mickey Leland the Political Activist

Abstract 004: This project is about the activist George Thomas “Mickey” Leland who was an important member of Congress and significant activist. Mickey Leland helped secure up to 800 million dollars in relief funds from the United States government, at the height of the African famine, something that made a huge impact and had never been done before in any other American compassionate effort. In 1987, Congressman Leland passed the *Food Assistance Act* for the Homeless which addressed malnutrition and starvation issues in the United States demonstrating his concern for the poor and hungry in the United States as well as Africa. Some of the crucial points of this project are: archival preservation and research techniques, development of collection inventories and exhibition development. The methods used to create this project on Mickey Leland are compiling his speeches, news papers, internet articles, and collection guides of archival materials from the Mickey Leland Archives.

Biography: Belinda Otego, is currently a senior at Texas Southern University and is from Equatorial Guinea in Africa, the only country in Africa that speaks Spanish. Before coming to the United States she lived in Madrid, Spain for 10 years. She is one of eight children and now lives in Houston, Texas with two of her younger brothers. Since she moved to the US in 2007, Belinda has completed English as a second language program and earned an associate degree at Houston Community College. She is the first woman in her family to pursue a bachelor’s degree. Her goal is to obtain a bachelor’s degree in Public Affairs. She has been fascinated with Public Affairs since she was a little girl and wants to help create opportunities for women in Africa by improving their living conditions. At the same time, she hopes to become an inspiration for many young girls in Africa.

Remmington Belford

Research Mentors: Ya Fatou Njie-Mbye and Sunny Ohia

Effect of Nitric Oxide on Endogenous Production of Hydrogen Sulfide in Bovine Neural Retina

Abstract 005: Nitric oxide (NO) and hydrogen sulfide (H₂S) are multifunctional signaling gaseous molecules that are endogenously produced in mammalian tissues. These gasotransmitters interact with each other to exert pharmacological effects in the body. Our laboratory has evidence that H₂S is endogenously produced in bovine ocular tissues, with the highest amount found in the retina suggesting a possible role for this gas in vision-related processes. **Purpose:** In this present study, we investigated the basal levels of H₂S production in response to NO donor (sodium nitroprusside, SNP) and NO synthase inhibitor (L-nitroarginine methyl ester, L-NAME) in isolated bovine retina. **Methodology:** H₂S concentrations in bovine neural retinae, was measured using a well-established colorimetric assay. The retinae were briefly homogenized in a mixture of zinc acetate, and borate buffer. Following this N,N-Dimethyl-*p*-phenylenediamine and ferric chloride were added to the mixture. The mixtures were then incubated at 37°C and centrifuged at 5000g. The absorbance of the supernatant was measured using a spectrophotometer, then compared against a standard curve of sodium hydrosulfide (NaHS) at concentrations of (10-750µM). **Results:** The NO synthase inhibitor, L-NAME (300nM-500µM) significantly attenuated ($p < 0.05$) basal endogenous production of H₂S with the highest inhibition at 500µM. Furthermore, the NO donor, SNP (100 µM) significantly enhanced the endogenous level of H₂S. **Conclusion:** We conclude that NO can interact with the pathway/s involved in the production of H₂S in the retina. It appears that maintenance of basal levels of retinal H₂S production is dependent on a tonic influence of NO. The pathophysiological basis of the interaction between these two gases in the retina merits further investigation.

Biography: Remmington Belford hails from Houston, Texas, and is a second generation Texas Southern University (TSU) Tiger. Remmington began his collegiate career at Prairie View A&M University, and is now actively perusing a Bachelor of Science in Biology, with a minor in chemistry from the College of Sciences and Technology here at TSU. Upon Completion of his bachelors degree, Remmington plans to acquire a masters in Public health and Pharmacology. Earlier this year Remmington received a travel award fellowship from (FASEB-MARC) to attend a scientific conference, where he not only had the opportunity to meet and network with professionals with in the biomedical sciences, but further solidified his quest in pursuing advanced training and professional development in the biomedical field. Remmington plays an active role in his community, holding several key leadership positions. He is a member of Brook Hollow Baptist Church where he serves on the Usher's Ministry. Remmington would like to pursue a medical degree to fulfill his ultimate career goal of being the proprietor of a successful skin care line.

Lan Bui

Research Mentor: Joshua Swan

A Retrospective Observational Cohort Study Comparing Diagnosis and Documentation of Delirium in the Surgical Intensive Care Unit

Abstract 006: Delirium is an acute brain dysfunction and an independent predictor of mortality and longer hospital stay. The Confusion Assessment Method for Intensive Care Unit (CAM-ICU) is a validated screening tool for diagnosis of delirium for intensive care unit (ICU) patients. In a cohort study conducted in our surgical ICU, the incidence of delirium using CAM-ICU criteria was 22% (20 of 93). However, in an observational cohort study conducted at 71 United States academic medical centers, only 6% (10,034 of 164,996) of patients with an ICU admission were documented with delirium using International Classification of Diseases - Ninth Revision (ICD-9) codes. This study will describe the variables which contribute to the low rate of delirium documentation using ICD-9 codes. The objective of the study is to compare the proportion of delirium documentation using ICD-9 codes with the proportion of delirium diagnosis using the CAM-ICU in the surgical ICU. The retrospective cohort study was conducted at a 24-bed SICU in a tertiary, academic medical center. Patients admitted to hospital from 06/01/2012 through 05/31/2013, who were 18 years or older and stayed in the SICU for at least 48 hours were included in the study. Patients admitted to other ICU during the same hospital admission and those who were not screened with the CAM-ICU were excluded. The primary outcome of this study is the proportion of surgical ICU patients diagnosed with delirium using the CAM-ICU and the proportion documented with delirium using ICD-9 codes. The secondary outcomes are the proportion of patients with diagnosis of hyperactive, hypoactive, and mixed subtype of delirium and the proportion with dementia documentation using ICD-9 codes. The study is in progress.

Biography: Lan Bui is currently a P3 student at Texas Southern University - College of Pharmacy and Health Sciences (TSU -COPHS). At TSU, she is an officer of American Pharmacist Association (APhA) and an active member of the American Societies of Health-system Pharmacy-Student Societies of Health-system Pharmacy (ASHP-SSHP). Besides school, Lan works as a research intern at the Methodist Hospital where she participates in conducting clinical studies focusing on the Surgical Intensive Care Unit population. She also volunteers regularly at Ronald McDonald House, a non-profit facility located inside Texas Children Hospital that houses pediatric patients' family overnight stay. Her philosophy for pharmacy practice is that every patient deserves the highest quality of pharmaceutical care. Lan's future goals are to pursue a post-graduate residency and to practice as a clinical pharmacist and researcher.

Rash-Dat Danmola

Research Mentor: Kasturi Ranganna

Expression profiling of genes responsive to NF- κ B mediated pathways in vascular smooth muscle cells (VSMC): Influence of butyrate, a histone deacetylase inhibitor (HDACi)

Abstract 007: Atherosclerosis, a gateway to cardiovascular disease, is a chronic inflammatory disease of arterial wall characterized by lipid accumulation, cellular migration, and proliferation and activation of inflammatory response. NF- κ B plays a pivotal role in the regulation of inflammation by regulating the expression of many genes involved in atherogenesis. Butyrate (BA), a four-carbon short-chain fatty acid produced in the gut by fermentation of fiber inhibits VSMC proliferation, a crucial element in the pathogenesis of atherosclerosis and restenosis. The goal of the present study is to determine whether butyrate arrested VSMC proliferation is linked to modulation of inflammatory response by examining the effect of butyrate on basal and lipopolysaccharide (LPS) induced NF- κ B expression and activity in VSMC. Effects of 5mM butyrate on basal and LPS -induced NF- κ B expression and activation in proliferating rat VSMC was assessed after 24 hours of treatment of butyrate pretreated VSMC with LPS to characterize and link the resultant effects on VSMC proliferation and morphology through Bio Rad cell counting technology, western blotting and immunofluorescence assay. Expression of VCAM and iNOS, target genes of NF- κ B was evaluated by western blotting. At 1 μ g/ml concentration, LPS increased VSMC proliferation, which was significantly reduced at 5 and 10 μ g/ml compared to untreated cells. However, LPS effects on VSMC cell proliferation were further inhibited by butyrate. Western analysis reveals slight induction of NF- κ B expression by different concentrations of LPS compared to basal levels in untreated VSMC although this increase is statistically insignificant. Butyrate significantly inhibited both basal and LPS-induced NF- κ B expression and we were unable to detect activated NF- κ B (phosphorylated) except in untreated VSMC. VCAM and iNOS, the target genes of NF- κ B exhibited interesting response. While butyrate inhibited both basal and LPS-induced VCAM expression, iNOS expression increased to same extent both by butyrate and LPS either alone or together compared to untreated VSMC. Taken together, our preliminary results indicate that butyrate-arrested VSMC proliferation appears to be linked to the antiinflammatory effects of butyrate by differentially modulating NF- κ B target genes. More investigation is required to identify those genes to fully understand the antiproliferative effect of butyrate.

Biography: Rash-Dat Danmola is a third year pharmacy professional student at Texas Southern University. She is from the small town of Hempstead, TX where she graduated from Hempstead High School in 2006. She completed her undergraduate degree in Chemistry at Texas A&M University in College Station, TX in 2009. As an undergraduate at Texas A&M University, she explored the various paths that her degree could provide and decided that her passion to help others would be best utilized in the field of pharmacy. After graduating, she worked for various companies such as Laboratory Corporation of America and Core Laboratories as an Analytical Chemist before entering the Pharm.D. program. Here at TSUCOPHS, Rash-Dat is active in numerous student organizations. She holds the office of Secretary of TSU APhA-ASP, Initiative Chair-Voting, Legislation and Immigration of TSU SPhA, and Co-Chaplain of the Delta Theta chapter of Kappa Psi Pharmaceutical Fraternity Incorporated. Post-graduation, Rash-Dat plans to complete a Pharmacy Practice Residency and pursue a career in Palliative Care.

Minh Do

Research Mentor: Kasturi Ranganna

Clusterin/Apolipoprotein J (CLU): Role in Histone deacetylase inhibitor (HDACi) inhibited vascular smooth muscle cell (VSMC) proliferation.

Abstract 008: Histone deacetylases (HDAC) are emerging therapeutic targets for treatment of cardiovascular diseases and other inflammatory diseases besides cancer. Because unwarranted proliferative phenotype of VSMC is an essential feature of vascular pathologies such as atherosclerosis and restenosis, HDACi are considered as potential anti-atherogenic agents by their antiproliferative, antioxidant and anti-inflammatory activities. Studies from Dr. Ranganna's lab have shown butyrate, a bacterial fermentation product of dietary fiber and a powerful HDACi, arrests VSMC proliferation and alters expression of several genes identified by gene array screening. Clusterin/apolipoprotein J (CLU), a secretory protein is one of the genes upregulated by butyrate. However, clusterin role in VSMC proliferation is divisive. The objective of this study is to confirm and determine the mechanism of CLU upregulation by HDACi to understand the significance/role of its upregulation in VSMC proliferation arrest. To confirm HDACi effect on CLU expression and its secretion, cell lysates and culture media of proliferating, rat aortic VSMC treated with required concentrations of HDACi for 48 hours were processed for western analysis. Furthermore, small interfering RNA (siRNA)-mediated gene silencing was performed by transfecting VSMC with two CLU siRNAs prior to treatment with butyrate to confirm the role CLU expression in butyrate arrested VSMC proliferation. Western analysis of cell lysates and culture medium of VSMC treated with 5 mM PBA and BA reveal that butyrate is more effective in CLU upregulation than its stable derivative PBA. Furthermore, western analysis, immunofluorescence staining and cell proliferation analysis revealed that VSMC transfected with CLU siRNA resulted in: at least 50% reduction in butyrate-induced CLU expression and secretion; reduction in intracellular CLU levels and about 2-fold increase in cell number compared to VSMC transfected with negative siRNA in response to 5 mM butyrate treatment. Interestingly even though phenylbutyrate is the stable derivative of butyrate, butyrate is more effective in upregulating CLU. Additionally, gene silencing studies appear to indicate CLU upregulation by butyrate contributes to VSMC proliferation arrest and warrants further studies with more effective siRNAs to establish CLU role in VSMC proliferation arrest.

Biography: Minh Do, when in high school, was very interested in medical science and the medical profession. This interest encouraged her to enroll into the Medical Assistant program at Everest College in California when she arrived in the United States in 2005. She volunteered as a Pharm-Tech in Methodist hospital for one year, where she had a chance to get experience and the insight of pharmacy profession. It was her passion for being a member of health care system to help improve community health that inspired her to pursue a pharmacy profession. After graduating from Everest College in California as a medical assistant, Ms. Do took pre-requisites courses required for pharmacy school in Lone Star College and Texas Southern University. Her hard work resulted in admission to College of Pharmacy at Texas Southern University. She has a dream of getting into a residency program, especially cardiovascular diseases and oncology and has a goal to become a competent pharmacist in future. She also plans to get a MBA degree after pharmacy school and continue doing research.

Badal Dave

Research Mentor: Selvam Chelliah

Synthesis of Curcumin analogues as anti-prostate cancer agents

Abstract 009: Curcumin, bis (4-hydroxy-3-methoxyphenyl)-1, 6-heptadiene-3, 5-dione, is the primary bioactive compound of *Curcuma longa* (Turmeric). Curcumin has been shown to possess wide range of pharmacological activities including antioxidant, anti-cancer and anti-inflammatory. One of the most important aspects of curcumin is its effectiveness against various types of cancer with both chemo preventive and chemotherapeutic properties. Unlike most chemotherapeutic agents, curcumin is reported to show little to no toxicity. Recent studies have found that curcumin has a dose dependent chemo preventive effect in several animal tumor bioassay systems including stomach, prostate and oral carcinogenesis. Prostate cancer is most prevalent cancer among African ancestry in United States and globally. Higher mortality rate (11%) is also the major concern. Our focus is to design and synthesis of two new curcumin analogues possessing anti-prostate cancer activity. The present proposal focuses on design and synthesis of novel curcumin analogues and biological investigation of cytotoxicity against human prostate cancer cell lines. Pyrazol and isoxazole analogues of curcumin will be synthesized in lab and characterization held by spectroscopy techniques (NMR, LC mass). Future focus includes test of new analogues on human prostate cancer cell lines via MTT assay.

Biography: Badal Dave was born in India and finished high school there. Badal came to the United States in 2008 after finishing two years of pharmacy school in India.. He learned English and also finished pre-requisites at the University of Houston and was accepted into the TSU pharmacy school in 2012. He has a musical background and is the lead singer in a band. All these help him study to become sharper and multitask. He enjoys research and invention of new things.

Marquesha Foreman
Research Mentor: Kiran Chilakamarri
Relation of Dynamics and Network Structures

Abstract 010: A number of physical processes are modeled by systems of differential equations with some parameters, and their solutions describe the dynamics of the physical processes. As the parameters change, the behavior of the physical process changes; however, the change could be abrupt. Modern bifurcation theory offers a tool to study such abrupt behavior of physical processes. Here we are interested in biochemical reaction networks. We list the 32 network models with three nodes and five interactions and analyze some of them. Our study of these network models began with the calculation of a characteristic polynomial of the Jacobian matrix associated with the equilibrium of the network motif. We can calculate the characteristic polynomial using the structure of the motif instead of algebra.

Biography: Marquesha Foreman is a native of Jennings, Louisiana. Since the Fall of 2011, Marquesha has attended Texas Southern University on a full ride academic scholarship. Here she pursues a degree in Mathematics with a minor in Computer Science. Seeking to make the most of her college career, Marquesha served as Sergeant at Arms of the University Academic Village and engaged in the TSU Hip Hop Society during her freshman year. During her sophomore year, she served as Vice President of the TSU chapter of the National Society of Collegiate Scholars. She is currently the President of the aforementioned organization. She has also volunteered for the annual Avon Breast Cancer Walk and Agape Ministries Development Center. Marquesha hopes to intern with the National Security Agency leading to a job offer.

La Mia Handy
Research Mentor: Shalondria Simpson
Pharmacy Students Perceptions on Team-Based Learning at a Historically Black College

Abstract 011: Lecture-based learning (LBL) is the traditional teaching method in most institutions, and is viewed as a passive form of learning. Team-based learning (TBL) is an active form of learning designed to enhance students' engagement in the classroom while also strengthening critical thinking, communication and teamwork skills. When comparing TBL to LBL, little to no research has been done to evaluate the perception of TBL in minority students. Our study examined changes in student engagement, performance and assessed students' perception of TBL among minorities. Results indicated that minority students responded positively to nearly all components of TBL modules.

Biography: LaMia Handy was born and raised in Galveston, TX. She attended TSU and went on to become the first person in her family to graduate from college with a Bachelor's of Science in Environmental Health. During her undergraduate studies, LaMia worked with Dr. Nora Osemene, the Pharmacy Practice Chair of the College of Pharmacy, on a Diabetic Education Study. The study was designed to educate seniors on the prevention, treatment and monitoring of diabetes. The study was successful and ignited her passion to conduct research. After receiving an undergraduate degree, LaMia worked at the University of Texas M.D. Anderson Cancer Center as a cord blood collector in the stem cell department. She then decided to pursue a Doctorate of Pharmacy. She has also served as a peer mentor for pre-pharmacy students at TSU. LaMia plans to pursue a residency after graduating from pharmacy school and will continue conducting research.

Chinonso Ezeudu

Research Mentors: Ya Fatou Njie-Mbye and Sunny Ohia

Regulation of Aqueous Humor Outflow by L-Cysteine in Trabecular Meshwork Tissues

Abstract: 012 Hydrogen Sulfide (H_2S) is a colorless gas that is produced endogenously in mammalian tissues. Previous studies from our laboratory have shown that H_2S [using H_2S -releasing compounds as donors] can induce pharmacological effect in mammalian ocular tissues. Furthermore, we showed evidence that the H_2S substrate, L-cysteine can decrease intraocular pressure (IOP) by increasing aqueous humor outflow through the trabecular meshwork. **Purpose:** To investigate the involvement of the biosynthetic enzyme for H_2S production (cystathionine β -synthase [CBS]) on L-cysteine-induced increase in aqueous humor outflow. **Methods:** Porcine ocular anterior segment explants were perfused with Dulbecco's Modified Eagles Medium (DMEM) using a constant perfusion head of 7.35mmHg and maintained at 37 °C with 95% air and 5% CO_2 . Stabilized explants were administered with CBS enzyme inhibitor [aminooxyacetic acid (AOA), 30mM] 30mins prior to L-cysteine (100 nM) treatment. The outflow was monitored for additional 4hrs; vehicle (0.1% saline) was run in parallel. **Results:** The H_2S substrate, L-cysteine [1nM, 100nM, 1mM], exerted a significant ($p<0.01$), concentration-dependent increase in aqueous humor outflow facility in porcine trabecular meshwork. The effects of 100 nM L-cysteine were completely blocked by AOA, an inhibitor of cystathionine β -synthase. Interestingly, AOA administered alone showed no significant effect on aqueous humor outflow.

Conclusion: We conclude that the effect of L-cysteine on aqueous humor outflow is dependent on the biosynthesis of H_2S in the anterior segment explants. Further studies are needed to determine the exact mechanism of action of H_2S on the regulation of IOP.

Biography: Chinonso Ezeudu hails from Enugu, Nigeria and is a third year pharmacy student at Texas Southern University (TSU). He graduated from high school at a very young age with the ambition to become a pharmacist and give back to the community. As an academic, Chinonso has received numerous awards such as the President's Leadership Scholar, National Society of Collegiate Scholars Merit Award, Tom Joyner's Foundation Scholar of the week, etc. He is currently a member of the TSU Debate Team, TSU Honors College, National Society of Collegiate Scholars, Phi Eta Sigma Honors Society, Golden Key International Honors Society, Student in Free Enterprise, and American Pharmacist Association. Chinonso hopes to continue to enhance his research skills thereby enabling him to become a biomedical science as well as a pharmacist.

Fomanyi Fossoh

Research Mentor: Omonike Olaleye

Characterization of Methionine Aminopeptidase-1 as a Novel Target for *Leishmania Major*

Abstract 013: Cutaneous leishmaniasis is caused by the protozoan parasite *Leishmania major* (*L. major*). *L. major* is transmitted by the bite of the phlebotomine sandfly and is the causative agent of disfiguring lesions. It is imperative to determine novel drug targets as well as develop new antiparasitic entities to combat the issue of drug resistance caused by the emergence of drug resistant *L. major* strains. Hence, we chose *L. major* methionine aminopeptidase-1 (LmMetAP1) as the drug target to identify potent inhibitors. Furthermore, to determine kinetic parameters of LmMetAP1, its biochemical characterization was conducted. LmMetAP1 is a metalloprotease that catalyzes the removal of the N-terminal methionine from a nascent polypeptide chain. This removal is necessary for important for several post-translational modifications to occur. These modifications include but are not limited to protein folding, translocation and localization. The activity of LmMetAP1 was determined using a chromogenic substrate. Optimal kinetic parameters for LmMetAP1 were determined by temperature, metal and substrate screens. Eight MetAP inhibitors were tested *in-vitro* to determine the percent of inhibition of LmMetAP1. We have successfully characterized and identified potent inhibitors of *L. major* promastigotes and LmMetAP1 in the nanomolar range. Our data suggest that LmMetAP1 could serve as a novel potential chemotherapeutic target for *Leishmania major*.

Biography: Fomanyi Fonge Fossoh, a second year pharmacy student, was born in the United States and lived in Houston for the most part of his adolescence. He literally stumbled on a book describing the task of a hospital pharmacist and realized that he could excel in this profession if he made the effort. The opportunity to do research has broadened his understanding of research methods and what it takes to truly be a scientist. He plans to pursue a combined PHD and Pharm D. degree.

Demetrius Gatewood

Research Mentor: J. Kenyatta Cavil

An Examination of Marketing Characteristics of Texas Southern University Football Consumers

Abstract 014: African American consumers' attendance at Historically Black College and University (HBCU) events, namely 'Football Classic' games have a historical relevance to the African American community and now HBCU community based on a socio-historical cultural empowerment associated with racial pride, cultural expression, and black masculinity. The purpose of this study was to examine how factors such as psychosocial involvement with the TSU football experience, consumption level, psychographic involvement with the TSU football experience; perception of TSU football, intensity of TSU football identification, and passion of HBCU cultural identification influenced TSU football consumers' (n = 138) attendance frequency at TSU football games and their consumption patterns based on points of attachments and motivation factors. Descriptive statistics revealed that the respondents attended HBCU sports more frequently than they did any other type of sport events, including TSU sporting events and were also avid consumers of HBCU sports. Descriptive statistics also revealed that passion of cultural identification and psychosocial involvement with TSU and HBCU fans significantly influenced TSU football attendance frequency. Moreover, psychosocial involvement with TSU football games exerted a profound and negative influence on TSU football consumption. Also to note, this investigation provides the basis for a longitudinal study that will allow TSU Sport Management Program students to measure whether there is any statistically significant changes from attendance at the shared partnership of the utilization of the HISD Delmar high school stadium compared to the new shared partnership with the Major League Soccer Dynamo in the new downtown BBVA Compass stadium that may provide marketing and branding initiatives for African Americans' consumption of sport. **Biography:** Demetrius A. Gatewood, from Lake Charles, Louisiana is a double major in Sport Management and Human Performance (Kinesiology). He is a senior at Texas Southern University and will be graduating in December 2013. Demetrius is also an honor student in the Department of Health & Kinesiology in the College of Education. During his undergraduate years at Texas Southern University, he participated in organizations that would strengthen his leadership amongst his peers and cohort. He was a member of the Texas Southern University Marching Band (a.k.a The Ocean of Soul, 2010) and the Texas Southern University Jazz Experience (Jazz Big Band 2010-Present). Demetrius currently is a member of the Sport Studies Leadership Association, a student organization and was responsible for writing the constitution.

Mayte Herrera

Research Mentor: Maria Burns

Maritime Accidents and Environmental Damage

Abstract 015: The purpose of this research was to evaluate the element of maritime safety, as stipulated in the International Code of Safety Management, per the IMO. Maritime casualties are distinguished into accidents, incidents and near misses. Upon Incident Investigation and Root Cause Analysis, their magnitude and cause is evaluated, hence they can be classified. Data was collected by field studies to the Port of Houston and the International Maritime Organization, through literature searches. Our results show that maritime accidents commonly occur due to vessel malfunction and human negligence and that these events cause not only monetary distress, but a huge environmental damage as well. explosion, grounding, collision, fire, ice damage, heavy weather damage. These accidents may impact the ship's condition by e.g. damaging the ship's hull, mechanical failure, damage of the ship's cargo areas, bridge, deck, accommodation area etc. The consequences may lead to loss of life, injury, damage or loss of cargo, as well as damage to the ship's structural integrity and mechanical failure. Any such kind of damage eventually deteriorates the vessel's seaworthiness. The information gathered reveals that at least 59% of maritime accidents pertain to human error (officers, crew, landside and pilots); machinery and technical failure amounts to 25%, crew exhaustion and lack of sleep amount to at least 5%, and the remaining 11% relate to the hull's deficiencies that affect seaworthiness. The official data from the global maritime organizations, combined with the primary information obtained from the Port of Houston, verify that over the past two decades, the number and severity of accidents has significantly been reduced. We conclude that the significant improvement within the industry is due to compliance to the global and national safety standards and the maritime regulations. Finally, the radical increase of marine training for the ship's crew is critically important to prevent these disasters in the future. **Biography:** Mayte Herrera has completed her freshman year in the Texas Southern University Maritime Transportation Management and Security Program. She has a keen interest in Maritime Safety and has commenced her Certified Training education with TSU. Her summer research in the area of safety has enabled her to pursue her dream in establishing a promising career in the fields of maritime transportation.

Sara Glenn

Research Mentor: Ayodotun Sodipe

The Effect of Microgravity on the Egg Laying Characteristic of *HYPYSIBIUS DUJARDINI*

Abstract 016: Tardigrades, also known as water bears, are a phylum of microscopic animals. They are distinguished for being one of the most complex of all known polyextremophiles as they are tolerant to a number of harsh and stressful environments such as extreme high and low temperatures, desiccation, ionizing radiation and microgravity. This makes them a model of high interest for research. This study analyzed the effects of microgravity on the egg laying characteristics of *Hypsibius dujardini*. The tardigrade must molt to lay eggs. This process usually requires 5-10 days and occurs several times throughout its life. Microgravity, also called weightlessness or zero gravity, is the absence of gravity. It is best illustrated by astronauts floating in their spacecraft. For research, microgravity is obtained by several different methods. In this study, microgravity was stimulated through a rotating cell culture system (RCCS). Three trial experiments were conducted in which the tardigrade *H. dujardini* was used as a model species. Female tardigrades were exposed to microgravity with the RCCS in slow turning lateral valves (STLV) at 10 rpm which imitates microgravity at the lower earth orbital (LEO). The purpose of this study was to investigate if the tardigrade species, *H. dujardini*, ability to molt to lay eggs is affected by microgravity. The animals were observed 12hr and 24hr post microgravity and this allowed for a comparison of the effects of a microgravity space environment on active female tardigrades ability to molt and to lay eggs. The traits were compared between tardigrades exposed to microgravity and those maintained in culture conditions without microgravity exposure as a control. Microgravity did not affect the active tardigrades ability to lay eggs after 12 and 24hrs. During microgravity, tardigrades molted, and females laid eggs. The study reports the first data on the effects of microgravity on a tardigrades ability to lay eggs after 12h and 24hrs of microgravity exposure. Extended hours of study for laying eggs and hatchability should be studied for clarity of the effect of microgravity on reproduction.

Biography: Sarah Louise Glenn is a senior at Texas Southern University where she majors in biology and minors in chemistry. Sarah was born and raised in Kemptville, Ontario, Canada and graduated from St. Michael's Catholic High School, a small catholic school in Ontario, Canada. Sarah is a recipient of a full athletic scholarship at Texas Southern University, where she is a starting defender for the universities women's soccer team and was selected for the pre-season SWAC second-team. Sarah has been on honor roll and dean's list for her past three years at Texas Southern University. Sarah plans to graduate from Texas Southern University in 2014 and then attend Dental school.

Carmen Gonzales

Research Mentor: Audrey Player

FOXQ1 Gene Analysis in Breast Cancer

Abstract 017: Breast cancer is characterized according to its related subtype. Presently, there have been five different subtypes identified: designated basal-like/Triple negative (TN), ERBB2+/-like, normal-like, and luminal A and luminal B. Arguably triple negative is the most valuable from a clinician standpoint. Triple negative is the most aggressive compared to all the other subtypes. TN results in a low patient survival rate and there are few therapies. TN is defined as negative for three genes: estrogen receptor (ER), progesterone receptor (PR), and ERBB2. Goal of this study was to identify genes differentially expressed between other subtypes and TN with the primary target of identifying specific genes that define TN. Originally 16 genes were identified that distinguish TN and other breast cancers. The particular gene examined for this study was FOXQ1. Methods used to analyze FOXQ1 and its relation to TN was polymerase chain reaction (PCR) and immunohistochemistry (IHC). PCR assisted in showing the relation between cell lines and FOXQ1 using RNA analysis, while IHC was used to analyze protein. PCR showed an over-expression of FOXQ1 in the aggressive (TN), compared to all others. The immunohistochemistry showed relatively comparable results. The analysis showed a 16.7% increased gene expression in TN with the gene FOXQ1. Results following PCR and IHC analyses were encouraging. The data proved to be useful for downstream analysis, because of the intensity of expression of FOXQ1 in TN.

Biography: Carmen Gonzales is originally from Lampasas, Texas. Growing up she always had a desire to excel in golf and school. She was recruited to play golf at Texas Southern University and was initially a pre-pharmacy major. However, she changed her major to biology and made the President's list. After TSU, she plans to go to med school and become a doctor.

Hien Huynh

Research Mentor: Omonike Olaleye

Characterization of Methionine Aminopeptidase 1 from *Trypanosoma brucei*

Abstract 018: Human African Trypanosomiasis (HAT) is a debilitating and potentially fatal disease caused by protozoan hemoflagellates belonging to the complex *Trypanosoma brucei*. HAT is a neglected tropical disease transmitted by the tsetse fly. Majority of the treatment options were developed over 50 years ago and show severe toxicity, marginal efficacy and/or emerging resistance. This calls for new and more effective drugs to treat the trypanosomatid infection. In this regard, a better understanding of biochemical and molecular characterization of potential chemotherapeutic targets is essential. Hence, the focus of our study is the characterization of *T. brucei* methionine aminopeptidase 1 (TbMetAP1) and identification of novel inhibitors. MetAP is a metalloprotease that catalyzes the removal of the N-terminal methionine residues from nascent proteins. It plays an essential role in post-translational modifications required for cell proliferation. Previous studies have shown promising results of methionine aminopeptidase inhibitors against malaria and tuberculosis. The human MetAP1 has low similarity with the TbMetAP1 making it a promising chemotherapeutic target. The TbMetAP1 gene was cloned, overexpressed and the resulting protein was purified to homogeneity in collaboration with UTEP. An assay for determination of the enzymes activity was conducted using L-Methionine p-nitroanilide as the substrate. Metal, pH, temperature, and substrate activity screens were performed on TbMetAP1 to determine the optimal kinetic parameters for its activity. Eight small molecule MetAP inhibitors were further screened against TbMetAP1 to determine their inhibitory activity against the enzyme. We have successfully characterized TbMetAP1 and determined optimal conditions of temperature, substrate, pH and metal required for activity. We have also identified small molecule TbMetAP1 inhibitors that show greater than 25% inhibition at micromolar concentrations. TbMetAP1 is a promising and novel anti-parasitic drug target for treatment of HAT. The expression and characterization of TbMetAP1 will allow for better understanding of the target and development of more efficacious drug inhibitors of *T. brucei*.

Biography: Hien Huynh originally from Viet Nam, came to America to study as a senior at Uniontown High School in Kansas. She then attended Kansas State University of Engineering and was presented with the Outstanding Student in Mathematics and Science award. Huynh is currently a P2 Pharmacy student. In the Summer of 2007, she volunteered at Mercy & Truth Medical Missions Clinic in Kansas City, Kansas and was greatly inspired by how health care professionals at the clinic worked tirelessly to provide healthcare to the underserved and uninsured of the community. Patient care has then remained her utmost interest. This wonderful experience propelled her to pursue higher education in health care and to reach out to the underserved. In August 2012, she volunteered with Meals on Wheels and was greatly impressed by the organization's efforts to end senior hunger. Her hope is that with the knowledge of a pharmacist, she would be well equipped to join the efforts to improve access to health care to the underserved and uninsured in America and developing countries. Hien plans to pursue specialty residency training and eventually practice as a clinical specialist.

Ayzha Ward

Mentors: Yunjiao Wang and Kiran Chilakamarri

Network Motifs and Representations

Abstract 019: A number of physical processes are modeled by systems of differential equations with some parameters and their solutions describe the dynamics of the physical processes. The purpose of this project was to examine network motifs and the relation between the number of arcs, nodes, and states of stability, instability, and equilibrium that they have. Differential equations represent the rates of change of a motif's nodes in relation to time and other nodes within the same network. When the parameters of a motif change, the dynamics of the network may experience sudden changes. Modern bifurcation theory offers a tool to study such sudden behavior. Here we examine the phase spaces and bifurcation diagrams of motifs using numerical methods.

Biography: Ayzha Ward is a sophomore at Texas Southern University with a major in Computer Science and a concentration in Networking. Her experience includes hands-on work involving the configuration of Cisco IOS network devices such as routers, switches, etc. Additionally, she was a Student Academic Enhancement Services (SAES) math tutor for the Spring 2013 school semester. Ms. Ward's accolades include being a Louis Stokes Alliance for Minority Participation (LSAMP) scholar. Her educational goals include completing her undergraduate studies and advancing on to graduate school in a computer science-related major. Ms. Ward's career goals involve working for a company centered on improving the efficiency of communicating across internetworks.

Tamesha Hill

Research Mentor: Maria Burns

The Evolvement of Piracy and Its Effect on the Shipping Industry

Abstract 020: In the maritime industry there are many dangers, seen and unseen. One of the primary dangers that are relative to my research is piracy. Dating back to as early as the 1800's, piracy has been the most common denominator for the shipping industry. My project discusses the evolvement of this "crime" and how its effects have impacted the shipping industry. Piracy is often mistaken for terrorism, which in actuality; they are fueled by different intentions. Terrorism is linked to religious beliefs while piracy is motivated by financial gain. Piracy consists of a group of criminals, whose aim is to capture vessels with valuable goods to make a profit off of the stolen goods or either collect a ransom that is worth millions of dollars. My research has shown that piracy not only affects the shipping industry, it also has effects on the consumers. The United States has shown an increase of \$1.6 billion in exports and as much as \$2.8 billion for exports. In the shipping industry these valuable vessels which carries this type of cargo is a massive target to pirates. Based on my research the maritime industry is evolving rapidly and so are the pirates. They are producing new ideas and becoming more aggressive as they target vessels that are moving goods throughout the waterways. This research shows the effects and the evolvement, but also how to help counteract some of its efforts, to help the maritime industry.

Biography: Tamehsa Hill after graduating from high school started a government career with the Postal Service. After 11 years she decided to further her education and enrolled in Texas Southern University. Both working outside of TSU and being a mother and going to school were quite difficult. However, she was accepted into the Thomas Freeman's Honor College; she was inducted into Who's Who among College Students and also received accolades from the Department of Maritime Transportation for making the Dean's list and Honors Day recognitions. In life she was counted out so many times, but she chose to fight through her struggles, and in the end she is the epitome of a true conqueror.

Alex Holt

Research Mentor: Daniel Vrinceanu

Finite Difference Calculation of Quantum States of a 2-D Dipole

Abstract 021: There exists an interest in the physics of solids containing an edge dislocation, because it affects its mechanical and electrical properties. In this case, we have a straight edge dislocation oriented along the z-axis that within a

$$V(r, \theta) = p \frac{\cos \theta}{r}$$

continuum model has a potential energy of around the edge of the dislocation. This problem has an extensive history of weak approximations of its energy values, especially its ground state. The variability of the precision of solutions has shown that accurate numerical solutions are not easily obtained. The source of this difficulty is the highly singular nature of the potential. We realized there are logarithmic contributions to the wave function at the origin that have been ignored by previous investigators. Therefore, we adapted a 2-D finite difference scheme that takes into account the logarithmic behavior of the wave function at the origin, mitigating previous short-comings. Specifically, we employed the asymptotic behavior correspondence (ABC) methodology. Excellent results were obtained by implementing and running massively parallel special purpose software (PETSc, SLEPc) within TSU's High Performance Computing Center.

Biography: Alex Holt is a senior physics major at Texas Southern University. He is a native Houstonian, whose mother had graduated from TSU. Before coming to TSU, Alex had worked for the Houston Independent School District as a high school math teacher assistant for a couple of years. After beginning his college career at Houston Community College, he transferred to TSU in order to pursue physics. For the past three semesters, he has been a physics tutor for the Student Academic Enhancement department on campus. Alex is also a student member of the American Physical Society. Alex's main interests are quantum theory and computational physics. His other interests include computer programming, traveling, and reading comic books. Upon graduation, Alex will start his career as a high school physics teacher. Alex is excited by the idea of giving his future students an understanding of how the universe works. His goal is to inspire the next generation of physicists.

Jameisha Jones

Research Mentor: Candy Ratliff

Analysis of the Criminal Justice Response to Victims of Sexual Violence in Harris County

Abstract 022: Over the past ten years specialized task force and victim advocate groups have recommended that specialized training on issues related to the crime of sexual assault be conducted separately and not just as a subpart of domestic violence training. Police Executive Research Forum (PERF), surveyed police agencies to assess policies for investigating and reporting sexual assaults and found that 92% of agencies have policies or protocols on the responsibilities of *officers who respond to sexual assault calls*, and 81% have training curricula for those employees. The objective of this research is to determine what training procedures are in place to assist “new” first responders who are called to investigate sexual violence cases. Researchers examined law enforcement training protocols to determine whether first responders received sexual assault/violence training separately. Analysis of nine police training protocols reveals that in 100% of the cases sexual assault training was a sub-part of investigations or domestic violence curriculum. Trainees were tested on types of sexual assault investigations and crime classifications of offences with code citations. Response to victims was marginally included in the training. In addition, 0.2% offered to officers who are interested, separate sexual assault investigation training facilitated by external agencies. Data suggest there is a need for uniformed police training.

Biography: Jameisha Dar’Relle Jones is from the small town of Benton Harbor, Michigan. She is currently doing a junior major in Political Science and minor in English at Texas Southern University. After receiving her BA in Political Science, she plans to attend the Thurgood Marshall School of Law at Texas Southern University or Howard University’s Law Program. She aspires to become a defense attorney for one of the following states: Texas, Georgia, or the District of Columbia.

Jennifer Julian

Research Mentor: Albertina Hughey

An Inquiry into the Parallel Processes of Literary Fiction Writing and Textual Encoding Using XML/XSLT

Abstract 023: This inquiry looks into the parallel processes of textual encoding using XML/XSLT and creating literary fiction. The goal is to show that there is very little difference between the two medias and that they are inter-reliant on each other in contemporary literary and humanities studies. This inquiry uses the TEI guidelines as well as various sources used in the creation of literary fiction works. The focus on this segment of the combined Humanities and Digital Computer Science related materials explores how meta-text and search engines can be used to explore a wide range of readings for various types of concerned researchers. This inquiry shows the significance of publishable medias in the present and near future.

Biography : Jennifer Julian is an English Major/Computer Science Minor at Texas Southern University. She was born and raised in Houston, Texas and graduated from Jack Yates Senior High School. She has an extensive family from Louisiana and enjoys spending time with them when she can. She creates websites, writes fiction, and designs C++ and Android programs in her spare time. She has finished most of her prerequisites to obtain her degree and will be entering into the Master’s degree program for English with a focus in Literature in January 2014. She relishes reading historical accounts of American Inventors and Authors particularly those in the southern regions. One day she hopes to publish her original novels as well as teach at Texas Southern University. She loves literature and learning how to apply the text as a shared history for the world. She became certified in Creative Writing through the English Department. One of her side projects for the year is to craft a fully comprehensible and entertaining manuscript for National Novel Writing Month which is in November. She has participated in this endeavor for the last five years. She plays the piano and clarinet and speaks Spanish and Louisiana French. Her ultimate goal in life is to become the teacher that makes learning the best experience that can be had for her students.

Stephanie Mata

Research Mentor: Anthony Rodriguez

Speaking of Trees: An In-depth Study of Forestry and Habitat at Texas Southern University

Abstract 024: The urban forest has been at the global forefront of a variety of studies and research projects in recent years, and it's picking up momentum. This study looks at the urban forest within the context of Texas Southern University, with the premise that the natural environment is very important in this academic setting. The urban forest within this institutional environment holds several key positions, including the historical, the social, the physiological, psychological and general wellbeing of campus dwellers and surrounding community, as well as the overall campus ambiance. In order to establish probable values, the study will include an inventory of the trees, the assessment of canopy proportion, and a prediction of canopy gains and/or losses for future outlook. Additionally, the study presents the role that the urban canopy and flora have on the fauna within the mixed environment of the built and unbuilt. In order to preserve and maintain local wildlife in our urban area, we must first engage the community, in addition to educating the interconnections within this ecosystem. By taking inventory, documenting, and labeling the tree canopy within the Texas Southern University perimeter, we will be able to locate the trees geographically. Through visual surveys, we will also take inventory of local fauna throughout the course, and we will engage the campus community through the creation and promotion of an online survey as well as the utilization of social media outlets. The study established a mechanism to value the trees within the campus environment. The final aspect of the study is the insertion of the university campus map in the ESRI Community Campus Map project.

Biography: Stephanie Mata was raised in the small rural town of Valdosta, Georgia. Stephanie is the proud mother of three children. She is an avid reader and considers herself a lifelong learner. She has passions for environmental conservation, history, politics and writing- just to name a few. Her love for trees has evolved from the daydreamer and explorer to the conservationist and activist. She is an active member of both Panda.org and Greenpeace, where she endeavors to persuade political officials and increase public awareness of the dangers of global climate change and its effects on ecosystems. Stephanie is seeking a degree in Public Affairs and is the current Vice President of the Public Affairs Club. This summer, she was also awarded the National Wildlife Federation Campus Ecology Fellowship and serves as Ambassador for their Student Leadership Program. Upon graduation next spring, Stephanie plans to enroll in the Graduate program here at TSU.

Afshin Nefabat

Research Mentor: Amruthesh Shivachar

Isolation and Morphological Characterization of Glial Cell Membrane Vesicles (Gliosomes) from Rat Brain

Abstract 025: Glial cells are distributed in the central and peripheral nervous systems. These cells are divided into subtypes that play various roles within a neuronal network. It has been recently demonstrated that glial cells form resealed vesicles of subcellular fragments called gliosomes, similar to synaptosomes, isolated from neurons. It is unclear if these gliosomes can be used as representatives of glial cells from adult brain. It is also uncertain if they are useful in functional and pharmacological assays. The purpose of this study was to optimize conditions for isolation and immunocytochemical characterization of pure gliosomal fractions from adult brain cortices. Gliosomes and synaptosomes were isolated from frozen adult rat brain cortices by homogenization followed by percoll gradient centrifugation and the washed gliosomes and synaptosomes were suspended in the sucrose containing buffer. The purity of gliosomes and synaptosomes were analyzed by immunocytochemistry. Aliquots of isolated gliosome or synaptosome were spread on to a glass-chamber slide and the attached vesicles were fixed with 4% paraformaldehyde. Then the attached vesicles were washed and blocked for 2-3 days with 5% BSA and 0.1% triton X100 in deionized water at 4°C. These vesicles were incubated overnight with antibodies against the glial- or synaptosomal-specific marker proteins, including anti-mouse monoclonal glial fibrillary acidic protein (GFAP), anti-rabbit polyclonal glutamate transporter 1 (GLT₁), anti-rabbit monoclonal synaptophysin (SYP), anti-mouse polyclonal neurofilament protein (NFL), anti-goat polyclonal cannabinoid receptor 1 (CB1R) and anti-rabbit polyclonal cannabinoid receptor 2 (CB2R). The resulting antigen-antibody complexes were labeled with respective secondary fluorescent antibodies and the fluorescence images were captured using an Olympus IX81 inverted microscope. Our preliminary results show that gliosomal fractions contained GFAP+ve vesicles suggesting that they are astroglial cell membrane fragments. Additionally, the gliosomes also stained positive for GLT1 and CB1R and CB2R proteins. Surprisingly, these vesicles showed some immunoreactivity for synaptophysin, and neurofilament proteins that are thought to be synaptosomal-specific proteins, suggesting some cross contamination with synaptosomes. Nonetheless, these results suggest that gliosomes may be useful membrane vesicles for the study of adult brain glial cell function.

Biography: Afshin Nejabat as far back as he can remember, always wanted to be a scientist, He would go through all of the household items looking for things to mix and create. His fondest memories in undergraduate studies were during science laboratories. After graduating with a B.S. in biochemistry, he pursued an M.S. degree in chemistry. After completing his graduate degree in chemistry, Afshin came to the conclusion that he wanted to obtain a PharmD degree and was admitted to the program at Texas Southern University. His current research in the URP program has introduced him to some new aspects of scientific investigating and these will be useful for him in reaching his future professional goals .

Irma Nikicicz

Research Mentor: Michael Sollars

In Search of Milagros: Building a Foundation for a Novel

Abstract 026: The scope of my research this summer focuses on creating the framework and initiating the process of writing a fiction novel. This research specifically involves investigating the two primary settings introduced in the novel's first three chapters. The development of the first setting, Brownsville, Texas, involves using personal experiences and familiarity with the environment from growing up there. The second setting, New York City—specifically the Upper East Side—requires deeper investigation, including anything from geography and lifestyle to real estate and weather. A thorough study of these two environments is essential, especially the unfamiliar, for an accurate portrayal of the settings, their contrasts and similarities, in the novel. The second component of the research involves the creation of the novel's two main characters—Milagros Arguello, the child, and Mila Glassman, the adult. The narration of Mila's past is told in third-person point of view. She is an adult living in New York City, but flashbacks of her childhood take her back to Brownsville, Texas, where the novel begins. Exploration of her adult persona focuses largely on her career as an editor-in-chief of a reputable travel magazine. This aspect of the research requires an in-depth study of an editor-in-chief's role in the hierarchy of magazine publishing, including income potential, job responsibilities, and lifestyle. Deconstructing the personality of her adult character uncovers deep, childhood scars that conflict with her current relationships. Flashbacks are used as a technique for disclosing to the audience the trauma that caused those scars. The creation of Milagros (aka Mili), the main character as a child, involves using mostly anecdotal experiences.

Biography: Irma Nikicicz was born in Brownsville, Texas, where she lived until she was seventeen years of age. Irma was raised in a largely bilingual home, and from a very tender age she became interested in the power and magic of language. Today, that interest in language stands fundamental to her writing, as she has come to rely on the precision of words for the delivery of expression. Irma is fluent in Spanish and has taken Polish and French language courses as well. She traveled around Europe, visiting France, Germany, and Poland. In Poland, where she traveled extensively, she visited Auschwitz-Birkenau during the summer of 2009. That visit was an eye-opening experience and made a huge impact on her life, after having seen—firsthand—the remnants of the holocaust's horror. Besides travel, Irma enjoys ethnic cuisine. When visiting Washington, D.C. one year, she tried Ethiopian food for the first time and has been hooked since then. She enjoys skiing with her family in the winter and has never lost her love of the beach at South Padre Island, where she spent her summers as a child. Irma is an English major and Spanish minor at Texas Southern University. In the genre of poetry, Irma gravitates towards the Romantics. She also enjoys reading the poetry of Pablo Neruda. In the area of modernism, she is an aficionada of Ernest Hemingway. One of her favorite books is *The Adventures of Huckleberry Finn* because of Mark Twain's use of authenticity in language. She currently lives in Sugar Land with her husband and four children.

Francis Ogonnia
Research Mentor: Ayodotun Sodipe
Morphological Changes in Yeast Cells Exposed to Oxybenzone

Abstract 027: Oxybenzone is one of the derivatives of benzophenone family which is widely used as a sunscreen agent in numerous cosmetic products because of its ability to absorb Ultra Violet spectrum with the range of 250 – 320nm. Studies have shown that oxybenzone interrupts cutaneous photoisomerization of 7-dehydrocholesterol which serves as the precursor for the synthesis of Vitamin D resulting in physiological imbalance in tissues. This present study focused on oxybenzone-induced morphological changes in *Saccharomyces cerevisiae* based on dose and time variations. Stock sample of the Yeast cell was obtained from ATCC and sub-cultured with agar. A set of five test concentration of 2µg/ml to 10µg/ml with a total of three replicates were used to spike the yeast cells and examined after 2, 4, 6, 8, 10, and 12 hours incubation at 25°C. Morphological change in shape was observed under an Inverted Eclipse Ti Nikon Multipurpose Microscope. In the assay, the result showed significant change on 10µg/ml with threshold of 4µg/ml relative to period of incubation. The cell images suggest that there was an apparent structural damage from smooth round / ovoid to rough and smeary shape in the yeast cell after 6 hours of exposure. These findings indicate that the cell integrity of *Saccharomyces cerevisiae* can be compromised by oxybenzone and further studies need to be done to understand the cellular response to oxidative stress and the pathway for repairing DNA damage induced by oxybenzone.

Biography: Francis C. Ogonnia is a post-baccalaureates student doing a major in Biology at the College of Science and Technology (COST), Texas Southern University (TSU). Prior to enrolling at TSU, he earned a Master of Science degree in Applied Biomolecular Technology from the University of Nottingham in the United Kingdom and a Bachelor of Science degree in Applied Microbiology and Brewing from Enugu State University of Science and Technology, Nigeria. Francis continues to participate in research as a Research Fellow at the NASA Center for Bionanotechnology and Environmental Research within the College of Science and Technology at TSU. Ogonnia will be completing the post baccalaureate program in December 2013 with plans of attending medical school.

Ashley Oliver
Research Mentor: Aisha Morris Moultry
Assessment of Medication Disposal Education in Schools and College of Pharmacies Nationwide

Abstract 028: Proper medication disposal is environmentally friendly, and it has a significant impact on the prevention of medication misuse and criminal acts involving medication abuse. To ensure pharmacists provide effective patient education on medication disposal, pharmacists must receive appropriate training in this area. Therefore, a study was developed to determine the presence of medication disposal subject matter in the curriculum of Doctor of Pharmacy degree programs. In order to assess the curriculum content of institutions and the knowledge of academic pharmacists on medication disposal, a 10-item survey was developed to measure the following categories: educational background on medication disposal and demographics, knowledge of how to dispose of medication, laws and regulations of medication disposal, medication disposal education within curriculum of institution. The survey was validated by a panel of practicing pharmacists. Contact information, including email addresses, for the academicians was acquired through public university directories of colleges of pharmacy. The academicians will be solicited for anonymous survey participation via email through coordination with the Texas Southern University Office of Online Education. An initial email requesting participation will be submitted the first week of August 2013 with an attached informed consent and a Survey Monkey link to the survey. Two weeks later a reminder email will be sent for participation. After four weeks from the initial email, the survey will be closed and data will be compiled, analyzed, and reported.

Biography: Ms. Ashley Oliver is a 3rd year pharmacy student at Texas Southern University's College of Pharmacy and Health Sciences where she learns, does research, serves on the curriculum committee, and is a leader in several pharmacy organizations, including the Student Society of Health-system Pharmacy(SSHP), Student National Pharmaceutical Association (SNPhA), and Kappa Psi Pharmaceutical Fraternity Inc, . In addition to being in the pharmacy program, she is an intern at CVS Pharmacy where she plays an important role in patient's healthcare through intervention and counseling. She also is a VALOR student at the Michael E. Debakey Veterans Affairs Medical Center, where she has gained inpatient and outpatient pharmacy experience. Prior to going to pharmacy school, Ms. Oliver received her undergraduate education in biochemistry from Texas Woman's University in Denton, TX. During her time at Texas Woman's University, Ms. Oliver prepared herself for pharmacy school by being involved in organic chemistry research, being a teaching assistant for the chemistry department, being inducted into biology and chemistry honor societies, and making the dean's list. Ms. Oliver also had the opportunity to teach high school math for a year after completing her degree. After graduating from pharmacy school, Ms. Oliver plans to further her education with a residency or fellowship.

Amy Oseghae
Research Mentor: Dong Liang
Nanoparticle Formulation of Resveratrol for Intravenous Administration

Abstract 029: Resveratrol is a photosensitive, plant-derived polyphenol found in grape skins. It is a strong antioxidant with anti-cancer and cardio-protective properties. Resveratrol has very low oral bioavailability and disposes rapidly in the blood circulation. Thus, there is a need of developing a sustained release formulation of the drug for clinical use. Two methods were used for the preparation of the nanoparticles. One method is to use a high-speed mixer and the other is to use a probe sonicator. For both methods, an oil-in-water emulsion was first formed by injecting PLGA and resveratrol dissolved in dichloromethane into a 1% polyvinylalcohol (PVA) aqueous solution. Resveratrol containing nanoparticles formed spontaneously when dichloromethane was evaporated under a high speed mixing or the probe sonicating. Nanoparticles were collected, lyophilized, and then evaluated for particle size distribution using Zetasizer, formulation recovery, encapsulation efficiency, and *in vitro* release profiles. Resveratrol concentrations were quantified using an established HPLC method. Particle size and encapsulation efficiency of the homogenizer mixing were determined and are shown in the Table below:

	Batch #1	Batch #2	Batch #3	Average
Particle Size				
Homogenizer	500.3 nm	258.7 nm	425.0 nm	394.7 nm
Sonication	502.8 nm	442.7 nm	387.6 nm	444.4 nm
Encapsulation Efficiency				
Homogenizer	22.1%	11.2%	21.0%	18.1%
Sonication	2.64%	2.23%	2.81%	5.81%

Resveratrol was formulated into nanoparticle formulations and the homogenizer method proved better encapsulation efficiency than the sonication method. Future studies would include the dissolution release profile of the nanoparticles.

Biography: Amy Oseghae was born and raised in San Antonio, Texas and completed her undergraduate coursework at the University of Houston and Texas Southern University. She is now a P3 student of the Doctor of Pharmacy program at Texas Southern University College of Pharmacy and Health Sciences. She hopes to complete a clinical residency or pharmaceutical industry fellowship after graduation and continue doing research, managed care or regulatory affairs in the government sector. Amy Oseghae is part of several extracurricular activities including the American Pharmacist Association in which she is vice president of the Texas Southern University Academy of Student Pharmacists Chapter. When not busy with studying, she enjoys volunteering to helping her community by participating in health fair events, charity fundraisers, and mentoring programs.

Enryka Payton

Research Mentor: Uche Ndefo

Understanding Insulin Reluctance in African Americans with Diabetes

Abstract 030: There is a disparity in the prevalence of diabetes in African-Americans (AA) compared to Caucasians with AA having an incidence 1.7 times greater than that of Caucasians. The American Diabetes Association (ADA) has established the treatment goal for persons with diabetes as an A1c less than 7%. However, according to Healthy People 2020, only 58.5% of the adult diabetes population have achieved that goal. Glycemic goals are more attainable with insulin than with oral antidiabetics. However, patients are generally resistant to the initiation of insulin for a variety of reasons which include the fear of needles, the weight gain associated with insulin and the perception that insulin is a sign of disease progression. The purpose of this study is to determine the expectations and concerns that African Americans with diabetes might have about their condition and treatment.

Biography: Enryka Payton is a native of Houston, TX, who began her journey in the Pre-medical Concepts Institute at Prairie View A&M University in 1997, where she studied biology under the guidance of Dr. George Brown, an outstanding mentor and instructor, who sparked her interest in research and Pharmacy. Pharmacy for her was an opportunity to enter a field that is highly diverse and would cater to her passion for science and math. Ms. Payton is a third year student in the doctor of pharmacy program and plans to impact the field by conducting research. Enryka stays involved in student organizations at Texas Southern University College of Pharmacy and Health Sciences and within her community. Her memberships include the Student Society of Health-System Pharmacists, Student National Pharmacy Association, Zeta Phi Beta Sorority, Inc., African Pharmacy Association, Higher Dimension Church and American Pharmacist Association where she holds various leadership positions. She has participated in such projects as the Hip-hop for HIV initiative, Beat the Pack Smoking cessation program, a flu clinic sponsored by Walgreen's, grocery and gas give-away sponsored by Higher Dimension Church and numerous health fairs within the Houston third ward community.

Du Phung

Research Mentor: Amruthesh Shivachar

Development of a Cell Migration Assay Method using 3-D Encapsulation Technology

Abstract 031: Cell migration is a normal process in development and maintenance of multicellular organism. However, in the formation of tumor, cell migration leads to cancer progression and metastasis. Currently, there are several methods to assess cell migration, some of which involve lengthy and cumbersome processes. The purpose of this study was to develop a rapid throughput cell migration assay method for assessing cell migration of glioblastoma multiforme (GBM) cells encapsulated in a 3-D PuraMatrix nanoparticle hydrogel scaffold. GBM is one of the most invasive, rapidly proliferating, aggressive type of brain cancer cells. The cultured GBM cells were mixed with the hydrogel (1%) at 1:1 ratio and the acidic suspension was pipetted as 15 microL "drops" into the growth medium at neutral pH to facilitate gel formation. The resulting, uniformly-sized, 3-D "drop-cultures" were incubated with the growth medium for three days. To measure the number of cells migrated out of the gels, we placed one gel-capsule per well in a 24-well plate containing the growth medium in the absence or presence of various concentrations of each drug under investigation. We used the following drugs (0-10microM): soluble epoxide hydrolase (sEH) inhibitor (sEHI#1471), microsomal epoxide hydrolase inhibitor (mEHI#1750), and a non-selective EH inhibitor 12-[[tricyclo [3.3.1.1^{3,7}] dec-1-ylamino] carbonyl] amino]-dodecanoic (AUDA), a synthetic cannabinoid analog, WIN75-212, Curcumin, and Resveretrol. Cells migrated from the 3-D gel scaffolds were counted by staining intact cells with the fluorescent dyes Hoechst 33342 which stains DNA of both living and dead cells blue together with propidium iodide (PI), which is membrane impermeable and stains the DNA pink only in cells with disrupted membranes. Cells from 3-5 non-overlapping microscopic fields were visualized on an Olympus IX81 automated inverted fluorescent microscope equipped with a Hamamatsu CCD camera. Both fluorescence excitations were captured and automatically merged using the Simple PCI Imaging software. The drug-induced inhibition of cell migration was calculated as a percent of total blue nuclei found outside the hydrogel in controls and cell death was calculated [pink cells x100/total cells]. Our preliminary results showed that among the drugs tested, WIN55212 inhibited 27, Curcumin, 25 and Resveretrol 34% of cell migration at 3 uM concentration. At that concentration, WIN-, curcumin and resveretrol induced 3, 25 and 6% cell death, respectively, among the migrated cells. More experiments are needed to establish statistical significance. We found that the drop-culture method was not only rapid, but also easy to perform and one can simultaneously determine cell migration and cell viability in one assay. Our method can be applied to screen drugs in a high-throughput multiwell assay system to simultaneously assess their effect on cell migration and cell toxicity.

Biography: Du Phung was born in Vietnam. He studied aquaculture biology at the Agricultural and Forestry University of Ho Chi Minh City. After graduation, he worked for a Veterinary Drug and Chemical Company for three years and then moved to Houston in 2006 to live with family. He began by obtaining his GED at Houston Community College and in 2009 graduated with an Associate's Degree in Piping Design and worked for a manufacture where they produced hardware for oil industry as a drafter. His interest in science led him to decide to become a Pharmacist and he took night classes for the pre-pharmacy program. In 2012, Du Phung was accepted into the Pharmacy Professional Program of Texas Southern University.

Delon Poole

Research Mentor: Audrey Player

A Study of the Gene BAG2 in Triple Negative Breast Cancer

Abstract 032: Breast cancer is a heterogeneous type of cancer, which includes both aggressive and less aggressive types. Aggressive breast cancers (TN) have been shown to be negative for 3 genes, estrogen receptor (ER), progesterone receptor (PR) and ERBB2 gene. It is important to understand TN because TN cancers spread and kill patients, and there are no treatments for the disease. This study is aimed at trying to characterize TN cancers so that we can identify genes that define the disease, and lead to better treatment. An experiment was used to identify genes different between TN and other types of cancer. BAG2 was one of the sixteen genes that were chosen. A polymerase chain reaction (PCR) was performed to amplify BAG2 in comparison of RNA levels in triple negative compared to non-triple negative cell line samples. Immunohistochemistry was used to examine the protein levels in the patient samples. PCR showed that there was a difference in the levels of RNA: The cell line MCF7, which was less aggressive, had a lower amount than MDA231 (the more aggressive type of cancer). However, immunohistochemistry showed that there is no difference in the protein levels in the triple negatives and other types of cancer. BAG2 does not appear to be a gene associated with TN breast cancer.

Biography: Delon Poole is the first member of his family to attend a university. Having asthma since birth made it difficult for him to attend school regularly and is one of the reasons he currently majors in respiratory therapy at TSU. His current summer research project is on breast cancer which he finds very interesting and may consider changing his major to biology.

Rebecca Villarreal

Research Mentor: Shaswati N Saha

Help Me Help My child Learn: Parent perspectives on the role of the public school system in educating their children with autism

Abstract 033: This qualitative study explored the perspectives of three mothers of children with autism, attending public schools. Data was collected using open ended in-depth interviews. The mothers were each interviewed three times. The responses were analyzed according to themes that emerged. Once all of the data were coded and classified into the different categories, it resulted in the identification of seven different categories. The findings from this study are all in accordance with previous research on this topic. The mothers shared some common concerns about teachers who are often unwilling and unable to meet the learning needs of their children. The participants also agreed that "learning" and achievement" meant progress and maximizing a person's potential, not necessarily academic achievement. The parents spoke to the importance of differentiating instruction to meet the needs of all learners especially those with special needs. The participants also stated that educators and other school personnel make little attempt to really listen to them or regard them as partners in their child's education. Finally, all three participants reiterated that getting to know their children would be the most critical aspect, enabling teachers to teach more effectively.

Biography: Rebecca Villarreal is currently in Interdisciplinary Studies with a particular focus on curriculum and instruction for Mathematics and Science. Focusing on secondary education has equipped her with a broad range of expertise in a variety of disciplines. Throughout her learning experience she has remained an accomplished student-athlete, excelling in both fields simultaneously. Playing softball has instilled many great values and lessons within Rebecca. She is equipped with the ability to be a committed individual, who served as a dedicated team leader. Her softball experience has taught her to enjoy intense preparation requiring time, patience, sacrifice and most importantly heart. Softball has also given Rebecca the perfect environment to develop some of life's most needed skills while acquiring adversity; understanding commitment, defining success, setting and achieving goals, and overcoming obstacles. Through these skills, she has developed an innate capacity to apply them to her life and to her eventual career in the education realm.

BreAuna Roundtree

Research Mentor: Monica Rasmus

The Effect of the Growing Elderly Population on the Prevalence of Medical Errors

Abstract 034: This research project was important because preventable medical errors in hospitals kill from 44,000 to 100,000 people a year in the United States. As people age, they usually use more health care services, as well as being hospitalized more than younger people. The research shows there are many more undocumented errors occurring in hospitals than documented errors. The objective of this literature review was to determine if the health care systems in Texas and the United States should expect more medical errors because of the growing elderly population and their greater need for health care and hospital services. A literature review was performed using electronic databases: Medline, ProQuest, and PubMed. Census data was accessed from the U.S. Census Bureau, the Texas Almanac, and Kaiser Family State Health Facts. The articles included in the literature review had to be in English and focus on hospitals in the United States. Articles were chosen from the years between 2009 and 2013, at least 10 years after the 1999 Institute of Medicine's publication, *To Err is Human*. The results yielded a slight decrease in the overall number of annual hospitalizations for the U.S. and for some states, such as Texas; however, the population increased and the rate of medical errors remained the same since the IOM report in 1999. Increases in the overall population and segments of the population, such as the elderly, will increase the prevalence of medical errors and deaths from preventable medical errors in hospitals in Texas and the United States.

Biography: BreAuna Roundtree was born in the city of Webster, Texas, just outside of the South Houston region. BreAuna graduated from North Shore Senior High School in May of 2007. Currently, she is majoring in Health Administration (HA) and was accepted into the professional phase of the Program in May 2013. Being accepted into the HA Program means she is one step closer to achieving her goal of being a part of the health care industry. She is most interested in health disparities and health care quality. BreAuna is an active member of Sigma Lambda Gamma National Sorority, Incorporated. She looks forward to being a member of the Student Healthcare Executive Association in Fall 2013. Her hobbies include spending time with her brother and reading. Her future goals include graduate school and a fulfilling position in the health care industry.

Marith Williams

Research Mentor: Oscar Criner

Measurements of Students Concentration and Focus while Reading

Abstract 035: Electroencephalographic technology has become available to the public in recent years. NeuroSky, Inc. is a developer of one such application, the NeuroSky "MindWave" application that digitizes analog electrical brainwaves and powers a computer user interface for games, education, research investigations, and other applications. The MindWave application measures these brainwave signals and combines them to monitor the attention levels of people as they interact with various tasks. Using this technology, we measured the attention levels of students as they read, while listening to various genres of music, such as, Heavy Metal, R&B, and Classical music. Many students listen to music while studying. This is personal preference and varies from person to person. The question in this research was, "Does listening to music affect the concentration and focus of students?" For those who prefer silence, music is considered a distraction, and for those who prefer a nice tune, music may be considered to be stimulating. Since the purpose of this experiment was to answer the question, does music help and hinder student's concentration; in the experiments, students had four miscellaneous readings for about two minutes. Each student read a passage in silence, then while listening to music. Using the MindWave technology each session was recorded and monitored for analysis. Studying each test carefully allows us to explore the focus points of each student along a quantitative scale. These investigations gives a better understanding of the question, "Does listening to music help or hinder students from fully focusing on study tasks?"

Biography: Marith Williams was born in Portland Oregon and soon after completing her high school career she relocated to Houston Texas. With her favorite subject being math, Marith decided at the early age of 13 she wanted to be an engineer. She is now a senior at TSU majoring in electronic engineering technology. While finishing her undergraduate career she plans to continue research with the Center for Research on Complex Networks. She is also involved with the Collegiate 100 and National Society of Black Engineers. After graduation Marith would like to pursue her masters in computer science emphasizing biomedical applications.

Zara Uddin

Research Mentor: Hyun-Min Hwang

Impacts of Elements on Seed Germination and Root Elongation

Abstract 036: Our environment is contaminated by variety of toxic chemicals such as heavy metals, pesticides, and industrial chemicals. In order to test impacts of these chemicals in water and soil, various methods have been applied. For simple and low cost screening of environmental samples, seed germination and root elongation also have been used. This study was to produce preliminary data that can be used to measure toxicity of surface water. Toxicity of elements (As (III), As (V), Cu, Sb (III), Sb (V), and Zn) on the germination of seeds and root elongation was measured in this research. Three species of seeds used were iceberg lettuce, romaine lettuce, and rye grass. Five seeds of each species were exposed to solutions containing 0, 5, 10, 50, 100, 500 and 1000 ppm of each element for 8 days. The results show that toxicity of tested elements on grass root elongation was in the order of $Cu > As(III) > Zn > As(V) > Sb(III) > Sb(V)$. Toxicity on romaine lettuce was in the order of $As(III) = Cu = Zn > Sb(V) > Sb(III) > As(V)$. Toxicity on iceberg lettuce root elongation was in the order of $As(III) > As(V) > Cu = Zn > Sb(V) > Sb(III)$. The results of this study can also be used to covert chemical monitoring data to more meaningful toxicity data. Rye grass and romaine lettuce showed adverse effects at lower exposure concentrations compared to iceberg lettuce, meaning that rye grass and romaine lettuce are more sensitive than iceberg lettuce to the tested elements. It indicates that rye grass and romaine lettuce can detect low levels of contamination and thus these can be used for early-warning indicators. Root elongation rates of rye grass seeds were approximately 2 times faster than those of iceberg lettuce. These finding indicates that rye grass seeds are more suitable for seed toxicity test.

Biography: Zara Uddin came to Texas Southern University a year ago after attending Lone Star College in Cyfair. Entering college she had exposure to countless science courses including geological, biological, and literary classes. It was then she unmasked the idea that inquisition and trialing in science leads to breakthrough of information, thus research is the key to success. Zara's interest in the wildlife society for two years at her local college, helped her craft the skill of trapping various mammalian animals, dissections, and understanding plant diversification. While continuing with her education, she has sustained working at a prominent bookstore for six years, and also works at a nursery helping blooming children find success in their abilities. Currently at Texas Southern University, Zara is completing her bachelor's in biology and is a lively member of the environmental student club.

Chelsea Smith

Research Mentor: Flora Estes

Pediatric Hypertension: What does the public know

Abstract 037: Hypertension is the term used to describe high blood pressure. Blood pressure is a measurement of the force against the walls of your arteries as your heart pumps blood through your body. The purpose of this research is to find out how much the public knows about pediatric hypertension; with an aim to promote awareness and provide education to parents and caretakers. A 12-question survey was designed and administered to an adult population (18 years of age or above) throughout the Houston and surrounding area. The survey captured 121 responses which were analyzed using a descriptive analysis. The study period was from June 4, 2013 to July 19, 2013. Of the 121 surveys that were taken 91% of the respondents were familiar with the term "hypertension" or "high blood pressure", although only 66% adequately define what it meant. Approximately 80% responded they had been diagnosed, either themselves or a family member. Of those 110 were adults and 9 children. All had treatment plans that consisted of medication, dietary restrictions, and exercise with the exception of four (4) who were diagnosed, but were on no treatment plan. When asked if they knew that children could have hypertension, 56% (n=68) said no. When asked to include the number of individuals in their household or families with hypertension, there were 67 males (n=2 children) and 69 females (n=5 children). The greatest percentage of those with hypertension were African American (n=54, 43%), Hispanic or Latino (n=32, 25%) and Caucasian (n=22, 17%) with the risk factors of being overweight (75%) and family history (74%) being the contributing factors. The survey reveal that although most were aware of high blood pressure many could not define or tell what it was and almost 60% did not know it could happen in children. This is a good indicator that awareness to the general public and education, especially among parents and caregivers should be provided.

Biography: Chelsea LaShell Smith, a native Texan from Arlington, Texas is a 2012 graduate of Mansfield Legacy High School. In the Fall of 2012 she relocated to Houston, Texas to pursue her desire for becoming a pharmacist. She enrolled at Texas Southern University (TSU) and declared a Pre-Pharmacy major and currently is in her second year. Chelsea is a strong advocate for mentoring and community involvement. She is an active member of the Collegiate 100 of Black Women, Habitat for Humanity, as well as an active member for the TSU Student Government Association. Her future goals include graduating Pharmacy school, to own her own bakery, and to be a teacher in the public school system.

Dayana Abdullah-Smoot
Research Mentor: Ashraf Mozayani
Identification of Congeners in Alcoholic Drinks

Abstract 038: The aim of this research was to detect different congeners in alcoholic beverages. Ultimately, the goal was to find specific markers for certain alcoholic beverages that will allow for the identification of the consumed beverage by analyzing blood. Congeners are secondary products formed during the fermentation of carbohydrates to form alcohol. Methanol, acetaldehyde, and isobutanol are common congeners that are found in significant concentration in all alcoholic beverages. The plant ingredients used in the fermenting process such as the cereal grain in beer and the grapes in wine results in the varying congener content of each. For instance, while 3-methyl-1-butanol is the most prevalent congener in beers, 2-methyl-1-butanol is the highest in wines. Alcohol consumption and its effects on consumers and the rest of the population, especially the negative effects, remains an ongoing challenge in the forensic science community. Law enforcement's current method of establishing whether a person is intoxicated is by the breathalyzer test. The blood alcohol content (BAC) tests the ethanol in their breath, but there is no way to determine which specific drinks were consumed. Blood analysis by gas chromatography can identify certain other substances, but currently no laboratory performs tests specifically for n-butanol, ethyl acetate, or other congeners like 3-methyl-1-butanol. In addition, unlike ethanol, many of the congeners can stay in the blood system for up to 2 days after the beverage is consumed. Our results obtained by literature review, show that the same congeners appear in well – known alcoholic drinks and the only aspect that makes them different from each other is the percentage. Congeners like methanol, isopentanol, and ethyl formate are congeners with higher levels in alcohol and they can also be tested in the blood stream. Methods to quantitate these congeners in blood samples can now be developed. **Biography:** Dayana Abdullah- Smoot grew up in Kokomo, IN. In the summer of 2006, she moved to Mansfield, TX with her two younger siblings, mother and grandmother. She attended Frontier High school, a school that allows students to focus on specific programs of study and she majored in agriculture with the goal of becoming a veterinarian. During her time at Frontier High school she earned an opportunity to intern at the Emergency Animal Hospital of Mansfield for the duration of her senior year. Dayana is now attending Texas Southern University majoring in Biology Pre – Vet Med. She aspires to become an exotic emergency veterinarian with the hopes of opening her own clinic.

Uyen Uyen Tran
Research Mentor: Dong Liang
Estradiol Microsphere Formulations for Controlled Release Drug Delivery

Abstract 046: Estradiol is a commonly used for estrogen hormone therapy in humans, and also being used for establishing breast cancer animal models for drug development research. The objective of this research is to formulate estradiol microsphere formulations using biodegradable polylactic-co-glycolic acid 50:50 (PLGA 50:50), and to characterize the microsphere properties with respect to the formulation components, drug encapsulation efficiency, particle sizes, and *in vitro* release profiles. An oil-in-water emulsion was first formed by injecting a PLGA and estradiol dissolved organic solution into a 1% poly-vinylalcohol (PVA) aqueous solution. Estradiol containing microspheres formed spontaneously when the organic solvents evaporated under a high speed mixing. Three different solvents (dichloromethane, acetone, and ethanol) were used respectively to estimate the best suitable formulation solvent. Microspheres were collected, lyophilized, and then evaluated for particle size distribution using Zetasizer, formulation recovery, encapsulation efficiency, and *in vitro* release profiles. Estradiol concentrations were quantified using an established HPLC method. The estradiol concentrations were linear from 0.1 ug/ml - 10 ug/mL. The microsphere particle sizes from three batches were 420.3 nm, 630 nm, and 438.2 nm that had 496.26 nm as an average size using dichloromethane, acetone, and ethanol, respectively. The encapsulation efficiency was 12.13 %, 5.014 %, and 3.828 for dichloromethane, acetone, and ethanol, respectively. *In Vitro* estradiol release studies are currently underway. Microsphere formulations were developed with sustained release profiles of the drug. **Biography:** Uyen Uyen Tran was 25 year old when she arrived in the United States from Vietnam. With the help and encouragement of her family, she took English Second Languages (ESL) from the local Community College and passed the COMPASS Test. With this certification, she was able to take college level classes at Houston Community College and obtained an Associates Art Degree. Ever since Uyen was a kid, she always wanted to work in the medical field and she enrolled in the University of Houston as a pre-pharmacy major and was later accepted into the College of Pharmacy at TSU. Today, she is a P2 pharmacy student in the honors program at TSU. She has come a long way since taking those first ESL courses.

Ashley Webber

Research Mentors: Ya Fatou Njie-Mbye and Sunny Ohia

Effects of Hydrogen Sulfide on Isolated Bovine Ocular Smooth Muscle

Abstract 040: Hydrogen Sulfide (H_2S) is a gaseous molecule with the pungent odor of rotten eggs. This gas, which is endogenously produced in mammalian tissues from the amino acid, L-cysteine, has been shown to exert pharmacological action on ocular smooth muscles. Evidence from our laboratory demonstrates that H_2S (using L-cysteine as substrate) can relax pre-contracted bovine iris-ciliary muscle. However, the mechanism of action in which L-cysteine exerts this effect is unclear. **Purpose:** To investigate the mechanism of action of L-cysteine, on isolated pre-contracted bovine ocular smooth muscle. **Methods:** Bovine iris-ciliary muscle strips were mounted in organ baths containing oxygenated Krebs buffer (pH 7.4, 37° C). Changes in longitudinal isometric tension were recorded and analyzed via Force-displacement transducers. Effects of L-cysteine on carbachol-induced tone were studied in the presence of enzyme inhibitors for H_2S biosynthetic pathway (AOA; cystathionine β -synthase (CBS) inhibitor, PAG; cystathionine γ -synthase (CSE) inhibitor), and prostanoids (flurbiprofen; cyclo-oxygenase (COX) inhibitor). **Results:** L-cysteine (0.01 nM-100 μ M) evoked a dose-related relaxation of carbachol-induced tone in bovine iris-ciliary muscle, reaching a maximum inhibition of 88% at 10 μ M (with an IC_{50} of 2 nM). Relaxations elicited by L-cysteine were unaffected by pretreatment of tissues with with flurbiprofen (3 μ M). Interestingly, the inhibitors of CBS and CSE (AOA (30 μ M), PAG (1mM) respectively) did not block the relaxant effects of L-cysteine. **Conclusion:** The H_2S substrate, L-cysteine can relax pre-contracted bovine iris-ciliary muscle, and this effect is not dependent on endogenous production of H_2S . Furthermore, prostanoids are not involved in the inhibitory action of L-cysteine in this ocular smooth muscle.

Biography: Ashley Webber is currently a sophomore at Texas Southern University (TSU), majoring in biology and minoring in chemistry. Prior to TSU Ashley attended Westside and Jack Yates Senior High School. Currently at TSU, Ashley is a part of the Thomas Freeman Honors College and runs track for the lady Tigers track team. In her spare time away from school, Ashley does a lot of volunteer work in her community. She was a part of a very well known teen organization called Top Teens of America. Top Teens of America is an organization that helps teens to become well rounded successful young adults, and allows them to help out in their community. Ashley also volunteers at St. Mary's Catholic Church where she helps with the children's choir, annual bazaars, and festivals. Ashley likes working with younger kids on their volleyball skills and is hoping to become a volleyball coach for her former club team. Her future goals are to graduate with a bachelor's degree in biology and attend veterinary school in the hopes of becoming a veterinarian and running her own practice .

Kingsley Sampson

Research Mentor: Hector Miranda

Sequencing the Complete Mitochondrial Genome of Grey Peacock-Pheasant *Polyplectron bicalcaratum*

Abstract 041: The peacock pheasants (*Polyplectron*) are some of the most spectacular pheasants of the world. There are about seven species belonging to the genus scattered in mainland and Southeast Asia. The origin of this genus is somewhat enigmatic and there are two contrasting hypotheses on the origin and evolution of the genus *Polyplectron*. One hypothesis based on three genes; two mitochondrial and one nuclear genes suggest that *Polyplectron* originated from the Palawan island in the Philippines and spread to Borneo then to mainland Asia including China. The other hypothesis suggested that the clade originated in mainland Asia and terminating to Southeast Asian islands of Borneo and Palawan. In collaboration with the Houston Museum of Natural Science, fresh tissue samples of the six *Polyplectron* were obtained. My project was to sequence the whole mitochondrial genome of one the six species- the *Polyplectron bicalcaratum*. A set 27 primer pairs were designed for polymerase chain reaction. All primers pairs produced PCR products of about 800 bp and were sequenced by Sanger sequencing. The forward and complementary reverse sequences were then aligned and assembled using the ClustalW in Geneious Pro 5.5. The whole mitochondrial genome was about with 16,700 bp with 13 protein-coding genes, 2 ribosomal RNA genes, and 22 tRNA genes. I am currently finalizing the alignments before submission to GenBank, annotations, and comparing with several other *Polyplectron* species.

Biography: Kingsley Sampson has maintained the dean's list in the Department of Electronics Engineering Technology at TSU. Kingsley joined Texas Southern University in 2010, from the University of Science and Technology Rivers-State, Nigeria where he was studying physics. Outside the pursuit of his degree, Kingsley also participates in intramural activities for the university, like table tennis and soccer, where he has represented the University in several soccer and table tennis competitions. He currently serves as the secretary of the men's soccer club.

Destiny Omeire

Research Mentor: Hector Miranda

The Complete Mitochondrial Genome of Germain's Peacock-Pheasant *Polyplectron germaini*

Abstract 042: There are two conflicting hypotheses on the phylogeography of genus *Polyplectron*. One hypothesis suggests that *Polyplectron* originated from the Palawan island in the Philippines and spread to Borneo and then to mainland Asia including China. The other hypothesis suggests that the clade originated in mainland Asia and terminating to Southeast Asian islands of Borneo and Palawan. We obtained fresh tissue samples of the six *Polyplectron* and my work was to sequence the whole mitochondrial genome of one the six species- the Germain's Pheasant-Pheasant *Polyplectron germaini*. This bird is endemic to southern Indochina. A set 27 primer pairs were designed for polymerase chain reaction. All primers pairs produced PCR products of about 800 bp and were sequenced by Sanger sequencing. The forward and complementary reverse sequences were then aligned and assembled using the ClustalW in Geneious Pro 5.5. The whole mitochondrial genome is about with 16,699 bp with 13 protein-coding genes, 2 ribosomal RNA genes, and 22 tRNA genes. Twelve out of 13 protein-coding genes have ATG as the start codon. Seven of the 13 protein-coding genes have TAA as the stop codon. The two ribosomal RNA genes (12S and 16S) are located between tRNA^{Phe} and tRNA^{Val} (975 bp), and between tRNA^{Val} and tRNA^{Leu} (UUR) (1601 bp), respectively. All of the protein-coding genes begin with the ATG start codon. Eight of 13 protein-coding genes (PCGs) have TAA stop codons (*nd1*, *cox2*, *atp8*, *atp6*, *nd3*, *nd4L*, *nd5*, and *cytb*). Three PCGs (*nd2*, *cox3*, and *nd4*) have incomplete stop codons of one T- nucleotide. We are currently sequencing the mitochondrial genome of five more species to test the two competing hypothesis. The complete sequence was submitted to GenBank and was given the Accession number KF422893.

Biography: Destiny Omeire was born and raised in Nigeria. He is involved in various organizations both on and off campus ranging from ASA (African Student Association) to the famous Wesley foundation bible study. He is now in his final year at Texas Southern University and he is currently aiming to graduate with his bachelor's degree in Electronic Engineering Technology. Destiny is looking forward to one day becoming a manager of an oil-company and to also become a great Engineer. He would like help more in his community through volunteering.

Stanley Azubike

Research Mentor: Albertina Hughey

Database Management Systems (DBMS) and Academic Website Management: A Primer

Abstract 043: This study looks into the DBMS and experiential training in academic database revision. The goal is to yield a revised, interactive website for the Department of English. The technology-enhanced website will serve as a portal with hyperlinks to faculty members' online scholarly works, professional blogs, and posted lecture videos. This study uses CSS, HTML and XML, a language tools used for coding. It enables us to edit a web-content, including the placement and formation of the actual textual content. This study shows the significance of modern content management system, culturally-reflective technology and web-organization.

Biography: Stanley Azubike is a pharmacy major and a sophomore here at Texas Southern University. He was born and raised in Anambra, Nigerian and moved to U.S at the age of 12. He graduated from Taylor High School in Houston. Stanley is currently a Resident Assistant at Linair East here at Texas Southern. He is an Honor Roll student who is planning to join the Honors College this fall and a member of the National Society of Collegiate Scholars. A Federation of American Societies for Experimental Biology award-winner, Stanley participated in the federation's national science convention in Boston in the Spring of 2013. He volunteers at the Houston Food Bank, where he helps repack and builds food boxes for people in the community. In addition, he recently participated in the Dwight Boykins 2013 Houston city council campaign. Overall, his ultimate goal is earn his Master's degree in pharmacy, and help make an impact on people's lives.

Chukwunweike Ezeanyike
Research Mentor: Momoh Yakubu

Effects of Hemeoxygenase Activation on Nitric Oxide Production from Rat Vascular Smooth Muscle Cells in Culture (RVSMC)

Abstract 044: Studies have shown that the vascular smooth muscle cells produce two distinct gases, nitric oxide and carbon monoxide. Dysregulation of signalling molecules like NO is the first target for therapeutic strategy for treating vascular diseases. Recently, the hemeoxygenase (HO-1) and PPAR have been identified as processing vascular properties. We studied effects of activation of PPAR and HO -1 on nitric oxide production in rat vascular smooth muscle cells. Treatment of cells with PPAR activator, clofibrate resulted in increased production of nitric oxide from the rat vascular smooth muscle cell while CoCl_2 activator of HO-1 resulted in slight reduction in nitric oxide compared to control. Co-incubation of clofibrate and CoCl_2 reduced nitric oxide production mediated by clofibrate alone. Furthermore, effects of the treatment with clofibrate and CoCl_2 were evaluated in the presence of Angiotensin II, a known vasodialator of vascular dysfunction. Pre-treatment of cells with PPAR and HO-1 activator did not have any significant effect of nitric oxide production by the vascular smooth muscle cells.

Biography: Chukwunweike Ezeanyika is a junior majoring in Biology. He is currently employed with Texas Southern University as a student worker in the Title III administrative office. Aside from work study and being a hard working student, he also is a Student leader/Residential Assistant at Lanier East where he helps freshmen focus on their primary objective of leaving home by tutoring those that need help in some classes. He has very good academic standings with good leadership skills that made a qualified recipient of the Presidential Leadership Scholarship as well as an honored member of the Thomas F. Freeman Honors College and also a member of The National Society of Collegiate Scholars. His hobbies include tutoring, playing soccer, bike riding, and playing Video games etc. He is spiritually grounded and also an active member of Lighthouse Chapel International where he serves as an usher. As a pre-med student, Chukwunweike plans to apply to Medical school immediately after his four-year undergraduate degree in Biology.

Jennifer Wilson

Research Mentor: Antoinette Christophe

Natural Disasters and Crime Rate: Hurricane Katrina

Abstract 047: In 2005 Hurricane Katrina struck the gulf coast flooding and destroying many homes, while displacing hundreds of thousands of residents. This research was conducted to determine if there was a correlation between migration patterns of evacuees and crime rate in 3 major cities: New Orleans, Memphis, and Houston. Houston as well as Memphis experienced an increase in crime rate that directly correlated to the increase in population; however evidence indicated the greatest escalation of crime rate occurred in Memphis. In New Orleans there was no identifiable pattern that occurred with the changes in population and crime rate.

Biography: Jennifer Wilson was born in Lafayette Louisiana and moved to New Orleans at age four where she was raised. Hurricane Katrina forced her and her family to relocate to Fort Worth, Texas. She always enjoyed shows that dealt with the criminal justice system and had a knack for constantly presenting a strong argument and felt destined to study law. As an Administration of Justice major at TSU, she is learning the processes and procedures that encompass the justice system. Jennifer is the Juvenile Justice Chair for the NAACP, a member of the Collegiate 100 Black Women, as well as the Student Government Association. She hopes to graduate in the next two years and go on to attend law school. Ultimately her desire is to become a world renowned attorney then possibly a judge.

Shanice Gowans
Research Mentor: E. Dianne Mosley
Strengthening the Culture of Learning at Texas Southern University

Abstract 045: The objective of this research is to identify ways in which the Culture of Learning at Texas Southern University can be strengthened. Strengthening the Culture of Learning at TSU will facilitate the success of enrolled students by identifying methods of increasing retention and graduation rates. Accomplishing this objective is one important step toward ensuring the longevity of the institution. The research method utilized in this study is ethnography. For this phase of the project, data were collected from focus groups comprised of freshman and sophomore level students currently enrolled at TSU. Students were asked to share observations and suggestions for improving retention and graduation rates and ways to strengthen the overall culture of learning at TSU. Responses are presently being analyzed using NVivo software. Ideal types of social interaction are being constructed from these data to provide an emic (insider) view of on the TSU culture of learning. This information will be employed in the development of a model for student success that when implemented will serve to increase graduation and retention rates that will ultimately strengthen the culture of learning at TSU.

Biography: Shanice Gowans majors in Sociology at Texas Southern University. What she likes most about social research is encountering problems and devising possible solutions. As a senior she understands the importance of working hard to succeed academically and preparing for life after graduation. As Shanice embarks upon her last year as an undergraduate at TSU, she is appreciative of the journey and the support of her mentors.

Joan Tran
Research Mentor: Momoh Yakubu
Analysis of Multiple Chlorinated Pesticides in Organs from Rats

Abstract 039: It is unknown which tissues store the highest levels of pesticides and what the best method is for their quantitation. Rats were orally treated with mixtures of chlorinated pesticides for two weeks and their livers, hearts, kidneys, and brains were collected and analyzed through high performance liquid chromatography (HPLC) for the presence of pesticides. Pesticide standards were analyzed to find their retention times in order to compare to the data acquired from the organ samples. Matching peaks were found which indicate that HPLC is an effective method in finding pesticides residues in organs.

Biography: Joan Tran graduated from Michael E. DeBakey High School for Health Professions in 2012 and continued her education at TSU as a Biology Major. She is currently in the Early Medical School Acceptance Program with UTMB-Galveston, Texas and plans to matriculate into UTMB's School of Medicine in 2016. Joan actively participates as an officer of TSU's chapter of the Health Occupations Students of America. During the HOSA Texas State Conference in Spring 2013, she placed fourth in her Pathophysiology Competitive Event amongst other college students from across the state. Ms. Tran is also a member of the Board of Advisors for Lend A Hand, a nonprofit charity organization that provides educational and medical aid to impoverished children in Vietnam. In 2012, Joan and her fellow Lend A Hand officers and members raised over twenty thousand dollars for heart surgeries, school supplies, and other necessities for children in Vietnam who wouldn't have been able to afford them otherwise. When she isn't volunteering or studying, Joan enjoys playing games with her older brothers, going to the movies with her friends, or shopping with her mom. Ms. Tran expects to graduate from TSU in 2016.

Muhammad Alghali
Research Mentor: Shishir Shishodia
Effect of Microgravity on Apoptotic Cell Death

Abstract 048: Astronauts are subjected to several environmental stress factors during space travel. One of which is microgravity. Studies have shown that Microgravity exposure can lead to changes in muscle atrophy, blood and plasma volume, bone loss and the deregulation of the immune system. In this study, we investigated the effect of microgravity on apoptotic cell death to determine whether microgravity is detrimental to the health of the immune system. Human T-lymphocyte Jurkat cells were subjected to microgravity conditions that were simulated using a using the Rotary Cell Structure System (RCCS) equipped with High Aspect Ratio Vessel (HARV) from Synthecon in Houston TX. Cell viability due to microgravity was observed by counting cells using trypan blue exclusion method with a hemocytometer. Trypan blue is a stain used to color dead cells blue while the viable (live) cells remain unstained. Data from normal (NG) and simulated microgravity (SMG) proved that there was indeed a change in cell viability. Proteins were extracted from cells grown in NG and SMG, and separated using an SDS-PAGE gel. Our results showed that cells grown in simulated microgravity conditions produced thicker bands of cleaved caspase proteins. Caspase proteins are essential for apoptosis in cells and cleaved caspases are the active forms of the proteins. The increased levels of the cleaved caspase proteins indicates that cells grown under SMG conditions were headed for self destruction whereas cells grown in normal gravity had very little caspase proteins present. These results show that space flight may alter cellular activity by inducing cell death.

Biography: Muhammad Alghali was born in Freetown, Sierra Leone the fifth child of eight children. He came to the United States determined to attend college in order to succeed to help his siblings. Muhammad worked as a cook saving money to put himself through school. He attended the National Institute of Technology (NIT) where he graduated with a Diploma and a valedictorian in the Pharmacy Technician Program. He did his internship at the Methodist Hospital where he was immediately hired as a Pharmacy Technician on completion of his internship tasks. Muhammad is graduating with a Bachelor's Degree in Biology at the Texas Southern University and is planning to enroll as a graduate student this coming fall and continue with research work which he has grown to love.

Kayla Burrell
Research Mentor: Audrey Player

Characterization of Transcription Factor 1 in Triple Negative Breast cancer compared to all other cancers

Abstract 049: Triple negative breast (TN) cancer is a very aggressive breast cancer with low survival rates and poor patient outcome. Triple negative breast cancer is known to be negative for three genes, estrogen (ER), progesterone negative (PR) and verb-b2 erythroblastic leukemia viral oncogene homolog 2 (ERBB2). Our goal is to characterize and define TN and identify reliable genes that show a difference between aggressive and less aggressive tumors so genes can be used to treat patients and ultimately effect patient survival. A list of more than 56,000 genes was obtained from microarray experiments using cell lines. Genes that showed a difference in expression were identified using the T-test and p-values with a statistical cut off <0.01 . The list was decreased to 49. To identify genes that were in patient samples, Gene Expression Omnibus (GEO) was searched for genes common to cell lines and patients; this resulted in a final short list of 16. Genes were visualized using Hierarchical clustering analysis. Transcription factor 1 was one of the four genes chosen for validation by polymerase chain reaction (PCR), gel electrophoresis, and immunohistochemistry using a patient sample representing primary (less aggressive) and metastatic (more aggressive) tumor. Transcription factor 1 did show differential expression between aggressive and less aggressive for particular patient samples selected. There was a down-regulation in the transcript levels in MDA231 (aggressive) compared to MCF7 (less aggressive). Similar results using RNA showed that protein levels were down-regulated in 33% or 2 out of 6 triple negative samples. Preliminary data showed that Transcription factor 1 displayed promising results for further data analysis.

Biography: Kayla Burrell is a senior at Texas Southern University with a major in Biological Science and a minor in Chemistry. She is a member of the National Society of Collegiate Scholars, Baptist Student Ministry, Thomas F. Freeman Honors College, Science and Technology Enhancement Program, and Beta Beta Beta Delta Epsilon Honor Society. Kayla has been interested in Biology and the medical field since she was a young girl. While in high school she was a part of the Medical Science Academy Program taking classes such medical terminology and pathophysiology. Kayla plans to continue her education and enter Graduate School in the fall of 2014.

Mohammad Coulibaly

Research Mentor: Jade Clement

A Study on the Combined Effects of Microgravity and Single Wall Carbon Nanotubes

Abstract 050: For the realization of the full potential of nanotechnology and nanomedicine, it is important to clarify the exact nature of nano-materials and their interaction with the living world as well as finding counter measures for their adverse effects on living systems. Carbon nanotubes are known to be toxic for the human health. A thorough understanding of the hazardous impact of the carbon nano-materials on human health will not only provide a scientific base for formulating safe-guard standards to protect susceptible populations, but also enhance the safety confidence in nanotech development. Microgravity is a major environmental factor that is hazardous to human health, causing serious problems such as immune dysfunction, muscle atrophy and neurological alterations. Rotating Wall Vessel (RWV) bioreactors are a commonly used method to simulate the microgravity effect on cultured cells. It is important to find out if cells that have experienced microgravity will have any change in their response to carbon nanotube exposures. The goal of the present research is to study the toxic effect of single wall carbon nanotubes (SWCNTs) on human liver cells that have been cultured under simulated microgravity for 25 days. Toward this goal, we treated cells with and without pre-exposure to microgravity with SWCNTs and performed XTT cytotoxicity assay for cell viability analysis. We are in the process of analyzing our experimental results on cells grown in simulated microgravity (SMG) bioreactors and later treated with SWCNTs. It is our hope that at the end of this time-course experiment we can obtain preliminary data suggesting whether simulated microgravity exposure may give cells some level of protection against the toxic effects of single wall carbon nanotubes or not.

Biography: Mohamed Coulibaly is a Chemistry student at Texas Southern University. Mohamed has an associates degree in science and also a certificate in electronics. After obtaining his bachelor of science in chemistry, Mohamed plans to pursue a graduate degree in chemical engineering.

Franchell Davidson

Research Mentor: Willie Taylor

Similarity and differences between continuous calculus and discrete calculus

Abstract 051: This project will study calculus from both the continuous and discrete points of view. While continuous functions are defined over intervals, discrete functions are sequences which are defined on inductive subsets of the integers. Various concepts from single variable calculus will be studied together with their discrete analogues. Finally, methods for finding solutions of both linear differential equations and linear difference equations will be investigated.

Biography: FranChell Davidson was born and raised in Houston, Texas. She is a sophomore majoring in Mathematics and minoring in Computer Science at TSU. She is the treasurer of The Texas Southern University Chapter of The National Society of Collegiate Scholars and recipient of The Louis Stokes Alliance for Minority Participation Scholarship. She plans to continue doing research during her future summers and to help other students to gain from her knowledge. Outside of her professional interests she is very family orientated, takes pleasure in reading books, enjoys being outside, and helping No More Victims Incorporated. FranChell is also a very tech savvy and hands on person. In the future FranChell plans to obtain her Doctorates degree in Mathematics and become a Mathematician. She also plans to go back to school after that in order to learn as much as she can about computers and their functions.

Damon Hall
Research Mentor: Fengxiang Qiao
Radio-frequency identification (RFID)

Abstract 052: Radio-frequency identification (RFID) is the wireless non-contact use of radio-frequency electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. Most traditional stop signs are blocked by trees and are unnoticed by drivers. The RFID in this study was tested and proven to read long range. However the height of the tag has little affect on the reading of the tag to the RFID. The program for the RFID was programmed on the computer and used for identifying the passive tags. These type of tags don't have their own power source. The reader powers up the tag by sending it a radio signal, and the tag responds by sending radio signals back with the information about the item that the chip contains. It is important that we use RFID on stop signs that are blocked due to the number of incidents that occur in the U.S. One of the main causes of motor vehicle crashes in the United States is the driver not being able to spot stop signs while approaching them. Running a stop sign because you didn't see it due to its positioning or some obstruction can result in a serious injury or even death. The impact of the RFID system can lead to a safer environment because drivers will know to stop at a sign that may have blockage on it.

Biography: Damon Hall grew up in Central Texas and when he got to high school Damon played varsity football. After he graduated he went to Texas Southern University to study biology, but later switched to the Maritime Transportation program. After graduating from the Maritime program Damon hopes to get a job at the Port of Houston.

Kanees Khan
Research Mentor: Graham Thomas
Bio Electromagnetics: Effects of Electromagnetic on Tissues, Cells, and Organisms

Abstract 053: There are possible hazardous health effects of exposure to electromagnetic radiation emitted from mobile phones on the human body. The effect is more pronounced if phone is kept in pocket or near testicular organs. Present review examines concerns of radiation interaction on biological tissue. Such radiation could be harmful and cause mutagenic changes in reproduction pattern and leads to infertility, decreased sperm count, enzymatic and hormonal changes, DNA damage, and apoptosis formation. Exposure to high power microwave radiation could also damage biological tissues such as skin. A one dimensional multi-layer model is presented to characterize skin temperature rises and burn processes resulting from skin exposure to microwaves radiation. The skin tissue exposure to microwave radiation was predicted depending on blood perfusion rate, thermal conductivity, power density, and exposure time. The research will utilize Penne's equation and Fourier Law to calculate the amount of heat transferred to the tissue sample. In our research we are going to look at the effects of microwave radiation on skin tissue by looking at the rising temperature based on time exposure to microwave radiation. In order to measure the temperature due to radiation we will use microwave (Owen) so it will give strong blast of microwave energy to flesh (pork). The reasons for pork flesh because it has the same consistency as human flesh. We are using the tissue for investigating our hypothesis. Data collected suggest the radiation caused the temperature of tissue to increase from an average room temperature of 19.1° C to 73.2° C. The range of temperature was 37.5° C to 73.2° C. The first sample was heated for 5 seconds and time exposure of sample to microwave radiation increase by intervals of 5 seconds up to 60 seconds for final sample.

Biography: Kanees Khan is a junior and enrolled in the Electronics Engineering Technology Programs at Texas Southern University. Kanees was attracted to Technology, particularly in Electrical Engineering. Apart being a student, Kanees is an active member of student organization, such as National Society of Black Engineering (NSBE) TSU chapter, During Summer of 2012 she worked on a grant from National Science Foundation Center for Research on Complex Networks (NSF-CREST). She has also been awarded the position as a National Aeronautics and Space Administrations, Science Technology Enhancement Program (NASA-STEP).

Sarah Sejoro

Research Mentor: Fawzia Abdel-Rahman

Adverse effects of microgravity on *Caenorhabditis elegans*

Abstract 054: The study of the effect of microgravity on *C. elegans* is carried out using the HARV (High aspect ratio vessels). During the process of this experiment, we used the wild type N2 of the nematode *C. elegans* to test for the reproduction, life span, and development rate. *C. elegans* cultures are maintained in the laboratory on NGM plates seeded with *E. coli* OP50 as a food source. *C. elegans* populations in liquid media (S medium) were exposed to simulated microgravity using the NASA recommended system the HARV (High Aspect Ratio Vessels) for 24 hours. Post exposure, the total population of hatched eggs and un-hatched eggs to compare it to initial population. Result showed that simulated microgravity affected the development rate, reproduction, survival and the progeny of the exposed *C. elegans* populations; the movement patterns between the experiments were also quite distinct.

Biography: Sarah Sejoro is a junior at Texas Southern University who is pursuing a Bachelors' degree in Biology in the College of Science and Technology. A member of the honors college, National Society for Collegiate Scholars as well as many other campus clubs and has been honored with several awards based on accomplishments. She loves reading books, travelling, reading, singing, and being involved in mentally challenging thinking games like puzzles, chess etc. She enjoys doing research and is working towards a career in the medical sciences field.

Kelly Newton

Research Mentor: Hyun-Min Hwang

**Sustainable production of resources for extended period of stay on Mars and lengthy space travel:
Hydroponic plant growth and biofuel production**

Abstract 055 There are growing interests in constructing buildings such as domes on Mars for humans. Because all human activities, including food production, must be occurred inside the buildings, soil based growing system has various limitations. Lengthy space travelers may also need to grow their own food. Hydroponic system, which is a plant growing method using mineral nutrients in water without soil, can fulfill these needs. Phytoplankton has gaining more attention due to their capacity in removal of carbon dioxide and toxic volatile organic carbon in the air and generation of oxygen and lipids that can be converted to biofuel. This study was conducted to test whether hydroponic system is feasible for growing climber plants and investigate optimum growing conditions for vegetables. Three climber plants (*Epipremnus aureum*, *Hedera Algeriensis*, *Hedera nepalensis*) were placed in a pilot scale flow-through hydroponic system and growth rates were measured. The success of vegetative growth in increasing concentration of nutrients (0-720 ppm) was measured for vegetables to find optimum growing conditions. *H. Algeriensis* and *H. nepalensis* grew at a steady rate of about 1 cm/week but growth rate of *E. aureum* was less than 0.2 cm/week. Optimum nutrient concentrations for all three tested vegetables are most likely between 720 and 500 ppm. Freshwater phytoplankton was incubated for two weeks in a solution containing mineral nutrients and vitamins. Lipids were collected from dried phytoplankton cells using hexane. The collected lipids can be thermally fractionated to produce readily usable biofuel. The present study showed both hydroponic system and phytoplankton incubation can significantly contribute to the sustainability of human life during lengthy space travel and extended period of stay on Mars.

Biography: Kelly Newton was born and raised in Trenton, New Jersey. She attended The Pennington School, where she earned three different internships: the first was at the University of Maryland Eastern Shore investigating Geospatial Information Technologies; the second was at Mercer County Hospital, where she worked and shadowed in the Pre-natal clinic; and the third was a teaching internship at the African People's Action School. She was also inducted as a member of the International Thespian Society, joined the field hockey team; later managed a middle school soccer team, and held several volunteering positions at her local hospital, elementary schools, and church, before graduating *magna cum laude* from her high school. Kelly then attended Temple University, in North Philadelphia, Pennsylvania. There she continued in her volunteering efforts, and earned a bachelor's degree in Anthropology, and a minor in Sociology. She is currently pursuing a Biology degree at Texas Southern University.

Richard North

Research Mentor: Audrey Player

Explication of Branched Chain Amino-Acid Transaminase 1 in Triple Negative Breast Cancer That Could Serve as a Relevant Biomarker

Abstract 056: Breast cancer has proven to be one of the most common malignancies in women of the United States. As the primary tumor begins in the breast itself, it eventually becomes invasive and may progress beyond the breast to the regional lymph nodes or metastasize to other organ systems in the body, leading to low patient survival. Often, metastatic tumors are defined as triple negative (TN); these tumors are negative for estrogen receptor, progesterone receptor and ERBB2). Objective of this study was to identify biomarkers related to TN cancers and validate their reliability. Branched chain amino-acid transaminase 1 (BCAT1) was the biomarker examined as part of this study. BCAT1 was examined using MDA 231 RNA to represent TN and MCF7 cell line RNA to represent other breast cancer types. Analysis of PCR products on agarose gel revealed over-expression of RNA in MDA231 TN samples compared to MCF7. Examination of protein levels was done using Immunohistochemistry (IHC) using tissue microarray (TMA) compiled using patient samples. At the protein level, BCAT1 expression could not distinguish TN and non-TN clinical samples. In conclusion, BCAT1 would not be a useful biomarker to characterize TN tumors.

Biography: Richard North III, a native of Houston, Texas graduated from Aldine Senior High School. Upon his graduation Mr. North embarked on a new journey that entailed the field of science. He enrolled into Texas Southern University declaring Computer Science as his major and received a scholarship award from the Louis Stokes Alliance for Minority Participation (L-SAMP). He then achieved academic honors from the university while being a mentor for Big Brothers Big Sisters, a member of the Collegiate 100 Black Men, and the Secretary for the Chemistry Club. During his tenure at Texas Southern University he gained research experience at the following institution: National Institute of Standards & Technology (NIST) Summer Undergraduate Research Fellowship Summer 2012. During his employment he worked within the American Dental Association Foundation (ADA Foundation) doing research on developing a standard method to analyze fluoride dental varnish. This opportunity gave him first hand research experience and skills. Additionally, he is abreast of methods to prevent and detect the decay of tooth's enamel. After completing his research, Richard participated in the Emerging Researchers National (ERN) Conference in Washington D. C. presenting the work he accomplished at NIST. Currently, Richard is a junior in the Department of Computer Science at Texas Southern University.

Tommy Quach

Research Mentor: Hector Miranda

The Complete Mitochondrial Genome of Palawan Peacock-Pheasants *Polyplectron napoleonis*

Abstract 057: The peacock pheasants (*Polyplectron*) are some of the most spectacular pheasants of the world. There are about seven species belonging to the genus scattered in mainland Asia and Southeast Asia. There are two contrasting hypotheses on the origin and evolution of the genus *Polyplectron*. One hypothesis based on three genes; two mitochondrial and one nuclear suggest that *Polyplectron* originated in Palawan and spread to Borneo then to mainland Asia including China. The other hypothesis based on morphological studies suggested that the clade originated in mainland Asia and terminating to Southeast Asian islands of Borneo and Palawan. Because of this conflict, we planned to use the whole mitochondrial genome of the six species as characters to test which phylogeographic hypotheses will be supported. For my part, I amplified the entire mitochondrial genome of *Polyplectron napoleonis*, the endemic found in the island Palawan. A set 27 primer pairs were designed for polymerase chain reaction. Out of the seven primers pairs, 24 produced target amplifications and were sequenced. New primers were designed for three regions and were then sent for sequencing. The forward and complementary reverse sequences were then aligned and assembled using the ClustalW in Geneious Pro 5.5. The whole mitochondrial genome was about with 16,700 bp with 13 protein-coding genes, 2 ribosomal RNA genes, and 22 tRNA genes. I am currently finalizing the alignments, submission to GenBank, annotations, and comparing with several other *Polyplectron* species.

Biography: Tommy Quach is pursuing a Bachelor of Science degree in Biology and a minor in chemistry. Tommy has been involved with numerous organizations on campus such as, Health Occupation Student of America, Biological Honor Society Tri-Beta, ENACTUS, and Dean's student advisory council. He was recently listed on the President's List and a science technology enrichment program scholar. Besides from being involved in academic matters, Tommy uses his free time (aside from studying) to be involved with volunteering at the hospital, participating in health-related runs such as the Breast Cancer Run, playing billiards, swimming, and basketball. One of Tommy's greatest achievement is building a definite structure of a charity group known as, Links to Love, where he gain a tremendous amount of leadership skills as an administrator and raised \$10,000 to finance medicine and build school in international countries. After he graduates from Texas Southern University he plans on going to medical school and becoming a doctor

Ariam Abraham

Mentor: Shodimu Olufemi

Designing mir primers and cloning of mir DNA fragments into expression vectors

Abstract: 058 MicroRNAs (miRNA) are a class of small non-coding RNA that are 15-25 nucleotides and are encoded by highly conserved genes. They are expressed in both unicellular and multicellular organisms and regulate different cellular process, such as cell proliferation, cell differentiation and apoptosis. Here we embark on a particularly effective and practical method of cloning miRNA into an expression vector. First we identified the miRNA sequence at the miRBase website and we determined the pre-miRNA sequence at the UCSC Genome Browser and the NCBI database. Second, we designed both forward and reverse primers for the miRNAs using two different software, Amplifix 2.1 and Sequencher. The miRNA primers were used to PCR amplify both Genomic DNA and cDNA. The PCR-amplification products were cloned into TOPO-4 vector DNA. The presence of the inserted PCR-products was confirmed by double restriction enzyme digestion using BamHI and Hind III or BamHI and Nhe I. The restriction enzyme digested inserts were further cloned into miRNA expression vectors, pEGP miR expression vector DNA or pmR-ZsGreen1 expression vector DNA. We confirmed the presence of the pre-miRNA sequence inserts in the expression vector by double restriction enzyme digestion and we successfully cloned the pre-miRNAs into the miRNA expression vectors.

Biography: Ariam Abraham was born and raised in Asmara, Eritrea and moved to United State after graduating from high school. She is currently a senior Biology student at Texas Southern University. Her deep passion and enthusiasm for science was the driving force behind her decision to major in Biology and her summer research experience provided her with necessary tools to grow both professionally.

Nafisat Omotayo

Research Mentor: Sodipe Ayodotun

Genotoxic Effects of Graphene Oxide in Saccharomyces Cerevisiae

Abstract: 059 Graphene oxide, a compound of carbon, has seized the scientific community by storm. It is a single or multi-atomic-layered material made by the oxidation of graphite crystals, that is both flexible and a great conductor of electricity and heat. Graphene oxide can be used in many aspects. It has exclusive mechanical, electronic, and optical properties, which have been used to develop innovative electronic materials including transparent conductors and ultrafast transistors. Because of its numerous benefits, graphene oxide is now shifting its focus toward biomedical areas such as precise DNA bio sensing and drug delivery. Due to graphene oxide's many advantageous properties and its potential use in the medical arena, there have been various efforts to test the possible toxicity of graphene oxide towards humans. This particular experiment was designed to study the multi-generation genotoxicity or DNA damage that may occur from graphene oxide after constant exposure to the yeast saccharomyces cerevisiae. In our study, we labeled the antibody RAD17 with the fluorescent dye FITC to visually compute any DNA damage that may occur. Our experimental design included nine conditions with two replicas and three controls. We optimized our stock solution of graphene oxide and prepared our concentrations of 500µg/ml, 750µg/ml, and 1000µg/ml. The samples were prepared in 96 well plates and incubated at 25°C with varying concentrations of graphene oxide and FITC labeled antibodies for a period of 16, 24, 48, and 72 hours. An inverted microscope, *Nikon Eclipse Ti*, was used to visualize the samples under an FITC filter; there were no visible foci within the samples. There may be number of possibilities for these findings but the important ones include; the rigid cell wall of saccharomyces cerevisiae, RAD 17 protein does not express well in response to reactive oxygen species. More sensitive assays need to be applied to see the multi-generation genotoxic effect in saccharomyces.

Bography: Nafisat Omotayo is currently a junior at Texas Southern University where she is studying to obtain a Bachelor's of Science in Biology with a minor in Chemistry. Nafisat divides her time between volunteering at the Stafford Therapeutic Equestrian Center for special needs children and adults, and volunteering in the Pro-Vision enrichment program. She is also a member of the Pre Health Professions Club and African Student's Association. These clubs offer Nafisat the platform to learn more about herself as a Nigerian American woman and of her future profession. After graduating, she hopes to further her studies by attending Texas Southern University's pharmacy school to acquire a degree in Pharmacy. Following her Pharmacy degree, she then plans on obtaining her Master's in Pharmacology.

Raven Reed

Research Mentor: Bobby Wilson

Preliminary Assessment of Volatile Organic Compounds in the Houston Metro Area

Abstract 060: Automobiles have been widely known as sources of VOC (Volatile Organic Compounds) emissions in outdoor environments; however, the impact of these emissions indoor has not yet been studied in detail and needs to be developed. Three different types of indoor parking facilities have been assessed for the VOC concentrations, which include residential attached parking garages, commercial ground parking garages, and commercial underground parking garages. For this assessment, Houston, Texas, a representative big city, was chosen because of its high dependency on private transportation via cars by its citizens, the numerous petrochemicals industries emitting VOCs, and the several days each year that it experiences a high ozone level. These factors significantly increase Houstonians' exposure to VOCs. Indoor air samples were collected using 6-L stainless steel canisters for 24-h period and analyzed using a modified version of EPA Method TO-15, which is TSU-TO15 with GCMS coupled to cryogenic pre-concentrator. The eight most abundant VOCs were identified in each sample. Six out of the eight VOCs identified are classified as hazardous air pollutant based on EPA regulations. This research found the concentrations of VOCs are higher in attached residential parking garages following, underground commercial parking garages, and ground commercial parking garages last. It can be assumed that the VOCs are greater where there is little to no ventilation.

Biography: Raven Reed is from Tulsa, OK. During high school she was accepted to a part time Laboratory Science Program at Tulsa Technology Center where she fell in love with Environmental Science and decided from that day that she wanted to be an Environmentalist. While at Texas Southern University and various internships she discovered that she needed an extensive chemistry background to compete with the masses for graduate school. Raven a former Biology major turned Chemistry major is currently at Texas Southern University working towards her BS in Chemistry with hopes to get into graduate school to obtain a PhD in Environmental Toxicology or Environmental Chemistry.

Ray Mbonu

Research Mentor: by Jade Clement

A Study on the Combined Effects of Microgravity and Bisphenol A on Human Cells

Abstract 061: Microgravity is a major environmental factor that is hazardous to human health, due to its ability to damage a variety of cells and tissues. Microgravity has been a main focus and area of research for many years. It has been shown to cause immune system dysfunction, muscle atrophy and neurological alterations to name a few. Due to high cost of space flown experiments, ground-based methods for microgravity simulation have been created which include head down bed rest for humans, tail suspension for rodents, cell and microorganism cultures with high aspect ratio wall vessel bioreactors, and random positioning effects similar to those seen in the space environment. Rotating Wall Vessel (RWV) bioreactors are a commonly used method to simulate the microgravity effect on cultured cells. The existence of Bisphenol A (2,2-bis[4-hydroxyphenyl]propane, BPA) in the environment has arisen as a major public health concern. BPA is commonly used in everyday products such as beverage containers, food cans, baby bottles, dental sealants, etc. It can be absorbed when ingested, inhaled, or through the skin. In this research report, we summarize our experimental observations on the toxicity of bisphenol A on human liver cells that experienced simulated-microgravity for 25 days versus the parental cell line that has never been exposed to the simulated microgravity. We performed time-course XTT cytotoxicity assay for cell viability analysis using various doses (25 μM ~200 μM) of BPA. We are currently finalizing our experimental procedures and in the process of analyzing the data. Our preliminary results may suggest a slight advantage on the survival rate of the microgravity treated human liver cells.

Biography: Ray Mbonu graduated from Westbury High School in May 2011. He is currently a sophomore Chemistry major in both the Thomas F. Freeman Honors College and Louis Stokes Alliance for Minority Participation Scholars. Before his first summer at TSU Ray was awarded an 11 week internship in Gaithersburg, Maryland, under the Science and Engineering Alliance, with the National Institute of Standards and Technology's SURF summer program. He is also a student worker in the office of the dean of the College of Science and Technology at TSU where he is also a student ambassador. Ray has volunteered with both the Martin Luther King Jr. and People's Clinics in Houston. As a member of his church, Ray is a member of the choir, lectors, and ushers organizations. He expects to graduate from Texas Southern University in 2014 and then attend medical school.

Tyneshi Thomas

Research Mentor: Hyun-Min Hwang

How much of energy TSU students can save by not using bottled water and riding bikes

Abstract 062: The consumption of bottled water has been increasing fast. However, drinking bottled water means that we also consume a large amount of energy used during the life cycle of this product, from extraction of crude oil to disposal to landfills. The amount of energy we use is on the rise in our country. According to *Journal of Environmental Research Letters*, 32 to 54 million barrels of oil were used to make 33 billion liters of bottled water in the United States in 2007. The purpose of this research is to see how much energy is consumed on campus when we drink bottled water versus use on-site water purification systems. Also how much of energy can be saved when we use bikes and public transportation instead of driving personal cars. A recent survey reveals that each TSU student drinks 1.74 bottles (500 mL size) of water. It can be converted to 16,530 bottles for all TSU students. By comparing the price of bottled water consumed each day to the cost of using water purification systems, the average amount of money spent per bottled water would compute to approximately \$2,066.25 per day (\$162,660 per semester). If each building on campus would have at least one purification system on each floor, the amount spent on the water would equal to \$22,551.20 for the initial semester with filters. The following semesters would cost approximately \$4,000 per semester. It means we can save lots of energy and money when we drink purified water instead of commercial bottled water. The second half of this research focused on the amount of energy we can save when we ride bikes and use public transportation. The average student drives approximately 50 miles (round trip) each day. This amount of miles is coupled with 20.75 MPG (weighted average of automobiles driven by students). It means that each student uses 2.41 gallons of gasoline (22,895 gallons for all TSU students) each day. Now of course it is not expected to have students ride a bicycle for 50 miles. If students use both bikes and public transportation, we can reduce the carbon footprint of TSU students.

Biography: Tyneshia Thomas is a native Houstonian and graduated from Worthing High School in 2003. On December 15, 2007, Tyneshia initially graduated from Texas Southern University with a Bachelors degree in Business Administration and Management. While obtaining on her degree at TSU, Tyneshia was offered a job to work for the Nigro Dermatology Group and worked at the dermatology clinic for five years. She then realized that she wanted to practice medicine and decided to enroll back at TSU to obtain a degree in Biology. After graduation she plans to apply for Physician Assistant School.

Uchechi Ogueri

Research Mentor: John Sapp

The Fries rearrangement using trifluoroacetic acid

Abstract 063: The Fries rearrangement is an old familiar reaction that involves primarily acetate esters of aromatic phenols. The original reaction was done by heating the ester in a molten mixture of the reactant ester and the Lewis acid, anhydrous aluminum chloride to temperatures above 150 degrees centigrade and then cooling the product and adding water. The result was a mixture of the ortho and para isomers of a rearranged ketone. In this research 2-Naphtol, a bicyclic aromatic phenol, was treated with the Lewis acid, trifluoroacetic acid (TFA) to determine if the TFA would cause the same rearrangement to occur. The results show, through infrared analysis, that TFA is an effective reagent to use in the Fries rearrangement. The infrared spectrum of the starting ester showed no evidence of the hydroxyl functional group while the infrared spectrum of the product showed positive evidence of the presence of the hydroxyl functional group, as it should, if the rearrangement had occurred. A series of other phenols are currently under investigation to determine the overall effectiveness of TFA as a useful reagent in the Fries rearrangement.

Biography: Uchechi Graceland Ogueri completed her elementary and high school education in Nigeria. Uchechi's hobbies include singing, dancing, writing, and reading. After high school, she desired to pursue a career in medicine. She was accepted into Texas Southern University as a Biology Major in January 2011. She has joined the National Society of Collegiate Scholars (NSCS), African Students Association, and the University's Environmental Club. During the course of her study in Texas Southern University, Uchechi worked as a student assistant at the College of Online Education (COLEIT) where she assisted in helping students resolve issues with the Blackboard and online classes. Presently, she works at the Student Academic Enhancement Services (SAES) where she tutors in Mathematics, including College Algebra, Trigonometry, and Geometry.

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