2015 Research Week 2015

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RESEARCH WEEK

MARCH 30TH - APRIL 3RD

Cross Disciplinary Knowledge - Sharing
A Crucial Driver for Research Education and Innovation

A Program Sponsored By the Office of Research
Texas Southern University 3100 Cleburne Avenue Houston, Texas 77004
Research Week 2015

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TSU Research Week 2015
Activity Schedule

“Cross Disciplinary Knowledge - Sharing: A Crucial Driver for Research Education and Innovation”

March 31, 2015 - Tuesday

Continental Breakfast and Registration
Sterling Student Life Center
9:30am-10:30am

Opening General Session
Sterling Student Life Center
10:30am-12:00pm

Student, Staff and Faculty
Sterling Student Life Center
1:00pm-4:00pm

Poster Presentations
Tiger Room (3rd Floor)
1:00pm - 4:00pm

Research and Outreach Center Exhibits
Tiger Room (3rd Floor)

April 1, 2015 - Wednesday

Student, Staff and Faculty
Rod Paige Education Building
9:00am-1:00pm

Oral Presentations
Room #318

College/ School Discipline Specific Sessions

College of Pharmacy and Health Sciences
Rod Paige Education Building Auditorium
8:00am - 5:00pm

College of Science Engineering and Technology
TSU Science Center Room #303H
8:45am - 12 noon

College of Liberal Arts and Behavioral Sciences
Sterling Student Life Center Room #114
1:00pm - 3:00pm

Jesse H. Jones School of Business
Jesse H. Jones School of Business Room #127
1:30pm - 3:30pm

School of Communication
Martin Luther King Building Room #217
2:00pm - 4:00pm

Rod Paige College of Education
Rod Paige College of Education Auditorium
5:00pm - 6:30pm

April 7, 2015 - Tuesday

Thurgood Marshall School of Law
Law School Building Room #202
12:00pm - 1:00pm

April 2, 2015 - Thursday

Awards Program/ Luncheon
Sterling Student Life Center
11:00am-1:00pm

Tiger Room (3rd Floor)
March 23, 2015

Dear Texas Southern University Family:

I am pleased to endorse Texas Southern University’s Research Week 2015, “Cross Disciplinary Knowledge—Sharing: A Crucial Driver for Research Education and Innovation.” Texas Southern’s Research Week serves each year to bring some of the nation’s most creative minds together to share their work and facilitate future intra- and interdisciplinary collaborations.

The theme for Research Week 2015, “Cross Disciplinary Knowledge—Sharing: A Crucial Driver for Research Education and Innovation,” acknowledges the growing trend in academia of intra-disciplinary study. TSU Research Week 2015, which will take place March 30-April 4, 2015, allows each member of the TSU family to garner the benefits of a University culture that serves as an epicenter for cutting-edge research.

In addition, Research Week 2015 is consistent with one of my top priorities as President of Texas Southern University to raise the bar of expectations in all university operations and undertakings to foster in every individual and institution at Texas Southern the goal of “Excellence in Achievement.” This year’s Research Week promised to do just that by creating an atmosphere of excellence—in student and research staff presentations, panel discussions, and new collaborations formed.

The institutional goal of “Excellence in Achievement” demands the University’s renewed emphasis on research as a critical priority. By so doing, TSU will become part of the nation’s vanguard of research pioneers, and thereby foster an incredible growth in opportunities for all individuals, institutions and programs at Texas Southern University.

I urge all faculty, staff, and students to participate fully in the many happenings during TSU Research Week. Such support exemplifies the University’s readiness to positively impact the world of the 21st century and beyond.

Sincerely,

John M. Rudley
President
March 26, 2015

Dear Texas Southern University Family:

Research Week at Texas Southern University (TSU) is an annual event designed to highlight and showcase the research activities and quality education/training for undergraduate students, graduate students, Ph.D. students, and faculty. Research Week not only allows TSU the opportunity to showcase the myriad research activities of the university faculty and students but it provides a forum to connect those activities to the universal research activities that are being undertaken in other educational enterprises, research laboratories, companies and corporations and governmental enterprises in the global community at large. TSU sponsors Research Week as a part of meeting and keeping its vision and mission of “Excellence in Achievement” through this year’s Research Week Theme, “Cross Disciplinary Knowledge – Sharing: A Crucial Driver for Research Education and Innovation.”

Texas Southern University is classified by the Carnegie Commission as a “Research Intensive” university and by the state of Texas as a “Doctoral” level university. Clearly, Research Week is very beneficial to TSU’s reputation, growth and development as an emerging research institution. It highlights and exemplifies the TSUs family readiness to significantly impact the educational and global community.

Thank you for participating in the 2015 TSU Research Week.

Yours truly,

James W. Ward, Ph.D.
Provost/Vice President for Academic Affairs and Research
Research Week (RW) 2014 marked the 10th annual RW program of Texas Southern University. The event which is designed to highlight scholarly research and outreach activities at TSU was held on April 1-7, 2014. This year’s theme, “Research Matters: TSU Celebrating the Process and the Promise” aptly captures the essence of the research enterprise on campus and the need to synergize among the various different entities for effective gains. This year’s program had 9% and 20% increases in the number of abstracts submitted for students and faculty, respectively.

The morning session on April 1st, featured Cheryl McCurdy, Ph.D., Associate Professor, Center for Health Promotion and Behavioral Research, The University of Texas Health Science Center who gave a presentation entitled, “Competitive Conflicting Communities: Responses to the Growing Presence of Heroin in Tanzania”. Dr. McCurdy drew on her deep and long-term research in Tanzania over the last 25 years and discussed the ways she developed partnerships with hard to reach populations, members of civil society and Tanzanian researchers to transform research and policy with respect to HIV prevention. Her HIV prevention work included a methadone clinic and outreach programs.

Faculty, staff and students had poster presentations in the afternoon session on April 1st. In total 70 posters were presented. On April 2nd, faculty, staff and students had oral presentations in both the morning and afternoon sessions. In total, 23 oral presentations were given. The largest groups giving oral and poster presentations were members of Pharmacy and Transportation Studies.

On April 3rd, research activities were presented at the various Colleges and Schools across campus. The Thurgood Marshall School of Law’s program was entitled, “Research by the Book” and featured 7 professors who had written books on various legal topics. The College of Liberal Arts and Behavioral Sciences had a presentation entitled, “Liberal Arts, Humanities, and Fine Arts: Fresh Visions…New Contexts” and a panel presentation entitled, “African American English: A History, A Science, A Controversy”. The College of Science and Technology had a theme called, “Big Data and Interdisciplinarity”. The College of Pharmacy and Health Sciences had student poster and oral presentations. The School of Public Affairs had three different panel discussions on Administration of Justice, Political Science and Urban Planning and Environmental Science.

The closing ceremony took place on April 7th and featured Shishir Shishodia, Ph.D. Associate Professor, Department of Biology in the College of Science and Technology. The title of his talk, “Therapeutic Plants” addressed the used of plants in the treatment of health and disease. Many treatments in modern medicine have come from derivatives of naturally occurring plants and many of these plants have been used for many years in different cultures for treating and preventing disease.

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**Presentation Category/Presenter/Department**

**ORAL**

**Faculty**
- Mark Harvey (Physics)
- Ashraf Mozayani (Admin. of Justice)
- Andrea Shelton (Health Sciences)
- Shayna Lee (Univ. Counseling)
- Monica Rasmus (Health Sciences)
- Bernadette Smith (Univ. Counseling)

**Staff**
- Latissha Clark (Transportation)

**Student**
- Janaye Robinson (Pharmacy)
- Steven Washington (Public Affairs)
- Zayne Belal (Physics)

**POSTER**

**Faculty**
- Fengxiang Qiao (Transportation)
- Yi Qi (Transportation)

**Staff**
- Yubian Wang (Transportation)

**Student**
- Juan Larralde (Pharmacy)
- Jie Liu (Transportation)
- Samuel Ubanyionwu (Pharmacy)
- Emmanuel Aniemeke (Pharmacy)

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**Research Week 2014 Winners**

**Research Centers**

Innovative Transportation Research Center
Tuesday, March 31, 2015
General Session

Sterling Student Life Center President’s Lounge, 4th Floor
10:30 AM – 12:00 PM

Facilitator: Linda M. Gardiner, Ph.D.
Director, Research Enhancement and Regulatory Services

Greetings / Opening Remarks: James W. Ward, Ph.D.
Provost, Vice President for Academic Affairs, Vice President for Research

Introduction of Speakers
10:35 A.M.

Maruthi Sridhar Balaji Bhaskar, Ph.D.
Assistant Professor of Environmental Science and Technology (TSU)
“Mercury Contamination and Bioaccumulation in East Tennessee Watersheds”

Questions and Answers
10:50 A.M.

Noreen Khan-Mayberry, Ph.D.
Chief Toxicologist
NKM Environmental Health Sciences
“Talking Toxicology”

Questions and Answers
11:45 A.M.

Closing Remarks
11:50 A.M.
Faculty, Staff, and Student Poster Presentations

Tuesday, March 31, 2015
Sterling Student Life Center, Tiger Room
1:00 P.M. – 4:00 P.M.
Case History of Using Moisture-Content Based Approach to Predict Low-Volume Roads Longitudinal Shrinkage Cracking Failure

Dr. Yaqi Wanyan (Abstract 001)
Engineering, COSET

Collaborators: Drs. Imad Abdallah and Soheil Nazarian, UT El Paso and J. Puppala, UT at Arlington

The desire for a deep understanding of premature failure of flexible pavements caused by longitudinal cracking led to the study presented here. The study developed a material model to estimate expansive subgrade strength and stiffness variations under seasonal drying and wetting cycles by using easy-to-measure moisture content together with soil index properties. Finite element analysis (FEA) models were then used to perform parametric studies to study the behavior of expansive soil shrinkage cracking and to further quantify the moisture content thresholds for initiation and propagation of longitudinal cracking, and the possible locations of such cracks. Two types of field instrumentation systems including moisture probes with data logger and field matric suction sensors were carefully installed at five representative sites in Texas with high plasticity index (PI greater than 25) clayey subsoils (Houston, Forth Worth, San Antonio, Paris and Atlanta) to determine the accuracy of the predicted longitudinal cracking distress. The estimated critical moisture contents and longitudinal crack locations showed good agreement with field measurements. Compared to prevailing suction-based approaches, the new moisture-content based approach seems to provide engineers an efficient way to understand the complex problem of damages caused by expansive subsoil, not limited to low-volume roads, but other lightweight infrastructures alike, to minimize extreme weather susceptibility, lower cost, and improve overall structure performance.

The Use of Social Media in Transportation Planning: Evidences from Texas

Dr. Sarmistha R. Majumdar (Abstract 002)
Political Science, School of Public Affairs

Public involvement in transportation planning using social media is gaining much popularity in an open government era that emphasizes transparency and engagement of the public in meaningful ways. The recent advancements in communications technology have made it possible for the regional councils of government to use social media tools like Facebook, Twitter, Flickr, YouTube, and others to provide information to the public, educate them, and seek their inputs and ideas in decision making in transportation projects. Whatever forms it may take public involvement paves the way for shared governance, confer legitimacy to decisions, and build trust in government’s ability to administer. This study has tried to gauge the extent of social media use in transportation planning and identify the challenges encountered in its use. Using the survey instrument, data has been collected from the regional councils of government in Texas. Analysis of data has yielded valuable information on the use and lack of use of social media in transportation planning along with the challenges experienced by the regional councils of government.
Garlic may Prolong Shelf-life of Goat Meat

Dr. Makuba A. Lihono (Abstract 003)
Human Services and Consumer Sciences, COLABS

Collaborators: J. Koo, D. Fernandez, U. Adamu, B. Huang, O. Gekara and F. Stigger, University of Arkansas at Pine Bluff (UAPB)

This research seeks to extend shelf life of ground goat meat by treating it with natural herbs and spices to include garlic, rosemary, and vitamin E. Rosemary and garlic were applied at 0.025% or 0.05% (w/w) and 0.45 or 0.90% to fresh ground goat meat, respectively. Vitamin E was used at 0.0125% or 0.025%. Treated ground goat meat patties (about 50 g each) were prepared, and individually packaged in plastic bags and stored for 12 days at 4 ºC. Total microbial counts were performed every 2-3 days. Results showed that at day 0, treatments 2 and 5 with 0.45% garlic had total aerobic counts not statistically different from the control but they were significantly lower at day 2. At day 5, treatments 9 and 10 with 0.9% garlic had the lowest counts and 1 Log_{10} less than the control (4.8 Log_{10} for treatments 9 and 10 as compared with 5.8 Log_{10} for the control) but their counts were not statistically different from the control. All the treatments reached spoilage by day 8. Although the pH of the control was lower than the other treatments with the exception of treatment 6 at day 0, all the treatments were not significantly different from each other at day 0 and thereafter. The control had higher redness (a* value) when compared with all the treated samples at day 0 and day 2. Treated samples kept their redness until day 8 but they decreased significantly at day 9. There is a possibility that garlic may provide some effect in preventing microbial growth in ground goat meat stored at 4 ºC early in the first 5 days.

Driving Performance Test of Stop Signs with Drivers Smart Advisory System

Dr. Fengxiang Qiao (Abstract 004)
Transportation Studies, COSET

Collaborators: Qing Li, Xiaobing Wang and Dr. Lei Yu, COST

Stop signs are easy to be blocked by obstacles at un-signalized intersections, which is a threat of safety. One of the feasible countermeasures is to provide an earlier earning message to drivers when approaching un-signalized intersections. In this research, a Radio Frequency Identification (RFID) based Drivers Smart Advisory System (DSAS) was developed to prompt warning messages on the STOP sign in the coming intersection. A pilot field test was conducted in a residential area with the test routes covering all turning movements. GPS unit was used to record down the second-by-second geo-locations of vehicles, while drivers’ performances were measured based on vehicle speed profile, acceleration rates, braking distance, and other factors. Impacts of DSAS messages on different turning movements were compared, and significant tests were conducted to examine if there are significant differences in performances for different turning movements. While the tests and performance measures were conducted with the DSAS messages, the testing procedure and the analytical procedures can be utilized for tests of messages from other systems such as from the Smartphone applications. It is recommended further testing the performances with more scenarios in driving simulator to reduce the safety risk during on road tests. It is envision that the tested message or similar can enhance the safety of drivers and also nearby pedestrian and even pets around un-signalized intersections.
Landscape Level Patterns of Mercury Contamination and Bioaccumulation in East Fork Poplar Creek (EFPC) Watershed

Dr. Maruthi Sridhar Balaji Bhaskar (Abstract 005)
Environmental and Interdisciplinary Sciences, COSET

Collaborators: Mark Peterson and Mark Bevelhimer

Over the past several decades, substantial environmental and ecological changes have occurred in East Fork Poplar Creek (EFPC) in Oak Ridge, Tennessee, as a result of historical pollutant discharges from Y-12 complex. One of the largest contaminant released is mercury (Hg), a significant environmental pollutant due to its persistence in the environment, ability to bioaccumulate in food chains, and its known hazards to both human and wildlife. The bioaccumulation of Hg in fish has proven to be enigmatic in the EFPC over the past several years, with remedial actions at industrial facilities successfully decreasing total Hg concentrations in water, but not resulting in commensurate decreases in fish Hg concentrations. The primary goal of this project is to develop a comprehensive understanding the landscape patterns of Hg contamination and bioaccumulation in EFPC watershed. Specific objectives of the project include; 1) To determine the spatial and temporal variations in Hg contamination and bioaccumulation, 2) Identify and analyze the influence of landscape dynamics on the Hg bioaccumulation across the EFPC, and 3) Identify and compare the potential driving factors of Hg contamination at multiple locations within EFPC. A comprehensive geospatial database which incorporated all the spatial and analytical data of the EFPC watershed was developed. Our spatial analysis indicated that the Hg concentrations in the fish in the lower EFPC slowly increased with time compared to the upper EFPC. Landscape level environmental factors are being evaluated to assess their influence on fish mercury trends.

African American Graduate and Undergraduate Male Students’ Attitudes Regarding Counseling: A Comparative Analysis

Drs. Candy H. Ratliff, Joyce P. Finch and Jessica D. Davis (Abstract 006)
Counseling, College of Education

African American male graduate and undergraduate students do not utilize counseling services on their college campuses even though payment is included in their student fees. Researchers conducted an exploratory study at a Historically Black College and University (HBCU) in the southeastern region of the United States. They examined African American male students’ attitudes (trust, stigma, socialization, and open to counseling) toward seeking professional counseling using the Attitudes Toward Seeking Professional Psychological Help (ATSPPH) Scale. Fifty African American male students from one graduate and one undergraduate class were invited to participate. The final sample consisted of 35 African American males ranging from 18 to 44 years of age. Four regression models were computed to determine the predictability of age, classification, marital status, and prior counseling (factors) on students’ attitudes. None of these factors were found to be independent predictors in seeking professional counseling.
A Preliminary Analysis of HBCU Smoking Policy Stringency & Health Related Programs

Dr. Tondra L. Moore (Abstract 007)
Pharmacy Administration and Health Science Services, COPHS
Collaborator: Shuangquan Zhao

Smoking policies on college campuses have been examined since the sixties. Studies have examined the smoking risks and practices for students who attend Historically Black Colleges and Universities (HBCUs) and determined the risk to be greater for African American students. The stringency of a smoking policy may be indicative of the health promotion activities on a campus. No study has examined the policies in relation to the existence of a health related degree programs offered on a campus and the stringency of the policy. Using the White House Initiative on Historically Black Colleges and Universities School Directory, 99 public and private institutions were identified. Of those, approximately half were public. Eighty-eight percent of the institutions were designated 4-year colleges. Only one of the institutions had no smoking policy. More importantly, seventy percent offered a health related degree program. Of the institutions that offered a health related program, only 29 (41%) outright banned smoking on campuses while 41 (59%) allow smoking in designated areas. The stringency of smoking policies on campuses that offer health related programs merits further analysis due to the higher risk of health disparities attributable to smoking while in college and the public health impact health related programs should have on the promotion of healthy lifestyle practices.

Postmortem Computed Tomography for Detecting Trauma Injury

Dr. Ayman Ibrahim (Abstract 008)
Forensic Sciences, School of Public Affairs
Faculty Advisor: Dr. Ashraf Mozayani

The conventional autopsy unpopular among Muslims, Jews and some other religious groups. These cultures require burial as soon as possible. Therefore, evaluation of the cause and manner of death is not possible because without dissection and analytical evaluation, it is impossible. The virtual autopsy or computed tomography images seems to be a safe replacement for the conventional autopsy. However, the effectiveness of this new technique is questionable among medical examiners. This research examines the published literature on detection and identification of trauma by conventional autopsy and compares it to computed tomography. The results indicates that in cases of trauma related death, the medical examiner is able to document, visualize and analyze the findings of blunt force trauma, pathologic gas collections and gross tissue. However, the medical examiner must utilize the expertise of the radiologist or develop the skills to use this technology.
**A Hot Spot Analysis of Teenage Crashes: An Assessment of Crashes in Houston, Texas**

**Dr. Gwendolyn C. Goodwin** *(Abstract 009)*
Center for Transportation Training and Research, COSET

**Collaborators:** Walter B. Council, MS. (Doctoral Student UPEP) and Jamaal Schoby, MS (Doctoral Student UPEP)

Today, states have enacted laws to ensure that teen drivers are more skilled and drive safely. The result is fewer accidents. However, when teen crashes from Houston, Texas were mapped, certain streets and areas appeared to have more accidents than other areas. Using the Getis-Ord Gi, this study was able to determine where clusters of accidents occurred. This research highlights the changes that occurred in teen crashes from 2006 compared to 2009 that led to the decline in crashes. While graduated driving programs and campaigns aimed to promote safety may have contributed to the decline in teen driver accidents, other factors also helped decrease crashes for this cohort. In Houston, Texas it appears that measures that calm traffic and prevent crashes for other cohorts also provided an added benefit to teen drivers.

**Managing Congestion Through Innovative Financing – Equity Issue**

**Dr. Mehdi Azimi** *(Abstract 010)*
Transportation Studies, COSET

Congestion pricing is an innovative strategy used to help reduce traffic congestion, improve the environment, and promote alternative modes of transportation in addition to generating revenue. The paper addresses equity issues related to congestion pricing using results of a survey of Katy Freeway users in Houston, Texas. Data analysis is conducted based on the survey and different commuters are examined to see how they might be affected by a congestion toll. Standard methods of statistical analysis are used to identify the existence of relationship between stated managed lane use and both traveler household income and gender.

**Interpretation and Evaluation of the Recent Toxicological Studies about AB-PINACA**

**Dr. Wael Ahmad** *(Abstract 011)*
Forensic Sciences, School of Public Affairs

Advisor: Dr. Ashraf Mozayani

AB-PINACA is one of the most potent PINACA compounds. They are belong to synthetic cannabinoids family, which have with adverse effects on the central nervous system and pulmonary system. The aim of this research is to evaluate the toxicological effects of AB-PINACA. This research examines published literatures concerning the interpretation of the presence of this substance in blood of driving under impairment and postmortem cases. The results indicate that smoking of AB-PINACA causes loss of consciousness, hallucination, pneumonia and lung failure, by affecting CB1 receptor modulator with almost 10 fold generator affinities for CB1 receptor more than any other classic synthetic cannabinoids. This research raises awareness of the newly emerging AB-PINACA strand of synthetic cannabinoids and it toxicological effects.
Effect of AB-FUBINACA on Glutamate-Induced Excitotoxicity in Bovine Neural Retina

Dr. Ahmed M. Bendary (Abstract 012)
Forensic Sciences, School of Public Affairs
Advisor: Dr. Ashraf Mozayani

Collaborators: Leah Mitchell, Drs. Ya Fatou Njie-Mbye and Sunny E. Ohia (Pharmacy)

Excessive glutamate has been linked to several ocular neurodegenerative diseases. There is evidence that endocannabinoids can exert neuroprotective action against retinal damage induced by oxidative stress or excitotoxicity. **Purpose:** In the present study, we investigated the pharmacological effect of AB-FUBINACA (1-amino-3-methyl-1-oxobutan-2-yl)-1-(4-fluorobenzyl)-1H-indazole-3 carboxamide) a novel synthetic cannabinoid, on glutamate-induced excitotoxicity in isolated bovine neural retina. **Method:** Isolated bovine neural retinae were pretreated with AB-FUBINACA (1nM -100µM) prior to insult with glutamate (3 mM), and retinal neuron survival was assessed using the methylthiazolydiphenyl-tetrazolium bromide (MTT) assay. **Results:** In the presence of glutamate (3 mM), only 66% of retina neurons survived when compared to control. Interestingly, 10 nM of AB-FUBINACA did not alter glutamate (3 mM)-induced retinal damage, whereas 100 nM AB-FUBINACA elicited an increase in glutamate-induced neuron degeneration by 16%. **Conclusion:** The novel synthetic cannabinoid, AB-FUBINACA caused a reduction in neuron viability of glutamate-induced neurotoxic retinas. The observed effect of AB-FUBINACA on glutamate-induced excitotoxic damage in bovine retina might involve a mechanism independent of the neuroprotective role of endocannabinoids in neural tissues.

A Review on Pesticides Analysis with a Forensic and Environmental Interest

Drs. Ahmed Saber and Ahmed M. Bendary (Abstract 013)
Forensic Sciences, School of Public Affairs
Advisor: Dr. Ashraf Mozayani

The extraction of organophosphorus and carbamate pesticides in human biological samples is difficult due to trace levels of intermediates present. This research reviews pesticide preparation procedures including: QuEChERS (quick, easy, cheap, effective, rugged, safe) procedures with different chromatographic techniques and detectors (LC/MS/MS), (GC-FPD), (GC-NPD), (GC/MS) and (GC/MS/MS). Optimal solvent ratios were determined. These ratios facilitate better recovery and reduce interfering results. Furthermore, this research should allow QuEChERS procedures for human development.
JonBenet Ramsey  Crime Scene Investigation in 2015

Claudia M. Bonilla  (Abstract 014)
Undergraduate in Forensic Sciences
Advisor: Dr. Ashraf Mozayani

This research examines new technology and techniques that have undoubtedly increased the significance of crime scene investigation. Forensic Scientist and Forensic investigators have learned to improve and develop their skills through the process of trial and error. Whether it is a technical error or human error these issues can be fixed to prevent future ones. In the case of JonBenet Ramsey, and along with many others, the nation has experienced heartache due to botched investigations and inadequate skills in crime scene processing, collecting and analyzing. Advancements in crime scene investigation include appropriate training in collection techniques, written procedures, acceptable standards, and well educated personnel. Technology such as alternative light sources in photography, linguistics in document analysis, smaller samples for DNA, and 3D models for ballistics has significantly improved the field of forensic science. With knowledge gained from previous mistakes we are now able to interpret crime scenes more efficiently, solve decade old cases, and exonerate those who are innocent.

The Genetics of Innocence: An Investigation of the Presence of Synthetic Cannabinoids in Hair

Chinyere Anugwom  (Abstract 015)
Undergraduate in Chemistry
Advisor: Dr. Ashraf Mozayani

Herbal mixtures containing synthetic cannabimimetics are among the new psychoactive products and are likely to be the most abused worldwide. Hair analysis for substance abuse has been gaining increasing significance in forensic sciences. Hair is a peculiar tissue which "keeps memory" of the recent history of drug intake; making in advanced medium to explore for the future of all drug testing. This research is evaluating the published literature about hair analysis as a tool to evaluate the prevalence of usage of synthetic cannabinoids and method of analysis. Segmental hair examination can produce information about the time line of the substance use. The literature indicates liquid chromatography-tandem mass spectrometry is necessary for detection and identification of these substances in the hair. Results strongly support the use of hair analysis as a tool to identify and detect these new psychoactive drugs.
Analysis of Urban Sprawl and its Effect on Urban Environmental Characteristics Using Spectral Reflectance and Landsat Data in Harris County, Texas

Gilbert Saah (Abstract 016)
Ph.D. Candidate in Environmental Toxicology, COSET
Faculty Advisor: Dr. Maruthi Sridhar Balaji Bhaskar

Urban landscapes are a complex combination of buildings, roads, pavements, roofs, vegetation, soil, and water, each of which exhibits unique spectral reflectance and thermal properties. To understand the interactions and impact of these heterogeneous urban landscapes on their environmental surroundings, more precise urban mapping techniques are of essential importance. Several studies have demonstrated that spectral reflectance characteristics (in the range of 350-2500 nm) of the different urban landscapes are varied and distinctly different. However, the application of this spectral information to map and accurately classify the urban features at local, regional, and global scales has rarely been explored. The goal of this research project is to investigate the effects of urban landscape features on the local and regional environmental quality in Harris County, Texas, using the Landsat imagery from 1984 to 2014. The specific objectives of the study are, 1) to develop a spectral library of the urban landscape features, 2) identify and analyze the spectral characteristics of the urban features, 3) use of multi-spectral and multi-temporal Landsat imagery to accurately classify and map the urban features, and 4) identify and map the effects of urban sprawl on environmental quality in the Harris County, Texas. This project is highly innovative because with the proposed research approach, we can map the energy efficiency at urban landscape level in Houston and its surroundings using Landsat data. The results of this research will be shared with the urban planners, city and state government personnel.

The Effects of Landscape Factors on Mercury and Methylmercury Contamination and Bioaccumulation in Red Breast Fish (Lepomis auritus) in East Fork Poplar Creek Watershed, Tennessee

Adelanke O. Segun (Abstract 017)
Master’s Candidate in Environmental Toxicology, COSET
Faculty Advisor: Dr. Maruthi Sridhar Balaji Bhaskar

Heavy metals such as mercury (Hg) and methyl mercury (MeHg) are the major contaminant to the biotic community in East Fork Poplar Creek (EFPC) watershed in Tennessee. This site had been polluted and received effluents over the years by the action of the U.S. Department of Energy (DOE) facility. Various traditional methods have been used in the past to characterize and identify the extent of contamination in this study area. The goal of this study is to utilize the remote sensing using Landsat imagery and GIS (Geographic Information System) techniques to map the Hg and MeHg dynamics in the EFPC watershed. Various landscape factors such as Leaf area index (LAI), Chlorophyll, impervious surface will be monitored and estimated through remote sensing indices such as Normalized Difference Vegetation Index (NDVI). In addition, in-situ analysis of the water and soil samples collected from the study area will be carried out and compared to the nearby uncontaminated watersheds. The historical trend at which Hg and MeHg bio accumulate in Redbreast fish (Lepomis auritus) will be evaluated by using the biochemical, physiological, growth, and nutritional response of the fish. This study will contribute to the better understanding of Hg and MeHg dynamics and their effects on the biotic community in EFPC watershed.
Assessment of Atmospheric Carcinogenic Polycyclic Aromatic Hydrocarbons in Houston using Pine Needles as Passive Samplers

Sharmila Bhandari (Abstract 022)
Ph.D. Candidate in Environmental Toxicology, COSET
Faculty Advisor: Dr. Hyun-Min Hwang

Vehicle and industrial emissions from fossil fuel combustion contain carcinogenic contaminants, especially PAHs (polycyclic aromatic hydrocarbons). PAHs with molecular weight of 278 and 302 have been gaining more attention due to their higher cancer potency. Some of these target PAHs are 10 to 30 times more carcinogenic than benzo[a]pyrene, a reference PAH. In order to investigate environmental disparity in terms of exposure to carcinogenic PAHs, pine needle samples were collected from small parks throughout the Houston metropolitan area (total 35 sites) and were analyzed for high molecular weight (HMW) PAHs using a GC-MS. Total concentrations of HMW PAHs (more than 25 PAHs) in pine needles samples varied from 31 to 762 ng/g (wet wt.). Benzo[b+j+k]fluoranthenes were most abundant and followed by indeno[1,2,3-cd]pyrene and benzo[ghi]perylene. Although concentrations of dibenzo[ah]anthracene and dibenzo[a]pyrene were lower than other HMW PAHs, they accounted for more than 50% of the total cancer potency because of their higher cancer potency equivalency factors. PAH patterns and ratios of selected PAHs indicated that vehicle emission is the primary source. Mass of particulate matter removed from samples declined as distance between the sites and closest highways or major traffic ways increased. PAH concentrations in pine needles have a negative correlation with mean annual household incomes. This study suggests that residents who live near highways/major traffic ways, in the inner city area, and near cargo train hub and industrial facilities are exposed to higher levels of PAHs compared to those live in suburban areas.

Houston Road Dust as a Potential Cause for Environmental Concern

Matthew Fiala (Abstract 023)
Ph.D. Candidate in Environmental Toxicology, COSET
Faculty Advisor: Dr. Hyun-Min Hwang

Operation of motor vehicles is one source of environmental contaminants, especially in urban areas. Fossil fuel combustion byproducts such as polycyclic aromatic hydrocarbons, volatile organic compounds, and particulate matter are released into the air through tailpipe emission. Wear of brake pads and tires are also problematic because these parts contain a large amount of copper and zinc, respectively. Another source of heavy metals is automobile catalytic converters which help reduce carbon monoxide hydrocarbons and nitrogen oxides emissions by oxidation and reduction reactions using the platinum group elements (PGEs), including platinum, rhodium, and/or palladium. To investigate the fate and transport of heavy metals (Ag, Al, As, Cd, Cr, Cu, Fe, Ni, Pb, Pt, V, Zn) in highway surface, road dust samples were collected from the edge of the I-10. Upon arrival at the laboratory, samples were sieved and digested with concentrated nitric acid and hydrochloric acid, and analyzed using ICP-MS. To determine whether this source of contamination is an environmental or human health risk, the bioavailability of the metals present in road dust, the sieved dust samples were sequentially extracted using water, dilute nitric acid, and concentrated nitric acid and measured with ICP-MS. Metals soluble in pH similar to acid rain (< pH 5.6) may pose an environmental health concern as these elements are available to infiltrate down the soil column and/or easily wash off into
Correlation Between Hepatocellular Carcinoma and Water Quality

Michelle Davis (Abstract 024)
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Faculty Advisor: Dr. Momoh A. Yakubu

At the turn of the century, people were unaware of the environment and public health consequences of dumping chemical wastes in close proximity of communities. Uncontrolled dumping of chemicals waste over these years have resulted in thousands of abandoned communities/properties or abandoned hazardous waste sites, such as chemical warehouses and landfills. Increased health problems in communities that are victims of hazardous dumping and the associated correlate to the toxic effects of these chemicals increased awareness in the 1980s. Citizens concern over the extent of this problem led Congress to establish the Superfund Program in 1980 to locate, investigate, and clean up the worst sites nationwide. Hepatocellular carcinoma (HCC) is one of the most common malignancies worldwide. It is the fourth leading cause of cancer-related death in the world. Approximately two out of every five persons alive today are predicted to develop some type of cancer in their lifetime. In Texas, as in the United States, cancer is the leading cause of death for people under the age of 85. Also, cancer is not one disease, but many different diseases. Different types of cancer are generally thought to have different causes as it is probably not due to one factor but to a combination of factors such as heredity; diet, alcohol use, tobacco use, infectious agents; chemical and radiation exposures. Historical data has shown that exposure to pollution, occupational and industrial hazards account for fewer than 10% of cancer cases. I will discuss the high prevalence of hepatocellular carcinoma in South Texas relative to the quality of water supply, lifestyle and possible contribution of gene-environment interaction within the affected community.

Determination of Multiple Pesticides in Biological Samples by HPLC Uv-Vis: Effects of Acetonitrile/Hexane Extraction Protocol

Joan Tran (Abstract 025)
Ph.D. Candidate in Environmental Toxicology, COSET
Faculty Advisor: Dr. Momoh A. Yakubu

Exposure to chlorinated pesticides is of great public health concern. They are extremely persistent; accumulate in sediments/plants/animals and of high potentials of bioaccumulation in human contributing to chronic health conditions. Effective and comprehensive methods to determine the presence of multiple pesticides (MP) in biological samples are desirable. The concentrations of pesticides in different organs of rats exposed to MP (endosulfan 1 and 2, Endrin, Dieldrin, 4, 4-DDT, and Aldrin: 1/100, of LD_{50}, in a mixture orally) for 2 wks in corn oil were determined in livers, hearts, kidneys, and brains. Samples were soaked in acetonitrile or hexane to determine better extraction media and effects on detection. Extracts were collect following homogenization, centrifugation, dried and reconstituted in 1 mL hexane or acetonitrile, standards of individuals and mixtures were analyzed to obtain standard calibrations and retention times using HPLC Uv-Vis. Results indicates that the standards elutes at 12.90, 14.90, 15.77, 15.90, 20.06, and 29.20 min for endosulfan 1 and 2, Endrin, Dieldrin, 4, 4-DDT, and Aldrin, respectively. Acetonitrile extracted samples showed significantly higher yield compared to hexane extracted samples with a ratio (Acetonitrile: Hexane) of 13:1 (brain); 18:1 (kidney); 366:1 (heart) and 1,186:1 (liver) for endosulfan 1. While endosulfan 2 showed 1:1 (brain); 39:1 (kidney); 161:1 (liver). Dieldrin was not detected in these samples, but other pesticides were detected with lower ratios. Thus, the media used to extract chlorinated pesticides could have significant effects on yields and quantification possibly resulting in under estimation of chlorinated pesticides in biological samples.
Geospatial and Statistical Analysis of Methyl Mercury (Me Hg) and Penta Chloro biphenyl (PCB) Distribution in East Tennessee Watersheds.

Shruti Lakkaraju (Abstract 018)
Master’s Candidate in Environmental Toxicology, COSET
Faculty Advisor: Dr. Maruthi Sridhar Balaji Bhaskar

Long term water quality changes due to the presence of Penta Chloro Biphenyls (PCB) and methyl mercury (MeHg) in East Fork Poplar Creek (EFPC) watershed and surrounding watersheds using remote sensing is being analyzed in this study. Historically the EFPC has received wastewater and pollutants from a major US Department of Energy (DOE) facility, which is located on the headwaters of the stream, for a prolonged period of time. Mercury (Hg) is a potent neurotoxin affecting the human and animal health. The MeHg is an organic form of mercury, which is formed in aquatic systems and has a high bioaccumulation rate in the aquatic food chain. The MeHg is known to impair neurological development in fetuses, infants and children. The PCBs have high bioaccumulation rate as they do not break down in our environment and they are known human carcinogens. The major goal of this study is to analyze long-term water quality trends in East Tennessee watersheds and to perform water toxicity tests to statistically analyze the MeHg and PCB distribution over a period of time. The area under study will be analyzed using remote sensing and GIS (Geographic Information Systems). The spatial mapping will help to accurately map the trends and hotspots of pollution. Through the analysis of the ASTER satellite imagery and geo-statistical modeling, a better understanding of the PCB and MeHg distribution trend and its effect on water quality changes will be developed.

Land Use and Land Cover Change in Galveston County, Texas

Mahsa Esmaeili (Abstract 019)
Master’s Candidate in Environmental Toxicology, COSET
Faculty Advisor: Dr. Maruthi Sridhar Balaji Bhaskar

The goal of this study is to investigate the land use and land cover changes in the Galveston County of Texas using the different landscape variables such as vegetation patterns, nature of impervious surface and surface water changes during the last three decades. Landsat satellite Imagery is being used in this study to monitor the urbanization and man-made transformation of Galveston County during the selected period of 1980s to 2014. Despite hurricane seasons and severe damages in the recent years, the island received a huge turnout in tourism and urbanization making it as one of the fastest growing regions in the Texas Gulf Coast. Landsat images corresponding to the years 1986, 1998 and 2011 were downloaded and processed using the ERDAS ERMapper software. The land use and land cover changes were analyzed using the combination of spectral bands and spectral ratios. Our results revealed that the land transformation from natural to man-made is more pronounced within the last three decades of the study period. The urban growth trend during 1986 to 1998 seems to be more concentrated towards the eastside of the island than on the west side. This study will have significant implications on projecting the future land use and land cover patterns and their effects on the environmental quality in the study region.
Analyzing the Heavy Metal Contamination and their Soil and Sediments Dynamics in East Fork Poplar Creek (EFPC) Watershed in Tennessee

Habibur Rahman Howlider (Abstract 020)
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Faculty Advisor: Dr. Maruthi Sridhar Balaji Bhaskar

The East Fork Poplar Creek (EFPC) watershed is contaminated historically by several heavy metals especially Mercury (Hg) and Methyl Mercury (MeHg) due to the presence of a Department of Energy (DOE) facility in the upstream of the creek. The main goal of this study is to analyze and map the land cover changes using remote sensing and studying the different heavy metal concentration, their interactions, availability, transport dynamics, and toxicity within the soil and sediment media. The different amendments like biochar, bio solids, coal fly ash; poultry manure will be tested to reduce the metal availability in the soils and sediments. We will also conduct in situ bioremediation experiment by using microorganism to lower the heavy metal contamination in soil sediments. Mapping and recognition of areas with maximal metal contamination will bring significant outcome, so that we can execute targeted remediation strategies to reduce the metal contamination and toxicity.

Estimate a Quick Table by Analyzing the Relationship between pH, Temperature, and BOD at Galveston Bay

Po-Hsien Kuo (Abstract 021)
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Faculty Advisor: Dr. Fengxiang Qiao

To Measure the quality of water can use many different parameters. Biochemical Oxygen Demand (BOD) and pH value are two typical parameters that help to evaluate the water quality. BOD is an agreed indicator of oxygen used by microorganisms during the oxidation of organic substance in a water sample. It measures the amount of oxygen required by aerobic microorganisms to decompose the organic matter in water. pH value is a logarithmic scale which measure of the acidity or alkalinity of an water or waste sample that may cause increase or decrease the rate of oxygen dissolve and amount of aerobic microorganisms. Besides, temperature is also a major impact that may cause the rate of oxygen dissolve in rivers, streams or lakes. In this research, correlation analyzing methods are used to find the relationship about BOD and all 14 parameters include pH, Total suspended solids, Total Organic, Chlorophyll a, Salinity, Temperature, Dissolved Oxygen, Ortho-Phosphorus, Total Ammonia Nitrogen, Specific Conductance, Fecal, E coli, Enterococci, Total Nitrate nitrite Nitrogen. The developed BOD quick table was used to model the pH value and temperature related BOD at 6 groups (Houston Ship Channel - Upper and Lower Galveston Bay) in Houston Galveston areas. The estimated quick table would help environmental scientist to quickly identify the problematic stations and prepare suitable treatments to improve the water quality through further investigations.
Herbal Supplement SAABFAT6 Attenuates Growth and Survival of Human Alveolar Adenocarcinoma Cell Line

Syntia Kwende  (Abstract 026)
Master’s Candidate in Environmental Toxicology, COSET
Faculty Advisor: Dr. Momoh A. Yakubu

The consumption of herbal supplements has been one of the remedy for several ailments including cancer for a long time. Cancers, especially lung alveolar adenocarcinoma are diseases with high morbidity and mortality and are often associated with suffering and poor quality of life. Herbal supplements are an attractive cancer therapy, we have investigated the antiproliferative and cytotoxic properties of the herbal supplement SAABFAT6 on lung alveolar adenocarcinoma (A549). Ethanol extracts of SAABFAT6 (0.5-2 mg/mL) was incubated with A549 cell line and in vitro antiproliferative/cytotoxicity activities were evaluated using MTT assay. SAABFAT6 significantly attenuated A549 cell proliferation at 48 (47%) and 72 (68%) but not at 24 hrs. for the 0.5mg/mL concentration. While, 1 and 2 mg/mL SAABFAT6 attenuated A549 proliferation similarly, reducing cell growth by ~76% at all-time points. In determining cytotoxic effects, incubation of A549 with SAABFAT6 significantly reduced cell survival by 72%, 86% at 48 and 72 hrs. respectively for 1mg/mL; 2 mg/mL SAABFAT6 significantly reduction cell survival by 45, 72, and 89% at 24, 48 and 72 hrs. respectively. This preliminary result indicates that SAABFAT6 supplement is a potential chemotherapeutic agent for the treatment and regulation of A549 lung alveolar adenocarcinoma growth and survival. We postulate that SABFAT6 is probably acting by interfering with cellular signaling associated with death and survival pathways (PI3K/Akt) and further studies are required to identify the molecular mechanism(s) by which the growth inhibition and cytotoxic effects of SAABFAT6 is mediated.

Health Risk Management: Radiation and Radon Gas, Impediments to Human Health

Zeus B. Falconburg  (Abstract 027)
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Faculty Advisor: Dr Monica Rasmus
Collaborators: Drs. Andrea Shelton, Renard Thomas and Melanie Lawson

Radiation and radon gas are environmental risk factors for diseases. After crucial ecologic disasters, human beings are at increased likelihood of direct or indirect exposure to physical hazards, jeopardizing their health for decades. Historically, studies suggest the development of different types of cancer. After the Nevada nuclear bomb tests in 1950 and 1960, 10,000 to 75,000 cases experienced thyroid cancer. After World War II, it was estimated that in 70 years 84,000 infants born in the U.S. from generation X (Gen X) would suffer from leukemia and 14,000 would need bone cancer treatments. More recently, the U.S. Surgeon General has warned that radon radiation is the second leading cause of lung cancer causing 20,000 deaths yearly. The annual estimated cost associated with the health-risk with radiation exposure is 2 billion dollars. This descriptive study is intended to assess the belief, attitudes, and knowledge (B.A.K.) of minority college students about the impact of radiation and radon gas exposures. Approximately 175 Texas Southern University (TSU) student volunteers from different educational backgrounds will be surveyed. An instrument with close-ended, open-ended questions, and a Likert scale was developed to access various student factors, including demographic background; sources of radiation exposures; radiation health risk; short-term and long-term effects related to radioactive ingestion or inhalation, nuclear plant explosions, and medical procedures. It is hypothesized that students in health related majors will be more familiar with consequences of radiation exposure than other majors. Findings will suggest recommendations for text to include in course curricula.
Effect of Psoralen Therapy on Breast Cancer Cells in Microgravity
Elvedina Mansoor and Vivek Mann (Abstract 028)
Ph.D. Candidates in Environmental Toxicology
Faculty Advisor: Dr. Alamelu Sundaresan
Collaborators: Loretta Olamigoke Fernando Zumbado, Misty Moore and Sarah Gonzalez

Breast cancer is the most common malignant tumor and the highest cause of death among women. The anti-proliferative effects of Psoralen UV A (PUVA) have been largely attributed to Psoralen intercalation of DNA, which upon UV-A treatment triggers the formation of interstrand DNA crosslink's (ICL) that inhibit transcription and DNA replication. Previous studies suggest that microgravity causes DNA damage in epithelial cells and might be synergistic with radiotherapy treatments. Parabolic flight induced microgravity conditions were thus used to assess if microgravity might enhance the activity of UV-A activated Psoralen. The objective of the experiment was to look at the mechanism of photo activation of Psoralen with UVA irradiation on ErbB2+ cancer cells in microgravity. Human breast cancer cell line MDA-MB-231 was used and treated with different doses of Psoralen (8-Methoxypsoralen) prior to the UV-A irradiation. UV-A irradiation was carried out in 6 well plates with cells treated with different doses of Psoralen (2.5μM, 5μM, 7.5μM and 10μM) to see the effects on the viability and growth. PUVA therapy can directly target catalytic kinase domain of ErbB2+ receptor tyrosine kinase oncogene. Differential gene expression analysis was done in different doses of parabolic flight flown breast cancer cells. Results were analyzed with expression profile of treated cells against controls. Preliminary data showed that the following genes - PMS2,BRCA1(Tumor Suppressor Gene), responsible for inducing Cell cycle arrest and transcriptional regulation / DNA repair respectively, were significantly up-regulated (p<0.001). Also the gene- PPM1B a member of the PP2C family are negative regulators of the cell stress response pathway and also plays a role in dephosphorylation of CDKs (p<0.001). Our results indirectly indicate that Psoralen treatment in microgravity increases DNA mismatches, apoptosis (CASP3, CASP6, Bax, AIF1, Akt1) and inhibits DNA accessibility in breast cancer cells.

AHCC Activation of Human Lymphocytes Via Genotypic, Phenotypic and Differentiation Pathways to an Adherent Cell Type. A Possible Direct Mechanism of T Cell Activation
Loretta Olamigoke (Abstract 029)
Ph.D. Candidates in Environmental Toxicology
Faculty Advisor: Dr. Alamelu Sundaresan
Collaborators: Vivek Mann, Elvedina Mansoor, Koji Wakame, Anil Kulkarni and Marie Francoise Doursout

The goal of this project is to study and understand the role and mechanisms of AHCC supplementation in the prevention of immunosuppression through T cell activation. Active Hexose Correlated Compound (AHCC) is a fermented mushroom extract, which is an immune supplement that has been used to treat a wide range of health conditions. It helps in augmentation of the natural immune response and affects immune outcomes and cell activation. Our experiment involved the isolation of human lymphocytes from normal donor buffy coats and treatment of the cells with different concentrations of AHCC – 0 μg/ml (control), 50 μg/ml, 100 μg/ml, 250 μg/ml, 500 μg/ml and 750 μg/ml. Interestingly after a time lag, clumping and aggregation of the cells were seen between 24 to about 72 hours of incubation, the cells become adherent and phenotypical changes were observed even at low doses such as 50 μg/ml i.e. macrophage like, spindle shaped, elongated, fibroblast like up until 360 hours and beyond. Cell proliferation also increased by a 100% (p<0.05)(cell count assays). These are probably translated from genotypic changes in the cells since the cells propagate for at least three-six generations (present observations). The cells can be trypsinized for two generations after which they visibly lay down a lot of extracellular matrix (ECM). These genotypic changes possibly involve signal transduction of cell adhesion molecules and adhesive cytokines and growth factors. Cell adhesion is an activation and survival pathway in lymphocytes and we hypothesize that this could be the mechanism of AHCC activation in human lymphocytes.
Preclinical Development of OJT001, a Novel Anti-mycobacterial Drug

Oscar Ekpenyong (Abstract 030)
Ph.D. Candidate in Pharmaceutical Sciences
Faculty Advisors: Drs. Huan Xie and Omonike Olaleye

One third of the world population are infected with Mycobacterium tuberculosis (Mtb) and the current standard regimen were developed about 40 years ago. Inhibition of methionine aminopeptidases in Mtb (MtMetAP) has been identified as a novel antimycobacterial pathway. In our study focused on the preclinical development of OJT001, a potent inhibitor of MtMetAP, we developed and validated an analytical method using HPLC coupled to UV detector; examined the solubility of the compound in different solvents; studied the solid state, solution state and pH stability of the compound at different temperatures; determined the log P and plasma protein binding of OJT001. We have also developed co-solvent and aqueous formulations of OJT001 to be used for the assessment of its pharmacokinetic properties in rats. To analyze OJT001, we developed an isocratic reversed phase HPLC-UV method with a mobile phase of 60% acetonitrile in water using 0.1% trifluoroacetic agent as an ion pairing agent. A flow rate of 1 mL/min was employed and detection was at 254 nm. OJT001 has a variable solubility ranging from practically insoluble in water, to being most soluble in DMSO and N, N-dimethyl acetamide (50 – 100 mg/mL). OJT001 is relatively stable in the solid and solution state at 4°C and 25°C, and relatively stable above pH 6. The co-solvent formulation comprised of 20% DMA, 30% PEG 400 and 50% Tween 80. In future studies, we will examine the pharmacokinetic properties of OJT001 in co-solvent and more sophisticated formulations in rats and exploring the lung delivery of the antimycobacterial agent.

Development of Bovine Serum Albumin Loaded PLGA Nanoparticles

Candace Cooper (Abstract 031)
Ph.D. Candidate in Pharmaceutical Sciences
Faculty Advisor: Dr. Huan Xie

Collaborators: Dr. Alemelu Sundaresan and Vivek Mann

Bone morphogenetic protein-2 (BMP2) has been demonstrated to promote osteogenesis in patients with bone loss. It is currently FDA approved for the treatment of long bone fractures and spinal fusion. However, current treatments are burden by severe side effects and short circulation half-life. PLGA-BSA nanoparticles were developed and optimized as a prototype for future development of a novel PLGA-BMP2 nanoformulation. PLGA-BSA nanoparticles were prepared using water/oil/water double emulsion/evaporation technique. Phosphate-buffered saline, pH 7.2 containing bovine serum albumin (BSA) was emulsified with dichloromethane containing poly (lactic-co-glycolic) acid (PLGA). This was injected into 1.25% of polyvinyl alcohol by syringe pump at 0.3 ml/min. The solution was again emulsified by homogenization. After evaporation for 2 hours, the solution was centrifuged and free BSA was collected in the supernatant. The effects of different PLGA ratios on the PLGA-BSA formulation were evaluated and characterized with respect to zeta potential, size, polydispersity index (PDI), encapsulation efficiency (EE). Optimal parameters for PLGA-BSA nanoparticles may be applicable to the development of sustained release BMP2 nanoparticles for osteoporosis-like treatment.
Glioblastoma Multiforme (GBM) is one of the most aggressive brain tumors and is known for migration and angiogenesis. GBM thrives in the hosts environment by upregulating growth factors such as Hypoxic Inducible Factor -1α (HIF-1α), Vascular Endothelial Growth Factor (VEGF), & epoxyeicosatrienoic Acids (EET). The EETs are arachidonate metabolites of cytochrome P450 epoxygenase pathway, and are shown to induce vascular angiogenesis and proliferation. The EETs undergo rapid metabolism by the soluble epoxide hydrolase (sEH). The purpose of this study was to determine if GBM tumor progression changes sEH expression and affects cell proliferation. We cultured GBM cells by using ATCC recommended protocol from early (passage 4-9) through late passages (16 or higher) to represent tumor progression. The expression of sEH, mEH (microsomal EH) along with glial fibrillary acidic protein (GFAP), VEGF, and HIF-1α proteins were monitored in intact cells by immunocytochemistry and quantified in whole cell lysate by western blotting analyses. Our data showed that early passages of GBM cells reached confluence every 7 days, while later passages reached confluence in about 4 days. The IC data demonstrated that sEH was expressed in GBM cells early and late passages, along with mEH, VEGF, & HIF-1α. However, western blot data showed that sEH expression progressively declined as the passages increased. The sEH but not mEH was undetectable in passages 11 and above with a concomitant increase in cell proliferation. Our results suggest that GBM tumor progression appears to thrive by down-regulating sEH expression thereby increasing angiogenic and proliferative EETs.

Cannabinoids, the active components in Marijuana plant extract, exert their pharmacological effects through cannabinoid receptor subtypes 1 (CB1R) and 2 (CB2R). Unlike the CB1R, the CB2R activation has been shown to produce anti-inflammatory responses in the peripheral system and in brain microglial cells. However, expression and function of CB2R in neurons and astrocytes remains elusive. Our lab research has previously demonstrated that astrocytes constitutively express CB2R along with its counterpart CB1R. The purpose of this study was to determine whether inflammatory agents, such as bacterial lipopolysaccharide (LPS), that induce astrogliosis, affect the expression of CB1R and CB2R in astrocytes. Confluent monolayer cultures of secondary rat cortical astrocytes (RCAs) were treated for 24 hr. with LPS (0-1.0μg/ mL) in serum-free Medium. The expression of glial fibrillary acidic protein (GFAP), as a measure of “astrogliosis”, and co-expressions of CB1R and CB2R were examined by immunocytochemistry (IC) and quantitative western blot (WB) analyses. The IC results showed that LPS dose-dependently changed the morphology of GFAP-expressing, flat-polygonal cells into more fibrous-bearing cells, indicating astrogliosis. The double labeling studies showed that GFAP-expressing cells also stained positive for CB1R and CB2R. The quantitative WB analysis complimented our IC results, showing a 1.2-fold increase in a protein band at molecular mass of 43KDa similar to that of CB2R without any noticeable changes in CB1R band intensity (60 KDa). Our results suggest that in brain astrocytes, LPS-induced inflammatory responses, including astrogliosis, may trigger an array of anti-inflammatory genes/protein expression, including CB2R as a protective measure against neuroinflammation.
**In Vitro/In Vivo Correlation of Biopharmaceutical Classification System Class IV Drug: Furosemide**

**Lyndsey White (Abstract 034)**
Ph.D. Candidate in Pharmaceutical Sciences  
Faculty Advisor: Dr. Dong Liang

The purpose of this study is to establish an in vitro dissolution model that can predict in vivo feeding effects of BCS class IV compounds. Several conditions such as dissolution media composition, surfactant concentration, paddle speed, pH, and tablet composition will be analyzed and compared to previous in vivo studies. Dissolution testing was carried out by utilizing and evaluating buffer mediums that consisted of 0.1N HCl, pH 5 acetate buffer, pH 5.8 phosphate buffer, and pH 7 phosphate buffer. All dissolution tests were performed by using a Varian VK 7000 tester, Apparatus 2 (paddle), at 50 rpm, and 900 mL of medium. All samples were analyzed by a Waters HPLC system with a fluorescence detector and Empire Pro software. Both the HPLC method and the in vitro dissolution profiles at varying pH values were established. We hope to explore additional in vitro environments and to generate an in vitro dissolution test that reflects in vivo outcome.

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**Impact of Fat Percentage in Propofol Pharmacokinetics in Obese Zucker Rat Model**

**Cheng-Hui Hsiao (Abstract 035)**
Ph.D. Candidate in Pharmaceutical Sciences  
Faculty Advisor: Dr. Dong Liang

Propofol is widely used to induce and maintain anesthesia in surgery. Current propofol dosing is calculated based on total body weight. However, highly lipophilic drug as propofol may be extensively distributed into excessive adipose tissues in obese patients. Our study use obese rat model to identify covariate factors that may significantly affect propofol pharmacokinetics (PK). Propofol was administrated to each rat at 30 mg/kg and blood samples were collected for HPLC quantification. Population PK analysis was performed using Phoenix (version 1.3). Model selection was based on goodness-of-fit in addition to criteria of statistically significance, model plausible and stability. Statistical significance for analysis was set at p < 0.05 ($\Delta$-2LL = 3.84). Categorical covariate model was investigated to identify factors impacting on propofol Pharmacokinetics. A three-compartment open model with first-order elimination without a lag time best fitted the data and parameters of $V_1$, $V_2$, $V_3$, $CL_1$, $CL_2$, and $CL_3$ were derived. In categorical covariate model, $CL_3$ typical value was estimated as 72.77 ml/(kg*min). Group of 10% fat has 30.71 ml/(kg*min) increase, while those of 34% and 40% fat have 9.32 and 21.37 ml/(kg*min) decrease from $CL_3$ typical value. Population PK estimates not only population mean, but also covariates which have impacts on PK parameters. Fat percentage is an important covariate affecting propofol $CL_3$ significantly in our obese rat model. Categorical covariate models demonstrated that higher level of fat percentage results in greater $CL_3$ reduction. Body weight alone is insufficient to accurately predict propofol PK parameters in obesity.
Design and Synthesis of Curcumin Analogues for Anti-prostate Cancer Activity

Brian Jordan (Abstract 036)
Ph.D. Candidate in Pharmacology
Faculty Advisor: Chelliah Selvam

Curcumin, a natural compound found in rhizomes from the plant *curcuma long* often used as food coloring possess effective chemopreventive and chemotherapeutic properties against various pharmacological activities. Recent studies have found that curcumin analogues within the last decade can be used to investigate cancer cell lines, leading to the attention of synthesizing and SAR (structure activity relationship) on favored regions. The goal of this study is to design and synthesis of heterocycle modified curcumin analogues for anti-prostate cancer activity. In the present study, a series of heterocyclic curcumin analogues were synthesized by condensed with various hydrazines (phenyl hydrazine, benzothiazole hydrazine, chlorophenyl hydrazine, fluorophenyl hydrazine, pyridyl hydrazine and nitrophenyl hydrazine). The structures of the compounds were confirmed by spectral (NMR and Mass spectroscopy) and elemental analysis. The purity of the compounds was demonstrated using HPLC. Preliminary in vitro cytotoxicity screening of heterocycle modified curcumin analogues were done by MTT [3-((4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide] assay using human prostate cancer cell lines PC-3 and LNCap. Most tested compounds demonstrated moderate to good in vitro cytotoxicity activity. Androgen receptor binding studies and molecular docking studies will be performed for most active molecules. The present work focuses on prostate cancer, the most prevalent cancer among male population. The current research work will explore not only novel synthesized curcumin analogues for anti-prostate cancer activity but also provide evidence that these newly synthesized analogues may be implemented in the treatment of other types of cancer because of its scaffold modification.

Develop an Android Remote Experiment App Based on Unified Remote Laboratory Framework

Qianlong Lan (Abstract 037)
Master’s Candidate in Computer Science
Faculty Advisor: Dr. Xuemin Chen

As Android app widely used by more and more people today, we propose to remotely conduct experiment at different physical places through this technology. Based on the Unified Remote Laboratory Framework we developed, the user can conduct remote experiment cross-platform without any plugin. However, there is no Android remote experiment app developed to take the advantage of Android’s better user experience, portability and convenience. The Android remote experiment app we proposed is a hybrid mobile app which combined the web app and native app technology together. Hybrid apps use a common codebase (HTML, CSS and JavaScript) to deploy native-like apps for a wide range of platforms. To demonstrate the efficiency of proposed new tool to access remote experiment, an Android app for remote smart material alloy (SMA) experiment is developed.
Developing Framework to Test Driving Performance at Left-Turn Movement with Smartphone Based Warning Message

Mahreen Nabi (Abstract 038)
Master’s Candidate in Transportation Planning & Management, COSET
Faculty Advisor: Dr. Fengxiang Qiao

Left-turning traffic is one of the major causes of conflict at intersections. Though an average of only 10-15% of all approach traffic turns left, significantly a large proportion of crashes occur involving 21% of all intersections fatal crashes. Where traditional safety countermeasures of engineering and advance technologies failed to reduce the chances of crashes due to driver’s poor judgment of time to the lack of information about oncoming signal change, a smart-phone based application could be helpful to warn the drivers about the upcoming situation. The U.S. Department of Transportation’s (DOT) National Highway Traffic Safety Administration (NHTSA) has proposed the V2V (Vehicle to Vehicle Communication) devices for Left Turn Assist (LTA), which are able to provide advance warning to reduce more than half of the vehicle crashes. The research plan is to enhance driver’s safety by designing and implementing a Smartphone Based Warning System, which is an advance warning on any oncoming possible collision. Such system should be able to provide drivers with enough time to react so as to prevent the conflict. A designed warning message would be conducted in real-time test by generating Rear-end Collision Warning, Angular Collision Warning, Side-sweep Collision Warning, Do Not Pass Warning (DNPW) etc. The Smartphone app in this research is a cost-effective approach and will help to improve traffic mobility, connectivity, and efficiency of an intersection.

Association Analysis of Travel Time to Work and Diagnosed Diabetes Incidence in Texas

Bo Wei (Abstract 039)
Ph.D. Candidate in Environmental Toxicology, COSET
Faculty Advisor: Dr. Fengxiang Qiao

Research in recent decades consistently indicates the adverse effects of physical inactivity on human health, and the evidences point to diabetes stemming from physical inactivity as an important contributor to these effects. However, lengthy daily commutes are typically not considered in physical inactivity. And few studies have examined associations between diabetes incidence and travel time to work. This study assessed whether travel time to work was associated with diagnosed diabetes incidence by incorporating GIS technology and data linkage, which provides clues to patterns in public health outcomes due to transportation problem. Geospatially-based diabetes and journey to work datum of Texas, 2007-2011 were drawn from CDC and Census. Spatiotemporal variation and hot spots of diagnosed diabetes prevalence of Texas from 2007-2011 were analyzed. Spatial distribution of the mean of travel time to work was plotted. Multilevel linear regression (OLS) was used to examine associations of diabetes incidence with car-commuting category, adjusting for potential confounding variables. Results found that travel model and travel time to work had positive association with diagnosed diabetes incidence in Texas. Those who used cars daily for commuting tended to have a higher risk of diabetes.
**Noise Reduction by Transparent Plastic Acoustic Barriers on I-30, Dallas, Texas**

_Boya You (Abstract 040)_  
Master’s Candidate in Transportation Management, COSET  
Faculty Advisor: Dr. Fengxiang Qiao

The construction of Interstate 30 in Dallas, Texas brought great impacts on traffic and environment. A 10-foot-high, 7-foot-wide, and about two-thirds of an inch thick transparent noise wall, which could successfully overcome the aesthetic and visibility problem, was built along I-30 due to the air and noise pollution. Compared to the traditional sound wall, the innovative ones have the advantages of lower density, shorter execution time and environmental friendliness. However, it is very difficult to update the design manual for these innovative sound barriers, since new technology and materials are developing rapidly. The first objective of this research is to identify the performance of this transparent noise wall through a field test. The second objective is to identify the combined performance of the noise wall and the existing green buffers. Three different scenarios were designed in this case study: (1) with the presence of plastic walls and green buffers, (2) with the presence of green buffers but no acoustic walls; and (3) without any kind of noise buffer. The field test was conducted to identify the highway barrier insertion loss and potential reduction on barrier height. Data analyses results indicate that, the development of the transparent plastic noise walls could effectively reduce the noises from I-30. The outdoor noise level had been reduced to below the hearing threshold with the help of the noise barriers.

**Emission Impact Analysis of Real-time Eco-driving Strategies Implemented on Autonomous Vehicles in the Vicinity of Intersection**

_Peiqia Tang (Abstract 041)_  
Master’s Candidate in Transportation Planning and Management, COSET  
Faculty Advisor: Dr. Lei Yu

Along with the speeding-up of the urbanization and motorization, transportation industry has become a main source of fuel consumption, green-house gas emission, and air pollution. Taking advantage of intelligent transportation technology, advanced eco-driving, which provides trajectory guidance to vehicles with respect to less vehicle emissions, is becoming an important research topic in the field of transportation planning and engineering. This study proposes an advanced eco-driving model based on the real-time information for automated vehicles approaching intersections. It first defines eco-driving strategies for various situations. Then, the eco-driving model is developed and tested in VIS-SIM traffic simulation platform. The result shows that the eco-driving could theoretically reduce CO₂ about 20% and CO, NOₓ, and HC by 60%. However, the mitigations are highly dependent on the degree of the traffic saturation.
Driving Behavior and Dilemma Zone Analysis at Yellow Interval with Advanced Warning Message under Foggy Weather Condition: A Simulator Test

Johora K Munni (Abstract 042)
Master’s Candidate in Transportation Management, COSET
Faculty Advisor: Dr. Fengxiang Qiao

This paper characterizes the impacts of foggy weather conditions on driver behavior at yellow interval and how driver behavior is influenced by the advanced warning message from the Drivers Smart Signal System (DSSS) at high-speed signalized intersection approaches from driving simulator test. The DSSS is an android system based Smartphone and tablet application that was developed as a real time traffic signal system which can inform drivers with an advanced yellow warning message just about one second before the yellow onset together with a Smart Yellow Countdown (SYCD). Twenty participants of similar demographic background were recruited. The driver approaching speed, braking time, average deceleration rate, probability of stopping/going with respect to time-to-reach-intersection (TRI) and dilemma zone were analyzed for 5 sec of yellow interval under normal weather condition (S-1), foggy weather condition (S-2) and foggy weather condition with DSSS (S-3), as drivers approach the intersection at a speed of 20.11 m/s (45 mile/hr). The onset of yellow interval was triggered at four different locations in each scenario (S-1, S-2, and S-3) and the distances from the intersection to the triggering location of yellow onset were 100.55 m, 80.44 m, 120.66 m and 60.33 m, respectively. A 15th percentile of deceleration rate of 1.6 m/s² was observed for normal weather condition which is higher than 15th percentile of deceleration rate of 1.1 m/s² for foggy weather condition with DSSS whereas the 15th percentile of deceleration rate for foggy weather condition is 1.9 m/s². The probability of stopping increases with increase of TRI for normal weather condition whereas no trends was observed for foggy weather condition and probability of stopping is always greater than going for any TRI for foggy weather condition with DSSS. Results from dilemma zone analysis showed length of dilemma zone in foggy weather was higher than length of dilemma zone in normal weather condition whereas the length of dilemma zone was least with AYW message and SYCD in foggy weather condition.

Instantaneous Prediction of GHG Emission Based on a Learning Model

Wu Ying (Abstract 043)
Master’s Candidate in Transportation Planning and Management, COSET
Faculty Advisor: Dr. Fengxiang Qiao

Instantaneous microscopic emission models can offer competitively accurate real-time emission estimations compared with macroscopic emission models, such as MOVES. In this study, second by second emission data was collected via Portable Emission Measurement System (PEMS) on the selected section of the freeway US-59 in Houston, Texas. Vehicle speed, RPM, Intake Air Temperature (IAT) and Manifold Air Pressure (MAP) are selected as the impacting parameters of vehicle emissions based on the correlation chart. A learning model based on K-Nearest Neighbor algorithm is then utilized to predict real-time greenhouse gas (GHG) emissions of the testing vehicle, which provides an average accuracy of 99% compared to the second by second emission data recorded in PEMS. This learning model is further validated by the data from other testing vehicles and the results demonstrate that it is widely applicable and not limited to one certain vehicle.
Quantifying Changes of Mobile Source Air Pollution in Metropolitan Areas Using Vehicle Emission Model MOVES

Ling Liu (Abstract 044)
Master’s Candidate in Transportation Planning and Management, COSET
Faculty Advisor: Dr. Fengxiang Qiao

Vehicle emissions are one of the major sources of urban air pollution and are also called mobile source emissions. A large amount of gross vehicle emissions is generated by vehicles commuting between residential homes and the workplace. Homebuyers generally prefer to purchase residential houses that are relatively less expensive, albeit at the cost of relatively longer commuting times. Consumers usually consider additional travel time, fuel consumption, and other personally concerned factors, with less apprehension about the extra air pollution possibly generated. In cities with populations between 15,000 and 1,000,000, an increase of one additional minute of average commuting time is associated with a reduction of 1.9 dollars in housing price per square foot (p-value: 0.038). To account for the generation of additional air pollution, this paper numerically characterizes factors related to air pollutants caused by additional travel time due to housing prices. Air pollutants such as CO, CO₂, NO₂, NO, NOₓ, and SO₂ as well as fuel consumption were estimated by MOVES (motor vehicle emissions simulator). The results will be a useful reference to generate recommendations for more efficient reduction of mobile source air pollution in metropolitan areas through joint efforts by government, agencies, the public, and industry from multiple fields including environment protection, land use, housing markets, transportation management, and law enforcement.

Effects of Different Pavements on In-vehicle Noises along Houston Highways

Qing Li (Abstract 045)
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Faculty Advisor: Dr. Fengxiang Qiao

Traffic is one of the noise sources that can affect human’s physical status and living environment. Regular traffic noises may damage the sensitivity of people’s hearing, induce adverse health effects, and bring anxious motions to residents nearby the roadways. Pavement type is one of the imperative sources that may induce traffic noise. Most of the existing studies focus on the impacts of pavement types on the surrounding acoustic environment of roadways, with less attention on in-vehicle noises. This paper explores the impacts of the different pavement types on in-vehicle noises for drivers. A normal concrete pavement and a thin asphalt pavement were chosen as a test bed. While the in-vehicle noised caused by the asphalt and concrete pavements were measured, drivers’ heart rates and riding comfort attributed to the in-vehicle noise were investigated. It was found that the asphalt pavement was able to reduce the in-vehicle noise for drivers at the driving speed of 60 mph, with approximately 6 dB. Drivers felt more comfortable when driving on an asphalt pavement than on a concrete pavement. Thought the in-vehicle sound level of about 80 dB measured on concrete segments was higher than the maximum safe level of 70 dB, there was no statistically significant difference in heart rates during the test. Even so, a chronic health effect due to the higher in-vehicle noise cannot be denied. Further tests of more drivers with different demographics along even complicated highways are recommended with additional measurements on other physical symptoms from drivers’ and passengers.
Comparison of the Discriminative Ability of APACHE II and SAPS II in Predicting In-hospital Mortality in a Surgical and Liver Intensive Care Unit

Veronica Ajewole (Abstract 046)
Pharm. D. Candidate Pharmacy
Faculty Advisor: Dr Joshua Swan

Acute Physiology and Chronic Health Evaluation II (APACHE II) and Simplified Acute Physiology Score II (SAPS II) are severity of illness scoring systems used to predict in-hospital mortality of patients in intensive care units (ICU). The objective of this study was to compare discrimination for in-hospital mortality prediction between these scoring systems in a Surgical Liver ICU (SLICU). It was hypothesized that APACHE II is better than SAPS II in predicting in-hospital mortality by having a greater area under the Receiver Operating Characteristic curve (AUROC) with minimum difference of 0.05. This retrospective study was a secondary analysis of a previous clinical trial in a SLICU. The discriminative ability of the three scoring systems was measured using AUROC curves and Youden’s index. Assuming a 0.05 difference in the AUROC for each scoring system, 350 patients would provide 80 percent power. Of the 326 unique patients enrolled in this study, there was 14 percent in-hospital mortality. The average APACHE II, and SAPS II scores were 26 and 44. The AUROC for APACHE II and SAPS II were 0.718 and 0.776. Using Youden’s index, the optimal cut-point for APACHE II, and SAPS II were 25.5 and 46.5. Although both scoring systems showed good discriminative abilities, the hypothesis was not proven. A limitation in affirming both hypotheses was that APACHE II was not adjusted for diagnostic category.

Generic Resistance in Seizures, Anticoagulation, and Depression

Christopher Vu (Abstract 047)
Pharm. D. Candidate Pharmacy
Faculty Advisor: Dr Nora Osemene

Recently, many blockbuster prescriptions and other medications, including some leading antidepressants, statins, hypertension, seizures, and anti-coagulation drugs have become obtainable as generics. If that is not enough, statistics explains that many brands will join the above list soon. It is noted that in the United States alone, almost three quarters of the prescriptions are now for the generic drugs. The reason to why people have now narrowed down to generic drugs for medication is not clear, however, various sources explains that so far, several consumers have been noted to save a lot, when they employ generic drugs as their immediate reliance. Objectives include substitution rates between brand and generic, barriers to brand and generic substitution, and finding adverse drug reactions reported to the FDA MedWatch. These objectives were accomplished with surveys, face to face interviews, and data collection from the FDA. Substitution rates founded in rural, urban, and remote locations as the result concluded there is more generic substitution than brand being dispensed. Barriers to brand and generic substitution concluded the majority of the control was third parties. Physician and patient preference were also barriers to substitution. MedWatch program is a reporting system to guide the health care community and public about adverse reactions of certain medications. In conclusion, there were a lot of factors regarding resistance to generics for patients and physicians. At the end, patient preference and tolerability will dictate which medication brand or generic are preferred for the patient.
Patient Characteristics and Medication Use Patterns in a Laparoscopic Sleeve Gastrectomy Patient Population

Victor Lee, (Abstract 048)
Pharm. D. Candidate Pharmacy
Faculty Advisor: Lily K. Cheung
Collaborators: Jenna Pham, Hongmei Wang and Vadim Sherman

Laparoscopic Sleeve Gastrectomy (LSG) is a bariatric surgery procedure for morbidly obese patients who have failed exercise and diet regimens. As compared to Roux-en-Y-gastric bypass procedure, LSG offers generally a comparable efficacy but a better safety profile. The objectives of this study were to evaluate demographics, comorbidities, and medication use in a sleeve gastrectomy patient population. A retrospective review of adult patients who underwent LSG at Houston Methodist Hospital (HMH). Data were collected using an electronic database. All patients included in the study met the criteria for bariatric surgery. This project was approved by the IRB at HMH. A total of 182 patients were studied (77.47% female and 22.53% male). The ethnic group distribution was (33.52% African American, 29.67% Caucasian, 9.34% Hispanic, 27.47% Others). The mean age was 41.8±12.2 years, while Caucasians had the highest mean age of 46.2±12.3 years. The mean BMI of all patients prior to LSG was 45.4±8.3 kg/m², and Hispanics had the highest mean BMI of 51.5±12.1 kg/m². The top 5 comorbidities were hypertension, obstructive sleep apnea, gastroesophageal reflux disease, hypercholesterolemia, and osteoarthritis/joint pain. The top 5 medications used prior to LSG were omeprazole, levothyroxine, furosemide, metformin, and atorvastatin. The majority of patients were female, and the leading ethnic group was African Americans. Caucasians had the highest mean age while Hispanics had the highest mean BMI. Further study with a larger patient size is needed to confirm the results from this study.

Effects of Preoperative Weight Change in the Outcomes of Laparoscopic Sleeve Gastrectomy

Jenna Pham (Abstract 049)
Pharm. D. Candidate Pharmacy
Faculty Advisor: Lily K. Cheung

Collaborators: Victor Lee, Phuong Do and Lincy S. Lal

This study aims to investigate whether preoperative weight change affects postoperative weight loss up to 12 months after stand-alone laparoscopic sleeve gastrectomy (LSG) procedure. Patients who failed to lose meaningful weight after a weight management program were eligible for bariatric surgery at the Houston Methodist Hospital. Weight changes between the initial weight measurement and prior to surgery were categorized into five groups: group 1 (>5% weight gain), group 2 (2-5% weight gain), group 3 (1-5% weight loss), group 4 (6-10% weight loss), and group 5 (>10% weight loss). Percentage excess weight loss (%EWL) up to 12-month postop were compared among groups. Data for 139 patients were included, 104 women and 35 men. The mean age, weight and body mass index were 41 years old, 279.7 pounds and 45.6 kg/m² respectively. The intent-to-treat analysis demonstrated a significantly higher mean %EWL with group 1 compared to the other four groups combined at 12-month postop, 23.9 (SD 7.7) vs. 9.8 (SD 1.9) (p=0.015). Additionally the mean %EWL of group 4 was significantly lower than the other four groups combined at 6-month postop, 11.1 (SD 4.2) vs. 25.3 (SD 2.8) (p=0.039). This study revealed that LSG was effective for patients to lose weight at 6-month, and a possible correlation might exist between preoperative weight change and postoperative weight loss in %EWL. However, the comparisons did not show a trend, and the number for each group was small. Further studies are needed to confirm the results of our study.
Discriminative Ability of SOFA Versus APACHE II for Predicting In-hospital Mortality in a Surgical Intensive Care Unit

Enryka Payton (Abstract 050)
Pharm. D. Candidate Pharmacy
Faculty Advisor: Dr Joshua Swan

Sequential Organ Failure Assessment (SOFA) (range 0 to 24) and Acute Physiology and Chronic Health Evaluation II (APACHE II) (range 0 to 71) are severity of illness scoring systems that are commonly used to predict the prognosis of patients who are admitted to an intensive care unit (ICU). This study aimed to compare discrimination for in-hospital mortality between SOFA and APACHE II surgical and liver ICU (SLICU) patients. This retrospective cohort was a secondary analysis of patients previously enrolled in a clinical trial from July 2012 to May 2013. The hospital’s Institutional Review Board approved the study. Discrimination and the optimal cut-off value were measured using Area Under the Receiver Operator Characteristic curve (AUROC) and the Youden’s index, respectively. 350 patients were needed for 80 percent power (alpha 0.05). This study enrolled 326 unique patients. Average SOFA score was 7 (standard deviation [SD] 4.6 and range 0 to 22) and 26 for APACHE II (SD 9.0 and range 5 to 56). AUROC for SOFA was 0.727 (95 percent confidence interval [CI], 0.641 to 0.811) and APACHE II was 0.718 (95 percent CI, 0.641 to 0.795). Youden’s index for SOFA was 10.5 (sensitivity 0.61, specificity 0.82) and APACHE II was 25.5 (sensitivity 0.83, specificity 0.54). The AUROCs were similar with a difference of 0.008 (95 percent CI -0.055 to 0.072, P equals 0.79). SOFA and APACHE II demonstrated similar discriminative ability for predicting in-hospital mortality. APACHE II score was not adjusted for diagnostic category and may have decreased the AUROC.

Retrospective Review of Patients on Anticoagulation Therapy With Adverse Events in a Rehabilitation Setting

Yolanda Rangel (Abstract 051)
Pharm. D. Candidate Pharmacy
Faculty Advisor: Dr. Willie Capers

As reimbursement rates become and huge focus in hospitals across the nation, we must strive to avoid additional adverse events that will increase hospital stay and costs. The purpose is to determine if a commonality exist between anticoagulant use and adverse events in patients at a rehabilitation setting. This study uses a retrospective analysis of inpatient adverse drug events involving anticoagulants reported January 2013-June 2014 to P&T committee. Data was collected using the rehabilitation Care4 electronic medical record. Patients selected to be in the study were on any class of anticoagulation medication that lead to an adverse event. The most common used anticoagulants included: Warfarin, unfractionated heparin, low molecular weight heparin, direct factor Xa inhibitor, and direct thrombin inhibitors. The anticoagulants implicated in each adverse event included: 33% Lovenox, 30% Warfarin/Lovenox therapy, 26% Heparin and 11% warfarin alone. Of the 27 patients that were studied 8 were on 3 anticoagulant drugs, 2 had a prior history of bleed, 8 patients were over 65, and 5 had hematomas suspected from physical therapy. 25 events were adverse reactions and 2 were medication errors. The results show a variety of adverse events that can occur from improper anticoagulation therapy or monitoring. These finding validates our need to utilize a team approach when providing anticoagulant therapy for patients. We can present data to P&T committee and be able to change the way anticoagulation therapy is monitored.
Systematic Review of the Cardiovascular Risks Associated with the Use of Atypical Antipsychotics in Agitated Alzheimer’s Patients

Rashdat Danmola, Brittany DeJohnette (Abstract 052)  
Pharm. D. Candidates-Pharmacy  
Faculty Advisor: Dr. Munder Zagaar

Atypical antipsychotics (AAPs) are widely used in healthcare to manage agitation in elderly patients with Alzheimer’s dementia. However, this specific indication is not FDA approved. AAPs act at several receptor sites; thereby, likelihood of harmful adverse events are increased. Evaluation of the associated risks is detrimental to justify AAPs continued use. The objective is to perform a systematic review demonstrating the risk for cardiovascular-related morbidity and mortality associated with the use of AAPs in patients with dementia. Related literature was identified by gathering sources from Pub Med, Medline, and the Cochrane Library utilizing the Texas Medical Center Health Science Resource Center. The articles compared the risks of use of AAPs against placebo in patients with dementia. The impact of AAPs involvement in increased cardiovascular disease and all-cause mortality was assessed. Patients were randomly, prospectively assigned in studies; however, retrospective and case-control studies were also performed. Based on our findings, the use of atypical antipsychotics are associated with an increased risk of cardiovascular morbidity and mortality in elderly patients. Compared to placebo there were increased cardiovascular and sudden-death events in patient 65 and older. Atypical antipsychotic medications are used judiciously in elderly demented patients; therefore, it is not recommended that we exclude these medications from clinical practice. The risks are established; furthermore, one should properly assess the benefits versus risks of the medication with a case-by-case assessment. This includes but not limited to the evaluating the following parameters: appropriate dose adjustments/or titration, strict laboratory monitoring, and adverse events profiling.

Monitoring, Managing Bleeding and Status of Antidotes of New Oral Anticoagulants

Okunlola Odutayo (Abstract 053)  
Pharm. D. Candidate Pharmacy  
Faculty Advisor: Dr. Munder Zagaar

New Oral Anticoagulants (NOA) is a new class of drugs that are indicated for prophylaxis and treatment of thromboembolic disease. NOA is a dynamic shift away from warfarin and its burden of frequent dosing change and frequent monitoring. The objective of this study is to compare NOAs to warfarin and which of the NOAs is better or worse in terms of bleeding and its management, as well as update the medical community on the status of antidotes for these newer agents. Correlated published articles were collected from PubMed by means of the TMC Library database. Ten Randomized Controlled Trials (RCTs), majority of which had little probability of bias. In six trials of treatment, NOAs were just as effective as warfarin in preventing recurrent symptomatic VTE (RR 0.89, 95% CI 0.75-1.05), however major bleeding was seen less often (1.08% vs. 1.73% for warfarin, RR 0.63, 95% CI 0.51-0.77), as a result leading to a net clinical benefit to favor NOAs (RR 0.79, 95% CI 0.70-0.90). Compared to Warfarin, NOAs are not only effective in treating VTE but also safer in terms of bleeding, thereby conferring clinical benefit. Their safety and efficacy was confirmed further in secondary prevention trials. As well as an antidote for Xarelto is currently being studied in a phase 3 study, testing safety and efficacy of this antidote.
Assessment of Palbociclib Combined With Fulvestrant Compared to Fulvestrant Alone in Women With Hormone Receptor Positive, HER2-negative Metastatic Breast Cancer Who Failed Prior Endocrine Therapy

Ulfat Nisa (Abstract 054)
Pharm. D. Candidate Pharmacy
Faculty Advisor: Dr. Rodney Hunter

Palbociclib is a cyclin dependent kinase 4 and 6 inhibitor that has shown to increase progression free survival (PFS) in patients with estrogen receptor positive breast cancer when combined with letrozol. Fulvestrant is used for metastatic breast cancer resistant to first line antiestrogen therapy. This randomized, double blind, placebo controlled, phase 3 clinical study was designed for patients with estrogen/progesterone receptor-positive (ER/PR-positive), HER2-negative metastatic breast cancer that was refractory to prior endocrine therapy. This clinical trial aimed to evaluate the superiority of palbociclib and fulvestrant combination over fulvestrant alone in prolonging PFS in patients who became resistant to endocrine therapy. In this study, 417 patients were enrolled based on confirmed diagnosis of HR+/HER2-, metastatic breast cancer. Participants were randomized to receive palbociclib or placebo 125 mg/day orally daily for 3 weeks; followed by 1 week off plus fulvestrant 500 mg intramuscularly on days 1 and 15 of cycle 1, and then on day 1 of each subsequent 28 day cycles. In both arms pre and peri menopausal participants received an injection of 3.6 mg goserelin every 28 days. Palbociclib/placebo dosing may be reduced or delayed in case of significant dose related toxicity. Dose reescalation was not allowed in such cases. The manufacturer is no longer following through this trial as ambitiously because the FDA has approved palbociclib (Ibrance) under accelerated approval and now the post marketing studies are geared towards providing further evidence for its currently approved indication.

Implementation of Pharmacist Intern-Led Discharge Counseling In A Community Hospital

Jeffy Joy, Julia Wilson and Alabama Pham (Abstract 055)
Pharm. D. Candidates-Pharmacy
Faculty Advisor: Dr. Munder Zagaar

The transition in care inpatient hospitalization is a complex process highly susceptible to medication errors with nearly 10 percent of patients discharged experiencing a medication-related adverse event. Communication about medications is included in evaluation of patient satisfaction scores after discharge. Pharmacist interns can provide extensive counseling and medical reconciliation to patients before being discharged from the hospital. The objective of this study is to determine the types of interventions assessed by extending pharmacy services to provide discharge counseling to patients. Additionally, cost avoidance and patient satisfaction scores were assessed. This study is a concurrent observational cohort study focusing on patients being discharged to home on medical and surgical units. The study will document discharge counseling sessions and medication reconciliation provided to each patient being discharged. The study will record the following: pharmacy intervention approach, type of intervention (e.g., adverse drug event, wrong dose, wrong drug), and pharmacy cost avoidance. The data will be analyzed to determine type of interventions, cost avoidance, and patient satisfaction over three months. A total of 264 pharmacy interventions were completed. There was also a substantial increase in the patient satisfaction scores in the brief 3 months the study was conducted. The total estimated cost avoidance with this pilot program in place was calculated to be $2,460. Implementation of a pharmacist-intern led discharge counseling program proved to be beneficial in a community hospital setting. Pharmacists are a key component to the healthcare team to ensure proper medication education and optimal therapy for patients.
Outpatient Pharmacy Prescription Refills at Lyndon B. Johnson Hospital

Walter Lemons and Ashlyn Phuong (Abstract 056)
Pharm. D. Candidates - Pharmacy
Faculty Advisor: Dr Angie Eaton

Our primary objective was to survey patients for the reason they come to wait in line to obtain refills. Our secondary objective was to instruct patients how to call in their refills, minimizing the wait time they experience when picking up their refills. Through the month of January, students opened an additional window, one of ten, at the outpatient pharmacy. With this window open, students would go up to patients in line and pulled patients who were only coming to initiate a refill. Students surveyed the patients for their reasons of requesting their refill in person and waiting. While granting their request, students also attempted to show patients how to call in refills ahead through a phone service to avoid waiting in line. 109 patients were surveyed, giving various reasons for waiting in line. 69% (75) did not know how to call in refills, 11% (12) did not have their medication ready, 8% (9) did not speak English, 7% (8) felt it was convenient, and 5% (5) were recently discharged. 34 patients chose to accept the help during the survey. Of those 34, only 6 accepted being helped on site, while the other 28 choose to receive the information and call in their refills themselves. While many patients have the ability and opportunity to simplify their process of obtaining refills, many simply are uninformed of how to do so, while others choose to wait in line due to other reasons.

Does Prasugrel Provide More Benefit Than Clopidogrel in Preventing Coronary Events.

Fred Walker (Abstract 057)
Pharm. D. Candidate Pharmacy
Faculty Advisor: Dr. Sondip Mathur

Prevention of myocardial infarction in patients with angina or history of acute coronary syndromes is paramount in medical care today. This may be accomplished through drug therapy with Aspirin in combination with prasugrel or clopidogrel. A comparison of these drugs will be made to determine which medication provides patient with the most benefit. In determining which medication is more beneficial in preventing cardiac events, the results of the TRILOGY ACS and TRITON TIMI 38 studies will be evaluated. Hazard ratio, statistical significance, patient specific factors and safety profile will be considered to determine which medication may provide the most benefit in preventing coronary events. Conclusions drawn from these studies will be compared with current guidelines. In the TRITON TIMI 38 study Prasugrel demonstrated greater benefit than clopidogrel in preventing death from cardiovascular cause, non-fatal MI and nonfatal stroke (9.90% vs 12.10%, p-value <0.001) Hazard Ratio of 0.81. Prasugrel also demonstrated higher bleeding risk (2.40% vs 1.80% p-value <0.001) Hazard ratio of 1.32. Prasugrel demonstrated the most benefit and least risk in patients with diabetes, age <75 and weight >60kg. In the TRILOGY ACS trial the primary end point of death from cardiovascular causes, myocardial infarction, or stroke among patients under the age of 75 years occurred in 13.9% of the prasugrel group and 16.0% of the clopidogrel group (hazard ratio in the prasugrel group, 0.91; 95% confidence interval [CI], 0.79 to 1.05; P=0.21). There was a lower risk bleeding events for prasugrel among patients under the age of 75 years (hazard ratio, 0.85; 95% CI, 0.72 to 1.00; P=0.04). After evaluating the TRILOGY ACS and TRITON TIMI 38 trials it is concluded that prasugrel is statistically more efficacious in preventing cardiac events. However, due to increased bleeding risk prasugrel should be limited to specific patients who may benefit most. For example patients who are post-PCI with low bleeding risk and under age 75.
Impact of a Pharmacist-led Disease State Management (DSM) Program on A1c Reduction in an Underserved Population with Type II Diabetes

Angela Gamwell, Tina Nguyen and Leo Le (Abstract 058)
Faculty Advisor: Dr. Portia Davis

The purpose of this study is to determine the effectiveness of a pharmacist-led disease state management (DSM) program at San José Clinic. This retrospective study measured the mean reduction in A1c over 18 months as the primary outcome and mean reduction in LDL-C levels as the secondary outcome. IRB exemption was granted prior to the start of data collection. Participants were identified using the clinic’s electronic medical record and were assigned a unique identifier to protect their privacy. Patients were included if they had a documented diagnosis of diabetes, were over age 18, had at least two clinic visits between January 1, 2013 and June 30, 2014, had a baseline A1c within the first six-month period and follow-up A1c within the last six-month period. A total of 66 patients met inclusion criteria and were divided into the two study arms: DSM (n = 39), defined as those who attended two or more DSM sessions within the timeframe, and non-DSM (n = 27). Both arms were randomly sampled for a 1:1 ratio of 27. The non-DSM group experienced a slight reduction in A1c by 0.23 (SD = 1.6, 95% CI [-0.37, 0.83]) compared to an average reduction by 1.22 (SD = 2.09, 95% CI [0.43, 2.01]; p = 0.026) in the DSM group. The non-DSM group and the DSM group both had an average LDL-C reduction by 0.37 (p = 0.5).

Development of Oral Dissolving Film Formulations of Omeprazole

Lilia Vera (Abstract 059)
Pharm. D. Candidate Pharmacy
Faculty Advisor: Dr. Dong Liang

Oral dissolving film is a potential formulation for drugs with low oral bioavailability and those required rapid onset. The purpose of this study was to develop optimal oral dissolving films of omeprazole, a potent proton pump inhibitor for peptic ulcer diseases, for rapid and effective delivery of the drug. Combinations of hydroxypropyl methylcellulose (HPMC) and maltodextrin were used to formulate ideal oral dissolving films containing omeprazole. Films were prepared by mixing HPMC, maltodextrin, glycerin, and water in various ratios until reaching complete polymer deliquescence, followed by the drying of the films at room temperature. Films were analyzed for morphology, surface pH, disintegration time, omeprazole incorporation, and in vitro dissolution of omeprazole. Oral dissolving films consisting with lower polymer concentrations (ranging from 2% - 7%), had shorter drying times and better film texture as compared to films consisting of high polymer concentrations (45% - 55%). Maltodextrin alone did not form an acceptable film. Increasing HPMC ratio in the films tends to increase rigidity of the film, but also introducing higher bubbles in the films. Disintegration times of the films ranged from 12 to 41 second. Formulated films had average surface pH of 7. An optimized film consisted of HPMC : maltodextrin : glycerine at 1% : 3.5% : 15% ratio showed the best morphology and shortest disintegration time. An optimal oral dissolving film containing omeprazole was developed. Further investigation is ongoing in evaluating encapsulation efficiency and in vitro dissolution profiles of omeprazole from the oral dissolving films.
The Efficacy of Ketogenic Diet as an Alternative Treatment for Refractory Epilepsy in Pediatric Patients: A Meta-analysis

Krysal Akor, Hermela Demesse, Alem Feleke and Omotayo Odusola (Abstract 060)
Pharm. D. Candidates-Pharmacy
Faculty Advisor: Dr. Sondip Mathur

The objective of this study was to systematically evaluate the ketogenic diet and its therapeutic success as an alternative treatment for epilepsy in pediatric patients. Using PubMed, Google Scholar, and Epilepsia, a search was conducted to identify studies on ketogenic diet as a therapeutic success for epilepsy. A therapeutic success rate is computed for the ketogenic diet as a treatment option for epilepsy. A 95% CI was estimated by applying the generic inverse variance method. A sum of eight studies met the inclusion criteria. The weighted success rate for patients who had taken a ketogenic diet as a treatment option for epilepsy, and experienced at least a 50% reduction in seizures from baseline was 41.9% (95% confidence interval (95% CI) = 30.5% - 53.5%) at 3 months (n=229); 39.3% (95% CI = 24.9% - 53.8%) at 6 months (n=188), and 40.7% (95% CI = 21.5% - 60.1%) at 12 months (n=154); weighted success rate for those that experienced at least a 90% reduction in seizures from baseline, or became completely seizure free was 25.9% (95% CI = 16.1% - 35.8%) at 3 months (n=130); 23.4% (95% CI = 14.1% - 32.7%) at 6 months (n=97), and 23.3% (95% CI = 13.5% - 33.1%) at 12 months (n=85). Formal statistical support for the efficacy of ketogenic diet in the treatment of epileptic pediatric patients is postulated through this meta-analysis.

Systematic Review of Literature/meta-analysis on the Link Between Adolescent Cannabis Use and Schizophrenia

Joshua Garraway (Abstract 061)
Pharm. D. Candidate Pharmacy
Faculty Advisor: Dr. Munder Zagaar

Cannabis is used more commonly than any other illicit drug in the United States. Additionally, the prevalence of cannabis use is higher among young adults than it is in any other age groups. Recently around the country there has been a growing movement to influence legislatures to decriminalize the use of cannabis which may lead to more widespread cannabis use. With legislatures across the country beginning to legalize cannabis use, it is timely to examine the association between cannabis use and the occurrence of mental illness, specifically Schizophrenia. The objective was to perform a systematic review to assess the correlation between adolescent marijuana use and schizophrenia. Related published articles were gathered from PubMed, Medline and Cochrane databases through the Texas Medical Center library and a google scholarly search. The selected articles evaluated various studies that examined the link between the use of cannabis and in adolescents and schizophrenia. The studies assigned participants to groups of cannabis users and non-cannabis users. The incidence of schizophrenia was analyzed. The studies reviewed all suggest that using cannabis in adolescence increases the likelihood of experiencing symptoms of schizophrenia in adulthood. The earlier age of initiating cannabis use and heavier use also increase the chance of schizophrenia. Cannabis use among adolescents should be strongly discouraged by parents, teachers, and health practitioners. If policy makers and law makers want to proceed with decriminalization of cannabis, they should at the very least also concentrate on delaying onset of cannabis use by putting laws into place that prevent adolescent use.
Association Between Pharmacy Residency Research Project Study Design and Publication: A single-center Retrospective Cohort Study

Jessica Guastadisegni, Bao Vi Vo, An Le
(Abstract 062)
Pharm. D. Candidates-Pharmacy
Faculty Advisor: Dr Joshua Swan

This study compared the proportions of prospective (or mixed) and retrospective studies completed by pharmacy residents as a major research project that were successfully published in a peer-reviewed medical journal. This single-center, retrospective, cohort study included all pharmacy residency research projects completed from 2001 to 2012. The outcome of publication in a peer-reviewed medical journal was self-reported by residency graduates using an online survey. The accuracy of self-reporting was verified by a systematic online search strategy through Pubmed and EMBASE. A data extraction tool was utilized by two independent investigators, who were unaware of publication status, to extract study design variables from internal manuscripts of the included projects. The proportions of projects published of each study design were compared using the chi-squared test. This study was approved by the institution’s Institutional Review Board and informed consent was obtained. Seventy-four pharmacy residency research projects were completed at this institution between 2001 and 2012. Of these projects, 51 were included in the study. It was found that 5 out of the 14 manuscripts that used a prospective or mixed study design and 11 out of the 37 manuscripts that used a retrospective study design were published in a peer-reviewed medical journal (36% prospective or mixed versus 30% retrospective, p=0.681). Prospective or mixed study designs had similar probabilities of being published in peer-reviewed medical journals as retrospective study designs.

Prevalence of Unintentional Acetaminophen Overdose

Jane Chacko, Trinh Lam, Ralph Leonida and Christin Nguyen
(Abstract 063)
Pharm. D. Candidates-Pharmacy
Faculty Advisor: Dr. Sondip Mathur

Acetaminophen overdose accounts for nearly 80,000 emergency visits and 30,000 hospitalizations in United States every year. There is a concern regarding unintentional overdose from acetaminophen which may be caused by taking multiple acetaminophen-containing products at a time or taking doses incorrectly. The objective was to determine the prevalence of unintentional acetaminophen overdose locally in comparison with the national data and confirm its significance as a public health issue. Data was collected from phone calls of acetaminophen overdose received by the Southeast Texas Poison Center in Galveston, Texas from January to June of 2013. Data encompasses all calls during the said time period and there were no inclusion or exclusion criteria applied. However, all the information gathered were stratified into different categories/variables (i.e. gender, age, causes). There were 3,270 calls made regarding acetaminophen overdose. 54.6% were determined to be unintentional overdose, of which 35.9% were caused by therapeutic error. 80.5% of patients who overdosed were 6 months of age or younger. Incidence in men and women were equally distributed (50.6% vs 49.2%). In comparison, only 25.9% of calls were found to be intentional overdoses and 78.5% of those were suspected cases of suicide. More people are overdosed on acetaminophen due to unintentional causes rather than intentional. Further actions must be taken to decrease incidences of toxicity and adverse events with more attention needed on preventing overdoses in younger infants who had more reported cases of overdose than any other age group.
In 2008 the US Food and Drug Administration mandated that all manufacturers of fluoroquinolone antibiotics include a Boxed Warning in the product labeling regarding the increased risk of tendon rupture and tendonitis associated with these medications. These drugs are utilized extensively in the treatment of many types of infections (respiratory, skin, bone and joint, etc.) and due to this it is necessary to understand the risk associated with their use. We employed various search engines such as PubMed and MEDLINE to come up with the papers to be included in our review. A total of eleven were used including two case reports, two literature reviews, and seven studies/trials. During our review of literature it was found that the most common site of fluoroquinolone-related tendinopathy was the Achilles tendon. Other sites were also subject to injury as a result of therapy with this medication class and risk factors such as concurrent corticosteroid use, high physical activity level, and age were found. Prescribers should take special care when prescribing these medications, especially when they are being used in populations at an increased risk for fluoroquinolone-related tendinopathy. The elderly population, athletes (or those with a higher than normal level of physical activity), and those taking corticosteroids should be monitored carefully for signs of the compromise of muscle or tendon integrity.

Will an OTC Statin Be Safe and Efficacious for the US General Public?

Jerrad Logue (Abstract 065)
Pharm. D. Candidate Pharmacy
Faculty Advisor: Dr. Shirlette G. Milton

According to the Centers for Disease Control, 71 million Americans have high cholesterol and only 1 out of 3 have the condition under control. The 2013 American College of Cardiology/American Heart Association Guideline for cholesterol treatment recommends pharmacotherapy that is expected to increase the number of patients on statin drugs. This study evaluates statin efficacy, usage, and safety for over-the-counter (OTC) use by the general public in accordance with the 2013 guidelines. The results will be of great significance when considering approval for an OTC statin in the U.S. Retrospective analysis of the literature and use of a survey instrument administered to pharmacy and health professions students. Literature reviewed from 2005-2014 was categorized into factors that include statin efficacy, safety, patient self-care, and OTC use in the United Kingdom. Results indicate that the medium-intensity statin currently proposed for OTC use in the U.S. would likely be effective for treatment under the new guidelines in decreasing the risk of premature death, heart attack and stroke. However, statins do not fulfill the criteria for OTC status in the US. Also, data does not conclusively demonstrate patient ease of understanding for self-treatment or the potential for safe use. Survey results indicate student concern for safety of OTC statins. There is insufficient data to justify the conversion of statins from prescription to OTC status in the U.S. Patient education and their ability to self-treat remains the FDA’s primary concern; however, safety remains a concern for current and future health-care professionals.
Best Time to Take Medication

Ivan Kitaka and Sunhee Kim  
Pharm. D. Candidates-Pharmacy  
Faculty Advisor: Dr. Sondip Mathur

Appropriate timing in taking medication is very important as it ensures maximum therapeutic benefit with lowest risk of unpleasant side effects hence improving patient’s quality of life. The body does not respond to medications in the same way at different times of the day. Our research is designed to enhance patient knowledge about medication use and to reinforce the significance of pharmacists general counseling tips. We considered 8 lifestyle variables namely food, caffeine, alcohol consumption, smoking during therapy, drug-drug interaction, sleeping disturbance, exercise and sunlight exposure. We collected and analyzed data on the impact of variables comparing 64 different drug classes and present respective interactions with each variable. Study results indicate that drug-drug interactions, alcohol, and food consumption are the most impactful on medication use effectiveness. Likewise, most Statins, for instance, are the most effective when taken just before bedtime as cholesterol production in the liver is highest after midnight and lowest in the morning and early afternoon. It is recommended that drug-drug interactions, alcohol and food consumption should be closely monitored and patients effectively sensitized on their impact in drug therapy management. It is concluded that consideration of the impact of the above variables can be used as an effective tool by pharmacists during counseling to improve patient outcomes and contribute toward a safe and effective medication use.

Oncology Education in Pharmacy School: A National Perspective

Juan Cabriales, Jay Khambhati and Mai Pham  
Pharm. D. Candidates-Pharmacy  
Faculty Advisor: Dr. Rodney Hunter

According to the American College of Clinical Pharmacy (ACCP), oncology topics that need to be taught in pharmacy schools across the United States covers topics that include hematopoietic disorders, neoplastic/solid cancer disorders, hematologic malignancies, and oncologic emergencies. Currently, the Accreditation Council for Pharmacy Education (ACPE) emphasizes that pharmacy students must learn the basic principles and mechanisms of neoplasms including treatment and management and does not go into further detail of which cancers need to be covered. The purpose of this study is to determine the extent and depth to which oncology is being taught in United States pharmacy colleges. A 14-question survey was developed using SurveyMonkey. A survey link was delivered electronically to college of pharmacy department chairs throughout the United States. Data was collected within a 2-week period from February 6-20, 2015. The survey was sent to 130 colleges of pharmacy, and 19 respondents participated in the survey, providing a response rate of 14.6%. Approximately 79% of colleges surveyed integrate concepts of oncology into many courses throughout the curriculum. Faculty taught oncologic concepts in 89% of colleges surveyed. Oncologic topics instructed most extensively were leukemia (38.25 contact hours), breast cancer (32.75 contact hours), and lymphoma (28.76 contact hours). Future pharmacists need to be adequately educated in oncology to improve patient outcomes and increase patient safety. Currently, there is no formalized structure for oncology education in colleges of pharmacy throughout the United States. Additional research is necessary in order to develop an appropriate curriculum that would sufficiently prepare future pharmacists.
Investigating the Effect of Riociguat on Pulmonary Hypertension Types and Subtypes Based on Safety and Efficacy Meta-Analysis Study
Katherine Tran (Abstract 068)
Pharm. D. Candidate Pharmacy
Faculty Advisor: Dr. Flora Estes

Pulmonary hypertension (PH) is the result of high blood pressure leading from the heart to the lung. According to World Health Organization (WHO), there are 5 groups of PH. Most common PH conditions include pulmonary arterial hypertension (PAH), PH with left heart disease, chronic thromboembolic pulmonary hypertension (CTEPH) and PH associated with lung disease such as COPD. These conditions are associated with high levels of morbidity and mortality. At this time, there is no cure for pulmonary hypertension. Riociguat, a member of a novel therapeutic class known as soluble guanylate cyclase stimulator, recently got approved by FDA in 2013 to treat CTEPH. The objective was to demonstrate the safety and efficacy of riociguat for use in various groups of pulmonary hypertension (PH) such as PAH, CTEPH and PH due to left ventricular dysfunction based on primary, secondary and safety outcomes. A systematic review of literature based on meta-analysis study was conducted on PubMed using the search terms “riociguat” and “pulmonary hypertension,” which resulted in 90 articles. These articles were further filtered to include only English language, full text, free full text, 5 years publication dates, human, and clinical trials, resulting in 6 articles. These 6 articles were screened for relevance based on inclusion/exclusion criteria and 4 articles remained. These 4 articles were then compared based on study design, treatment efficacy end points, safety outcomes, and results. A total 977 patients from 4 trials were evaluated from 2007 to 2012. 283 patients received placebo while 694 patients received riociguat. In PATENT-1 and CHEST-1 study, riociguat significantly improved exercise capacity and some of the secondary endpoints in patients with PAH and CTEPH. In LEPHT study, primary outcome of pulmonary artery pressure was not met. All 4 trials have shown a favorable safety profile compared to placebo. Even though the primary outcome was not met in all 4 trials, riociguat has shown a promising future for PH treatment. Despite the small sample size and possible confounding factors, riociguat was shown to be more well tolerated and shown improvements in some of the secondary outcomes.

Clusterin/Apolipoprotein J (CLU): Role in Histone deacetylase Inhibitor (HDACi) Inhibited Vascular Smooth Muscle Cell (VSMC) Proliferation
Minh Y Do (Abstract 069)
Pharm. D. Candidate Pharmacy
Faculty Advisor: Dr. Kasturi Ranganna

The excessive proliferation and migration of VSMC from arterial media to intima are the main contributors to the neointimal hyperplasia that is responsible for the pathogenesis of atherosclerosis and clinical pathologies including restenosis after angioplasty and vein-graft failure. Butyrate (BA), a histone deacetylase inhibitor (HDACi), exhibits potential anti-atherogenic effect by having antiproliferative, antioxidant, and anti-inflammatory effects on VSMC. Studies from Dr. Ranganna’s lab have shown that butyrate arrests vascular smooth muscle cell (VSMC) proliferation and alters expression of several genes identified by gene array screening. Clusterin/apolipoprotein J (CLU) is one of the gene upregulated by butyrate; however, role of CLU in VSMC proliferation is controversial. Therefore, this study aims to confirm and determine if CLU upregulation by butyrate plays a role in VSMC proliferation arrest. Small interfering RNA (siRNA)-mediated gene silencing was first performed by transfecting proliferating rat aortic VSMC with four CLU siRNAs prior to treatment with butyrate (5mM) to confirm the role CLU expression in butyrate arrested VSMC proliferation. The impact of CLU gene silencing on butyrate-induced CLU secretion and inhibition of VSMC proliferation are determined by western blot analysis of culture medium and using BIO-RAD cell counter respectively. Furthermore, RNA isolation is done to determine what level the CLU gene is being expressed in VSMC proliferation arrested. As the results, western blot analysis showed there is nearly 80% reduction in butyrate-induced CLU secretion implicating that CLU gene is greatly silenced. However, there is also slight reduction in CLU secretion in VSMC transfected with negative siRNA but the reasons are not clear. Conclusively, butyrate treatment significantly inhibited VSMC proliferation compared to untreated VSMC. Moreover, butyrate inhibited VSMC proliferation was further inhibited by siRNA transfection, implicating either the siRNA or the transfection reagent may be causing the inhibition of proliferation.
Highly active anti-retroviral therapy (HAART) is a combination of three different classes of human immunodeficiency (HIV) medications and has been shown to improve the survival rate of HIV-infected patients. Various metabolic complications are associated with HAART following prolonged use. These include dyslipidemia and insulin resistance, major risk factors for the development of cardiovascular disease. In a survey conducted by the International Association of Physicians in AIDS Care (IAPAC, 2003) on 431 HIV-positive patients on antiretroviral therapy; smoking contributed 41.1 percent to cardiovascular risk compared to 21.3 percent for antiretroviral therapy. Smoking is a modifiable risk factor that may further reduce morbidity and mortality in a persons living with HIV (PLWHA). On account of the above reasons, this study examines the effect of smoking cessation in PLWHA as a way of reducing cardiovascular risk. The study type is interventional and the design is randomized and longitudinal. The eligible ages for the Phase II study are 18 to 65-year old men and women. An eligible participant must meet inclusion criteria of Houston, Texas resident, a self-report HIV/AIDS diagnosis, a cigarette smoker, and have participated in Phase I research. Phase I study individuals did pre/post biometric measures. All Phase II individuals participated in a six months data collection of biometric measures, survey, and smoking cessation class. Participants were randomly assigned to Individual Health Coaching (IHC, N=7) or Group Health Coaching (GHC, N=18). Participants were counseled on heart disease risk along with measurement of baseline cholesterol level, blood pressure, Hemoglobin A1C, and body mass index (BMI). The baseline characteristics of phase I participants [BMI, waist circumference, systolic blood pressure (SBP), diastolic blood pressure (DBP), A1C, and HDL] were similarly compared to that of phase II participants. The greatest mean reduction (34%) was observed in HbA1c levels in the GHC group although the LDL levels among the same group increased. The IHC group had a better overall improvement to interventions - SBP and DBP had a greater reduction. There was no data on lipid profile to assess improvement in lipid levels in the IHC group. Interestingly, the GHC group a paradoxical increase (33.9%) in LDL but a decline (6.8%) in HDL. After observation and follow up with individuals living with HIV who were introduced to different interventions, it was noted that there was a better outcome when the individuals were subjected to individual health coaching since their overall risk of cardiovascular events was significantly reduced than in the group receiving group health coaching.
Faculty, Staff, and Student Oral Presentations

Wednesday, April 1, 2015
Rod Page College of Education, Room 318
9:00 A.M. – 1:00 P.M.
Recalibrating the Scale: Using Research to Reform
Prison Sentencing
SpearIt, Ph.D., J.D. (Oral 001)
Law, School of Law

Prison sentencing in the United States is a lesson in arbitrariness. Prison sentences have always been based on arbitrary figures, such as 10 years for robbery or twenty-five years to life for a third felony conviction. There has been nothing close to a scientific basis for determining how long humans should be kept imprisoned—that is, how long before it begins to backfire. Instead, crude correlations simply accord harsher sentences to what are believed to be severer crimes. Notwithstanding the chasm between human knowledge and punishment practices, the Supreme Court has repeatedly stressed that punishment should be guided by human knowledge. In death penalty cases, for example, the Court has growingly turned to scientific data for its decision making. Sentencing laws, however, remain steeped in the olden days. My research aims to develop the law and policy of sentencing by conducting meta-analysis of what researchers recommend in prison sentencing. The hypothesis is that researchers and scientists in general will recommend less severe sentences than the legal status quo. Unlike the U.S. Sentencing Guidelines, which are predicated on achieving greater uniformity and internal consistency, this work focuses on the more fundamental problem of translating crime into time. The model that derives from the analysis will offer more objectivity in sentencing than anything ever known in American penal history. If this hypothesis is accurate, then the findings of this research will simultaneously offer a viable model for recalibrating the scale of prison sentencing.

What Does Modern Science Say About the Origin of Human Moral Behavior? Science Confirms Philosophy
Dr. Marian Hillar (Oral 002)
Interdepartmental Center for Philosophy, Socinian and Religious Studies, COSET

During the last decades evolutionary science has made significance progress in the elucidation of the process of human evolution and especially of human behavioral characteristics. These themes were traditionally subjects of inquiry in philosophy and theology. Already Darwin suggested an evolutionary and biological basis for moral sense or conscience, and answered Kant’s question about the origin of the moral rules postulated by philosophers. This paper reviews the current status of such investigations by natural scientists, biologists and psychologists, and compares their models for explanation of human moral behavior with those postulated by philosophers. Today natural scientists postulate cooperation as the third element of evolutionary process after mutations and natural selection. They seem to fully confirm the intuition of philosophers. The thesis on the fundamental status of cooperation in the entire animal world leads to a belief concerning dialogue: dialogue, rooted in a sense in cooperation, is a primary men’s capability, being emerged from the biological essence of humans. Thus the examination of cooperation reveals inter alia biological foundations of human moral behavior.
The Myth of College Versus the Truth

Drs. Rochelle Parks-Yancy and Delonia Cooley (Oral 003)
Business Administration, School of Business

The mythical magic of graduating from college and starting your career suggests *Poof!* Voila! Students graduate and right afterwards, the dream job in their field is there for the taking. However, this is not necessarily true. What students do while they are still in college can have a tremendous impact on their career after college. Unfortunately, countless of students graduate each year and are completely bewildered by not having gotten that ideal full-time job that pays the bills nor a job interests them. After all, isn’t that one of the main purposes of college? The reality is that college can be a confusing and unclear land of career preparation. There are many career resources available at universities to help students land the right full-time job that they will like and pays the bills. But, first, you have to know what to do and how to do it….which many students don’t know. We tell students what they should while they’re in college to help their career after college. They will learn: (1) How to get the job or internship that you want while in college; (2) How to develop career management skills that will apply to your entire career path, no matter how many jobs that you have or career changes that you make long after college is over and (3) How to get the career that you want after college.

The Impact of Law Enforcement Referrals on Expulsion Rates in U.S. Schools

Drs. Andrea Shelton, Emiel Owens, and Jay Cummings (Oral 004)
Departments of Health Sciences and Education Administration & Foundations

Juvenile justice policies and practices have historically, impacting detention and incarceration rates among students in the United States. Police departments started assigning officers to schools in the 1950s to improve student-police relations. Through the years, a police presence has been used to facilitate drug-education programs and deter crime associated with weapon possession. With the implementation of zero tolerance policies recently, police in schools have been associated with student suspensions, expulsions, and arrests for minor or non-violent offenses. National data demonstrate that minorities, particularly African American males receive the harshest discipline. The purpose of the present study is to compare rates of expulsions due to law enforcement referrals by gender and ethnicity in four school settings. The data for the present study were drawn from the 2011-2012 Civil Rights Data Collection, a national survey administered by the Office of Civil Rights to provide an overview of the educational experiences of students in this country. The data collection procedures were organized into two sub-components; measures of a point in time and cumulative end-of-year data. The latter were used to examine expulsion rates for males/females, African Americans/Whites in grades one through 12 in public Title 1, charter Title 1, public non-title 1, and charter non-title 1 schools. Consistent with previous studies, findings indicate that nationally, a disproportionate number of African-Americans students are being adversely affected by law enforcement referrals. In addition to ethnicity, statistically significant differences were noted by gender, school type, and grade. Findings suggest revisions to school policies and practices.
Cybersecurity in Small Businesses and Non-profits

Dr. Kamala Raghavan (Oral 005)
Accounting and Finance, School of Business

Most small businesses are becoming painfully aware that their small size does not provide them immunity from the risk of a cyber-attack. A recent survey by the National Cyber Security Alliance (NCSA) found that 71% of security breaches target small businesses, about 50% of small businesses have suffered from cyber-attacks. The credit data provider, Experian reports that 60% of small businesses go out of business 6 months after suffering a security breach. Symantec reported that cyber-attacks on small businesses rose 300 percent in 2012 from the previous year. Small businesses and non-profits are attractive to hackers because they tend to have weak online security. NCSA’s research identified 3 major reasons for hackers to target small businesses: They are not equipped to handle an attack due to lack of resources; their partnerships with larger businesses provide back door access to a hacker’s true targets; and they do not guard the information hackers desire such as credit card credentials, intellectual property, personally identifiable information, etc., effectively. This paper discusses the SEC disclosure guidance for registrants that can provide a model framework for small businesses and non-profits, and offers steps to strengthen cybersecurity. It reviews the responsibilities of internal and external auditors for assessing the cybersecurity risk in small businesses in today’s global environment. More businesses are establishing systems that monitor and alert when the probability of a particular scenario increases, setting up cross-functional crisis management teams, and identifying processes to quickly react to risks when they occur.

Summary of Paths: The True Meaning and Long-term Consequences of Student Loans

Dr. Ladelle Hyman (Oral 006)
Accounting and Finance, School of Business

Collaborators: Carlton Perkins, Germaine Gray Samuels and Rosalyn Wilson

This is a review of the literature related to student loans and to the effect that the student loan program is having on society as a whole. Data continue to show an increasing reliance by students on borrowing to finance their college education. There is evidence that this shifting toward borrowing by students has negative consequences for college access and retention for minority and low-income students. The estimated effects of aid seem to accrue to all financial aid dollars — whether they come from grants or loans. In other words, it seems that in terms of promoting college persistence, Pell recipients benefit from having more dollars in hand during college, even though down the road it means they will have more debt as well. These potentially countervailing effects deserve more inquiry and consideration, as families increasingly rely on loans to finance college. Many students exhibit evidence of financial illiteracy: no knowledge about the total amount owed, length of time of the repayment period, when the repayment period began, and the monthly amount of the repayment when it begins. A holistic approach to addressing student loan management at the university level includes financial literacy education in coursework: in a stand-alone course in personal finance or in a personal finance component in a required course.
Training Haitian Food Processors in Developing and Implementing Hazard Analysis and Critical Control Points (HACCP)

Dr. Makuba A. Lihono (Oral 007)
Human Services and Consumer Sciences, COLABS

Collaborators: A. Mendonca, A. Daraba, A. Shaw, Iowa State University and Chantale Pierre-Louis, Pan American Development Foundation and Florida International Volunteers Corps

The purpose of our visit to Haiti was to train food processors in hazard analysis critical control points (HACCP). HACCP is an internationally recognized food safety system that focuses on preventing food safety problems during the manufacture of food products. The objectives of our HACCP workshop were to assist Haitian food processors to: (i) increase their knowledge of the importance of implementing HACCP for public health and economic reasons; (ii) identify foodborne hazards and monitor critical control points in their food manufacturing operations and (iii) develop and implement a HACCP plan for a food processing operation. Two training workshops were conducted in Port-au-Prince and Cap Haitien. Information from site visits was incorporated in lectures at the workshops. Lectures covered the principles of HACCP and topics ranging from hazard identification and establishing critical control points (CCPs) to HACCP plan development. In the working group sessions participants worked as teams to: i) develop a process flow diagram, ii) identify hazards and establish CCPs to control hazards, iii) describe how to monitor CCPs, iv) establish corrective actions and v) develop a HACCP plan. Each group presented their work to all the other participants. At the end of each workshop, the participants were evaluated using examinations based on criteria required for certification by the International HACCP Alliance. Pre- and post-training questionnaires were used to evaluate knowledge increase of participants and their overall perspective of the value of the training they received. Thirty four (34) Haitian food processors (9 women, 25 men) were trained.

Motivating Students to Learn within a Sport Management Program: The Integration of the ARCS Model of Motivation through Utilizing Project-Based Learning Strategies in a College Curriculum

Drs. Courtney Flowers and J. Kenyatta Cavil (Oral 008)
Health & Kinesiology, School of Education

In order to design a program that stimulates and manages motivation, scholars have used the ARCS Model of Motivation (ARCS) which includes four concepts and characteristics to stimulate motivation: Attention, Relevance, Confidence and Satisfaction. Additionally ARCS not only stimulates motivation in learners through increasing motivational appeal of instruction, but also can be used to improve student retention. This presentation seeks to highlight the integration of ARCS Model of Motivation and Project-Based Learning Strategies through an experiential learning project. The ‘TSU Sport Management Lecture Panel for Black History Month Project’ was used as a foundation for exploring student’s motivation to learn. The study examined undergraduates enrolled in two sport management courses at Texas Southern University.
The Adoption of Mobile Learning to Improve Student Learning Experience: The Design Thinking Approach

Drs. Karma Sherif, Mayur Desai and Ronald Johnson (Oral 009)
Business Administration, School of Business

The adoption of mobile learning to improve the student experience in higher education is both a technological and administrative innovation. Successful implementation of the technology requires the involvement of multiple stakeholders to generate change. In this paper, we propose the Build to Compete Framework, as a toolkit for the successful adoption of mobile learning in higher education to positively impact student learning experiences. The model is based on design thinking and defines five phases that institutions go through to actualize the promises of mobile learning: discovery of the limitation and constraints currently inherent within the educational system; assessment and reframing of the problem; exploration and design of alternative solutions; implementation of the optimal design; and learning from the previous cycle to improve on the next. The framework is iterative in nature moving forward and backward through the phases as new knowledge is created through implementation that sheds light on the discovery and framing of the problem. Multiple perspectives are considered through the innovation process promising the delivery of memorable learning experiences for students and a sustainable business model for the adoption of m-learning in higher education. We report on the results of a longitudinal study on the adoption of mobile learning in technology class that undergone three iterations to achieve significant effect on student learning experiences.

Creating Supportive Environment for Culturally and Linguistically Diverse Students in Higher Education

Dr. Yu Chang (Oral 010)
Confucius Institute, COLABS

Because of worldwide migration and globalization, racial, ethnic, cultural, linguistic, and religious diversity is increasing in nations around the world, including the United States (Banks, 2009; Castles, 2009). In the U.S., students become increasingly diverse. This is even more prominent in higher education. Colleges and universities have more learners than ever before whose perceptions and ways of making meaning vary from one another and from the instructor. However, this new context of higher education also brings a big and unprecedented challenge for teachers in designing curricula that are sensitive to cultural differences. As we all know, Universities continue to attract growing numbers of international students, so addressing how teachers deal with cultural diversity and deliver effective teaching to build supportive environment for international students in higher education becomes increasingly important. To meet the challenge, and to fulfill the purpose of higher education, what the educators in higher education need to do is to respect diversity, to engage the motivation of all learners, and to create a safe, inclusive, respectful and equitable learning environment. Based on the theories of multicultural education and culturally responsive teaching, this paper focuses on three important spectrums: teachers’ dispositions and beliefs in culturally and linguistically diverse classroom; teachers’ cultural knowledge required for delivering effective instruction to culturally and linguistically diverse students; teachers’ instructional strategies and skills that are intended to provide assistance for culturally and linguistically diverse students. This paper attempts to fill these gaps by exploring what knowledge, attitudes, and skills are needed for a teacher to work effectively with students from diverse groups.
Designed of an Incentive Bases Carbon Tax System to Reduce Carbon Emissions from Fossil-Fired Power Plants in Texas

Dr. Joseph Boyd (Oral 011)
Accounting, School of Business

This research proposal will analyze the impact of a revenue neutral approach to reducing greenhouse gas emissions in Texas. The revenue from the carbon taxes would be utilized to finance an environmental earned income credit as well as provide funds to assist power plants in making carbon emissions renovations. The topic is particularly relevant to Texas, as the EPA Proposed Clean Power Plan will require Texas to reduce CO2 emissions by 38%.

Using Technology for Stakeholder Involvement in Promoting Urban Forestry and Sustainability Concerns Within the Institutional Space

Dr. Anthony M. Rodriguez (Oral 012)
Mickey Leland Center for Environment Justice and Sustainability, School of Public Affairs

Collaborators: Stephanie Mata, master’s student and Raiven Williams, undergraduate student

Texas Southern University sits on 150 acres with 47 buildings and serves a population of 10000. The urban forest and the natural ecology within the overall built / unbuilt system has only been an externality with intermittent interest in respect to sustainability and natural preservation values of flora and fauna. This study provides an analysis of the urban canopy, permeable, non-permeable, and tree cover values. In this research, information centers are identified to provide two way communication using GIS collector technologies addressing the notion that institutional users are equally concerned as home owners pertaining to sustainability. The research further concludes that natural clusters and nodes can stimulate both flora and fauna with limited human interjection and provide points of community connection. Using technology the sustainability conversation within the campus/nonprofit institutional sector can expand its reach and serve as a means to exert intellectual influence on other sectors. Overall, the notion of positive change comes about by knowledge and awareness is further enhanced.
Effect of Delirium Motoric Subtypes on Administrative Documentation of Delirium in the Surgical Intensive Care Unit: A Retrospective Cohort Study

Lan Bui (Oral 013)
Pharm. D. Candidate Pharmacy
Faculty Advisor: Dr. Joshua Swan

Collaborators: Vy Pham, Memorial Hermann Northwest Hospital and Beverly Shirkey, Houston Methodist Research Institute

Previous studies have estimated delirium prevalence using International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) codes. This study compares the proportions of surgical intensive care unit (SICU) patients with hyperactive/mixed versus hypoactive delirium that received ICD-9-CM documentation. This is a retrospective cohort study conducted at a 24-bed surgical ICU from June 2012 to May 2013. Adult patients with ≥ 24 hours SICU care, never admitted to another ICU during the hospital stay, and screened with the Confusion Assessment Method for the ICU (CAM-ICU) were included. Delirium was assessed twice daily and was defined as ≥ 1 CAM-ICU ratings. Delirious patients were categorized into three motoric subtypes (hypoactive, hyperactive or mixed) using corresponding Richmond Agitation-Sedation Scale (RASS). Documentation of delirium was defined as having ≥ 1 of 32 unique ICD-9-CM codes that was not present on admission. Of included patients, 40% (423/1055) were diagnosed with delirium using the CAM-ICU, and 17% (183/1055) had an ICD-9-CM code for delirium. The sensitivity and specificity of ICD-9-CM codes for delirium were 36% and 95%, respectively. Of patients with delirium, ICD-9-CM codes documented delirium in 42% (95% CI 35%-48%; 105/253) with hyperactive/mixed and 27% (95% CI 20%-34%; 46/170) with hypoactive (relative risk=1.5; 95% CI 1.2-2.0; P=0.002). Administrative ICD-9-CM codes had a sensitivity of 36% for identifying delirium in SICU patients. Patients with hyperactive/mixed were 50% more likely to receive an ICD-9-CM code for delirium compared with hypoactive. Low sensitivity, over-sampling hyperactive/mixed, and under-sampling hypoactive may bias studies that use ICD-9-CM codes to quantify delirium prevalence.

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

Zayne Belal (Oral 014)
Undergraduate Physics, COSET
Faculty Advisor: Dr. Mark Harvey

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 molecular constituents of water can break up 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 the underlying physics mechanisms contributing dose within the biological cell volume due to single particle irradiation of water using the Geant4 Monte Carlo Toolkit (version 9.6). Calculations were performed over a wide range of incident particle energies for a single proton (e.g., 0.001 – 100 MeV) and a single alpha particle (e.g., 0.100 – 100 MeV) within a volume of water consistent with the size white blood cell; e.g., neutrophil. Predictions were obtained on multiple physical processes (e.g., elastic scattering, ionization, excitation, etc.) contiguous with each produced particle species. Our preliminary results suggest that elastically scattered electrons were produced most frequently within the water volume at all depths and incident particle energies considered in this study.
Global climate models (GCMs) are tools used to study climate processes and make future projections, however they are known to have biases. These biases serve as inaccuracies that may differ with reality. We hypothesize that self-organizing maps (SOMs), a computational tool that identifies underlying structures in large data amounts, could lead to improved understanding of how real-world and climate processes work. We investigated the effectiveness of SOMs to distill large amounts of climate data into representative categories and to identify possible causes for biases in GCMs. Essentially, SOMs take high-dimensional data and reduce it to a 2- or 3-dimensional figure. In order to process these data, we used MATLAB, a computational environment. Two climate features of interest were the Inter-Tropical Convergence Zone (ITCZ), a band of rainfall that runs along the equator, and the South Pacific Convergence Zone (SPCZ), another prominent region of precipitation located in the Western Pacific region. To evaluate the accuracy of the SOM to recognize precipitation patterns, we used real-world observations from NASA’s Tropical Rainfall Measuring Mission (TRMM) satellite as a benchmark. Once convinced that the SOM was accurately representing the observational data, we compared the observational output to the output from Phase 5 of the Coupled Model Intercomparison Project (CMIP5), a set of current-generation GCMs. Conducting an SOM analysis on TRMM data produced an accurate and anticipated model of the Pacific region, including the ITCZ and SPCZ, and suggested that the SOM was correctly organizing the observational data into the most prevalent data set patterns.
College/ School

Specific Sessions
Research Week provides an avenue for promoting national and local awareness of the exciting research and outreach activities on the campus of TSU by faculty, students and staff in the College of Pharmacy and Health Sciences. Many of the COPHS faculty, students and staff research projects were selected for presentation during the University’s forum. All others will present during the Annual RW College Breakout Session. Research participation is required of all 4th year professional pharmacy students as a longitudinal research project culminating in its presentation during the TSU Annual Research Week.

**Wednesday, April 1, 2015**
College of Science Engineering and Technology
8:45 AM — 12 Noon
TSU Science Center Room #303H

8:45am - 8:50 am  Welcome and Opening Remarks by Dean Lei Yu and Dr. Lila Ghemri, Chair of The COSET Research Committee

9:00 am - 10:55 am  Graduate Students Research Presentations

11:00 am - 12:00 noon  Panel "Negotiating Graduate School: A Graduate Student Perspective"

**Wednesday, April 1, 2013**
College of Liberal Arts and Behavioral Sciences
1:00 PM — 3:00 PM
Sterling Student Life Center Room #114

The agenda for our session this year will consist of brief (fifteen minute maximum) summaries of research in progress. I invite all COLABS faculty to individually or cooperatively submit a one-sentence description of a research project that you would like to share with your colleagues. An abstract or synopsis is not necessary. In conjunction with the theme of the 2015 Research Week, we ESPECIALLY welcome projects with interdisciplinary components between departments within COLABS or inclusive of disciplines in other colleges.
A Summary of Paths: The True Meaning and Long-Term Consequences of Student Loans  
Dr. Ladelle Hyman, Carlton Perkins J.D., Mrs. Germaine Gray Samuels and Ms. Roslyn Wilson

Research Impact Factor Metrics - A Proposed Model  
Dr. Mayur S. Desai and Dr. Kamala Raghavan

AACSB provides guidelines for intellectual contribution (Research) Impact Metrics. However, there is no standard approach (i.e. “one size fits all”) to measure Research Impact (RI) which makes it difficult for schools to “objectively” define the criteria for measuring intellectual contribution impact. The purpose of this paper is to propose a general framework that can be tailored to meet the needs of any business school - i.e. a business school can take this framework and be able to choose the research impact factors and their respective metrics, and develop measures applicable to the specific business school based their mission, vision, and stakeholder needs. Various terms such as research impact, impact factor, metrics, and measures used in the proposed model are defined and discussed in this paper. The significance of the model proposed by this paper is that any business school can use this model to plan and guide their faculty to meet the qualifications as required by the AACSB standards, and monitor their performance by using the metrics and measures suggested in the proposed model.

Mobile Learning in Higher Education  
Dr. Karma Sherif, Dr. Ronald Johnson, and Dr. Mayur Desai

The adoption of mobile learning to improve the student experience in higher education is both a technological and administrative innovation. In this presentation, we propose the Build to Compete Framework, as a toolkit for the successful adoption of mobile learning in higher education to positively impact student learning experiences. The model is based on design thinking and defines five phases that institutions go through to actualize the promises of mobile learning; discovery of the limitation and constraints currently inherent within the educational system; assessment and reframing of the problem; exploration and design of alternative solutions; implementation of the optimal design; and learning from the previous cycle to improve on the next. The framework is iterative in nature moving forward and backward through the phases as new knowledge is created.
**Wednesday, April 1, 2013**

**School of Communications**

2:00 PM—4:00 PM  
Martin Luther King Building Room #217

Dr. David Owerbach, Grants Development Officer of the Office of Research will be meeting with the School of Communications (SOC) Faculty to provide information on funding opportunities in the area of communications. These grants will be program and research related. Also, he will talk to the faculty about creating a research agenda for the SOC that ties into our faculty research areas. Following his formal presentation faculty will discuss their personal areas of research and additional funding for future projects/scholarship.

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**Wednesday, April 1, 2013**

**Rod Paige College of Education**

5:00 PM — 6:30 PM  
Rod Paige Education Building Auditorium

This college-specific research session will consist of recent dissertation defense presentations from the following students:

- **Gladys Pickrom**: Comparing Levels of Principal Support for Science, Technology, Engineering, and Mathematics Education in Urban, Suburban, and Rural Schools

- **Zenaida Davis Woods**: Predictability of Selected Social Media Communication and Demographic Factors on Intimate Partner Relational Satisfaction

- **Caren Randle**: An Examination of the Effect of Social Stressors on the Degree of Prenatal and Postnatal Maternal Depression Among Low-Income African-American Women

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**Tuesday, April 7, 2015**

**Thurgood Marshall School of Law**

12:00 PM - 1:00 PM  
Thurgood Marshall School of Law Room #202

**Scholarship Beyond These Four Walls: How to Emerge, Engage & Excite**

The school will have a panel of scholars ranging from law students who have already successfully published papers, to senior faculty. Panelists are invited to share their experiences with reaching out beyond the law school and engaging with, learning from, and contributing to the larger community. We hope to encourage all scholars and to embolden our students to publish. Students and faculty alike are invited. Light refreshments will be provided.
Thursday, April 3, 2015
Award/ Luncheon Program
Sterling Student Life Center, Tiger Room, 3rd Floor
11:00 AM – 1:00 PM

Facilitator ........................................... Linda M. Gardiner, Ph.D.
Director, Research Enhancement and Regulatory Services

Greetings/ Opening Remarks ........................................... James W. Ward, Ph.D.
Provost, Vice President for Academic Affairs, Vice President for Research

Introduction of Speakers

11:10 A.M.

Lovell Jones, Ph.D.
Associate Dean for Research
Prairie View A&M University College of Nursing and
Research Professor at Texas A & M University Corpus Christi.

“Major Ethical Issues in the Study and Treatment of Cancer in African Americans
and Other Minorities - Who You Are Shapes How You Look At Problems”

12:00 P.M.
~Lunch Served~

12:25 P.M. Award Presentations

Faculty Oral Presentation
Staff Oral Presentation
Student Oral Presentation

Faculty Poster Presentation
Staff Poster Presentation
Student Poster Presentation

Closing Remarks
12:55 A.M.
Dr. Noreen, The Tox Doc (www.doctornoreen.com) works to advance Dr. Noreen's personal mission of, "Translating the language of science for non-scientists, in order to educate and inform the public of critical issues that affect their health and quality of life. Dr. Noreen, The Tox Doc provides publications, consumer products, training, team building, media communications and speaking engagements. Through her work as a public speaker and technical expert, Dr. Noreen is routinely featured on television and talk radio as a guest expert and has spoken internationally. Her areas of expertise are not only unique; they affect all of us.

Dr. Noreen Khan-Mayberry is a professional Toxicologist and Medical Scientist, with 20 years of professional experience working in the fields of petrochemical, microbiological, chemistry and toxicology. Dr. Noreen has specialized experience in Environmental contaminants and their impact on human health, air, water and ground quality.

Dr. Noreen is a published author and has formulated an all plant-based micronutrient food supplement to support the health of the body's detoxification organ system. This unique supplement is critical in assisting optimal health of the liver, kidneys, and pancreas. Her book "Talking Toxicology" is an essential guide for everyone. This book is an easy to understand explanation of the science of toxicology and teachers the reader how to recognize and reduce toxic exposures.

Dr. Noreen's mission truly fulfills the intent of recognizing distinguished influence leaders and game changers. Dr. Noreen has worked to ensure that chemical contaminants in Space vehicles and Space habitats do not affect the health of astronaut crews during spaceflight operations. Here on Earth, Dr. Noreen uses her toxicological expertise to reduce toxic effects to human health and our planetary resources.

Dr. Noreen owns NKM Environmental Health Sciences (www.envirohealthsciences.com), which provides environmental consulting services and green technology expertise for the medical, legal, construction and environmental industries. Dr. Noreen has authored a number of research articles, serves on several editorial boards of international peer-reviewed journals and has received a number awards including receiving the first ever "She Innovates" award, One of the Top 50 Women of Influence in Houston, being honored as a trailblazer in science and as a global leader. Dr. Noreen also made history by serving as the first female NASA Space Toxicologist, one of only 7 Space Toxicologists in the world. She also introduced the specialty of Space Toxicology to the international Toxicology community.

Dr. Noreen is a strong advocate for giving back to the community and strives to educate and inspire current and future generations. Her communications skills are strong and are used to facilitate international messaging. She is passionate about empowering people to improve their overall health as well as leadership for women.
Lovell Jones, PhD, is currently Associate Dean for Research at Prairie View A&M University College of Nursing and Research Professor at Texas A & M University Corpus Christi. Upon on his retirement. Dr. Jones became the first African American to be awarded Emeritus Professor status in the Department of Health Disparities Research, the Division of Cancer Prevention & Population Science at the University of Texas M.D. Anderson Cancer Center as well as at the University of Texas Graduate School of Biomedical Sciences at Houston. He is the former Director of the joint UT MD Anderson Cancer Center/University of Houston Dorothy I. Height Center for Health Equity & Evaluation Research. Dr. Jones has more than 35 years of experience in addressing minority health and the health of the underserved. As a scientist, he has also done extensive research into the relationship between hormones, diet and endocrine responsive tumors and has presented his work both nationally and internationally. He has edited one of the few comprehensive textbooks on this subject: *Minorities & Cancer*. Dr. Jones has either chaired or co-chaired numerous major events regarding the underserved and cancers, including the American Cancer Society South Central U.S. Regional Hearings on Cancer and the Poor and the 1st National African Cancer Education meeting in Abuja, Nigeria. Dr. Jones is co-author of the congressional resolution designating the third full week in April as "National Minority Cancer Awareness Week." For his work, the NIH/National Center on Minority Health and Health Disparities was awarded him its Director’s Award for Excellence in Health Disparities. Dr. Jones has also received the Ruth Kirschstein Diversity in Science Award and was selected as one of the top African American Scientist in America by the National Science Foundation “The HistoryMakers” http://www.thehistorymakers.com/biography/dr-lovell-jones. Dr. Jones’ research work also involves determining the mechanism by which natural and environmental estrogenic agents may initiate cancers in hormonally responsive tissue. He has served as the PI on a number of NIH grants, including “The Women’s Health Eating and Living Study,” an NCI grant studying the role of diet on prevention recurrence of second primaries in breast cancer survivors. The other grant was awarded was the Centers of Excellence for Community Partnership, Outreach, Research & Training from the National Center on Minority Health & Health Disparities and the Centers for Medicare and Medicaid Cancer Prevention and Treatment Demonstration grant titled: “Facilitated Assistance, Research, & Outreach Services.” He has been awarded either as Principal Investigator (PI) or Co-PI approximately $40 million in research and/or educational grants. In January 2000, Dr. Jones was named the first director of the congressionally mandated Center for Research on Minority Health (CRMH), a multidisciplinary center which aims to a) foster research that addresses the causes of health disparities and translates scientific results back to the communities affected by those disparities; b) encourage minority students to pursue careers in the biomedical sciences; and c) increase recruitment and retention of minority and medically underserved populations into clinical trials. Lastly, Dr. Jones has been thrice honored on the floor of the US Congress for all of work as well as selected by HistoryMakers as one of the top 180 African American scientists whose worked as been archived for future generations in the Library of Congress. Dr. Jones received his PhD from the University of California, Berkeley. He is married to Marion C. Jones, and they have two children and three grandchildren.
# Texas Southern University
## Alliance of Institutes and Centers for Research

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<tr>
<th>Name of Institutes and Centers</th>
<th>Director</th>
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<td>Institute for Education and Legal Studies</td>
<td>Professor Sarah R. Guidry</td>
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<tr>
<td>Center for Strategic Advances in Education (CSAE)</td>
<td>Dr. Jay R. Cummings</td>
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<tr>
<td>Earl Carl Institute for Legal and Social Policy (ECI)</td>
<td>Professor Sarah Guidry</td>
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<tr>
<td>Center on Legal Pedagogy (CLP)</td>
<td>Dean Dannye Holley</td>
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<td>Institute for International and Immigration Law (IIIL)</td>
<td>Prof. Fernando Colon-Navarro</td>
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<td><strong>Institute for Business and Human Services</strong></td>
<td><strong>Dr. Glen Johnson</strong></td>
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<td>Mickey Leland Center on World Hunger and Peace (Global)</td>
<td>Dr. Glen Johnson</td>
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<td>Economic Development Center</td>
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<td>JP Morgan Chase Center for Financial</td>
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<td><strong>Institute for STEM, Environmental Research, and Biotechnology</strong></td>
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<tr>
<td>NASA Center for Bio-Nanotechnology and Environmental Research (C-BER)</td>
<td>Dr. Adebayo Oyekan</td>
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<td>Environmental Research and Technology Transfer Center (ERT²C)</td>
<td>Dr. Bobby Wilson</td>
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<td><strong>Institute for Biomedical and Health Disparities Research</strong></td>
<td><strong>Dr. Adebayo Oyekan</strong></td>
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<tr>
<td>Research Center in Minority Institutions (RCMI)</td>
<td>Dr. Dong Liang</td>
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<tr>
<td>Center for Cardiovascular Diseases</td>
<td>Dr. Adebayo Oyekan</td>
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<tr>
<td>Center for Health Disparities Research: Cardiovascular Diseases &amp; HIV</td>
<td>Dr. Adebayo Oyekan</td>
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<td><strong>Institute of Computational Science and Engineering (ICSE)</strong></td>
<td><strong>Dr. David Olowokere</strong></td>
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<td>Dr. Wei Wayne Li</td>
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<td>TSU High Performance Computing Center</td>
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<td>Engineering Resource Center</td>
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<td><strong>Institute of Transportation Studies</strong></td>
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<td>Center for Transportation Training and Research</td>
<td>Dr. Carol Lewis</td>
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<td>National Transportation Security Center of Excellence and Petrochemical Transportation</td>
<td>Dr. Carol Lewis</td>
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<tr>
<td>Innovative Transportation Research Center</td>
<td>Dr. Lei Yu</td>
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UNIVERSITY INSTITUTE FOR EDUCATION AND LEGAL STUDIES/POLICY

EARL CARL INSTITUTE FOR LEGAL AND SOCIAL POLICY
INTERIM DIRECTOR: SARAH R. GUIDRY
ESTABLISHED: 1992
PHONE: 713-313-1151/ FAX: 713-313-1153/ WEBSITE: www.earlcarl.org

GOALS: The Earl Carl Institute (ECI) was established in 1992 as a research and writing think tank at the Thurgood Marshall School of Law. The mission of the Institute is to help solve legal and social problems facing the urban community through scholarship and advocacy. The Earl Carl Institute seeks to identify, address, and offer solutions to issues that affect traditionally urban and disenfranchised communities.

TASKS: ECI’s focus is on providing research based policy advocacy through direct legal services and written materials addressing issues that have a disproportionate impact on minorities locally, statewide and nationally. ECI generally undertakes projects that are interdisciplinary in nature and have one of three outcomes (1) Student Development, (2) Public Policy Initiatives, and (3) Community Education. In addition, these projects fall into ECI’s priority research areas: (1) Criminal Justice, (2) Education, (3) Family, and (4) housing. ECI’s operations are primarily facilitated through its three centers: (1) Center for Civil Advocacy, (2) Center for Criminal Justice, and (3) Center for Government Law. ECI provides law students opportunities to gain experience working with clients, lawyers and courts through the Opal Mitchell Lee Property Preservation Project, the Juvenile Justice Project and the Thurgood Marshall School of Law Innocence Project. The Center for Government Law provides law students integrated academic and practical skills training in government administration and regulation. ECI also undertakes Special Projects involving interdisciplinary partnerships and collaborations. Current special projects include the ECI Interdisciplinary Journal for Legal & Social Policy, annual symposiums on juvenile justice, indigent defense, and an ECI special journal issues. ECI policy or position papers target academia, the Texas Legislature, other political actors, Texas Department of Criminal Justice, Judges, attorneys and other vested interests, including civil rights and advocacy groups, and individuals from other disciplines as well as the urban community in general.

INSTITUTE FOR INTERNATIONAL AND IMMIGRATION LAW (IIIL)
ESTABLISHED: 2002
DIRECTORS: CRAIG L. JACKSON AND FERNANDO COLON-NAVARRO
PHONE: 713-313-1918

GOALS: The Institute (IIIL) is dedicated to providing specialized academic and practical legal training for students planning a career in international or immigration law. The Institute is dedicated to encouraging scholarly research in the fields of international law and immigration law; therefore, IIIL prepares students for positions with law firms practicing international or immigration law; U.S. government agencies, foreign governments, private organizations, and foundations working to advance social and economic justice. The IIIL also provides a scholarly atmosphere for the study of international and immigration law as well as a forum to discuss problems facing those disciplines. The IIIL offers an extensive inventory of international law courses, including but not limited to: International Litigation, International Tax, International Human Rights, Comparative Law, International Law, Employment-Based Immigration, Criminal Law and Immigration, NAFTA, Family-Based Immigration, Basic Mexican Business Law, Naturalization and Citizenship, Treaty Law as well as a Civil Externship Clinic at the Consulate of Mexico, an Administrative Law Clinic: Immigration Law Concentration, and the American and Caribbean Law Initiative, which is a Consortium dedicated to study comparative law issues. The Institute also recognizes students who have demonstrated a deep interest and scholastic achievement in the areas of international law or immigration law through its Certificate Program in International and Immigration Law.

TASKS: Among the many scholarly programs of the Institute is the Genocide Prosecution Project. Under this project, the Institute is planning to sponsor two programs involving the ad hoc tribunals hearing criminal cases on episodes of genocide in the former Yugoslavia and Rwanda. The International Criminal Tribunal for the former Yugoslavia Program, pending ABA approval, is scheduled to start in the summer of 2006. Tentative plans the International Criminal Tribunal for Rwanda program are being made with that program possibly starting in the summer of 2007. Both programs will involve classroom study of international criminal law, the cases from each tribunal, and the procedures for bringing cases to the tribunals. Students will attend tribunal hearings in The Hague, Netherlands (where the Yugoslavia Tribunal meets) and Arusha, Tanzania (where the Rwanda Tribunal meets).
GOALS: Dedicated to the study of instructional design for legal education, the Center for Legal Pedagogy uses principles from the cognitive sciences about leaning and discourse theory to study, implement, and evaluate law school teaching methodologies. The primary research aim of the Center is to investigate how legal knowledge becomes organized; how the cognitive processes that accompany legal knowledge develop with learning and experience; and how the acquisition of legal knowledge is measured and assessed. The Center has an inter- and multi-disciplinary focus. It recognizes that we now have many of the investigative tools needed for the advanced study of legal pedagogy. It employs computer-based technologies that have been developed to enhance educational research. And, it uses the cognitive sciences - including cognitive psychology, artificial intelligence, and linguistics - to provide the theoretical means for studying formal process theories of human cognition. Turning to recent advances in the understanding of the nature of competence and the phenomena of expertise, the Center seeks to provide a thorough analysis of the objectives of instruction and to offer a solid basis for studying the learning of law, for designing conditions for learning, and for assessing acquired competence in the law.

TASKS: The Center has developed a series of initiatives and educational programs to enhance the law school’s curriculum and instruction, including pre-law programs, academic support programs, educational workshops, and collaborative teaching and instructional projects. In addition to providing educational support to deliver mentoring and advising programs to students, the Center has implemented faculty development forums to enable faculty members to share and impart teaching innovations, to encourage research, and to foster scholarship. To assist with assessment, the Center has established the Teaching and Learning Effectiveness Program (the TLE Program) – a faculty professional development initiative that presents faculty with opportunities to become acquainted with the latest research concerning matters of teaching, learning, and assessing, and to learn new instructional strategies that may be applied to their fields of expertise. Each year, the Center measures the skills and abilities of the law school’s in-coming students through a battery of diagnostic tests that examine learning strategies and styles, critical thinking, and writing. In addition to reporting about the data collected from these diagnostic tests and making the data available to faculty members in order to mentor and to plan teaching methodologies, the Center uses this data to advise students and to help students identify areas in which students could benefit most from educational interventions. The Center is also conducting two on-going studies: (1) A Correlation Study of the students’ performance on LSAT, UGGPA, INDEX, LSI, LASSI, Watson Glaser, Writing Diagnostic, Mid-term Grades, First-Year GPA, Second-Year GPA, and Third-Year GPA, using the SPSS statistical package. (2) A Bar Passage Study of the students’ performance on LSAT, UGPA, INDEX, Second and Third Year Required Course Performance, and Third-Year LSGPA as predictors of TMSL Bar Performance. Through its research studies and publications, the Center offers faculty and students pedagogical assistance with academic performance and skills by providing information about instructional design and outcomes assessment. Its publications include: (1) Law School Teaching Innovations/Tips, (2) Law School Teaching Quick Tips, (3) New Directions in Legal Education, and (4) Legal Writing Tips.

UNIVERSITY INSTITUTE FOR BUSINESS AND HUMAN SERVICES

MICKEY LELAND CENTER ON WORLD HUNGER AND PEACE
ESTABLISHED – 1989
DIRECTOR: DR. GLEN JOHNSON

GOALS: To provide on-going opportunities for projects, programs and research by students and faculty that increase awareness and understanding, leading to innovative projects and programs that address the enduring critical problems of world hunger and peace; and to offer advanced leadership development training to TSU students to prepare them to learn and lead in while providing a means to outreach to today’s diverse global community.

TASKS: The Leland Center is the custodian of the Mickey Leland Archives and is currently working to digitize the Leland Collection. Through the Texas Legislative Internship Program (TLIP) the Mickey Leland Center provides undergraduate and graduate students intensive training and unique exposure as staff members to local, state and national government and elected officials, to increase the number of graduates prepared and available to work in government and public service. The Leland Center also supports the development of International Study Abroad Programs for TSU students through the Mickey Leland International Enhancement Program (MLIEP).
**GOALS:** To foster economic growth and development throughout the Houston-Galveston area by developing viable and effective community and economic development projects that provide capital resources, technical assistance and training to the small business sector, Houston’s inner-community organizations, and other undeveloped sectors of the community such as the unemployed, underemployed, and the homeless.

**TASKS:** Projects primarily emphasize job creation, business development and expansion, entrepreneurship, higher education, career development, neighborhood revitalization, technology and community involvement. The current project provides:

- economic development in business planning and financial management;
- revitalization of a Third Ward community daycare center;
- technical assistance to eight (8) minority business expansion grant recipients;
- career planning and skills development in computer technology and office administration;
- housing for homeless women with children; and
- GED/college preparation.

**MISSION:**

- To promote lifelong financial education through teaching, research and community outreach programs
- To contribute to an individual’s knowledge of personal finances, money management, credit awareness and estate planning.

**TASKS:** The Center has developed a series of initiatives related to financial education to enhance the business curriculum and the overall understanding of personal finance content. The current programs of the Center include a semi-annual guest lecture series, an annual financial education conference along with educational workshops for students, teachers and community members. In an effort to address the personal finance knowledge gap of college students, a financial education module has been included in the freshman level business course. Stand alone seminars on personal finance are also conducted throughout the fall and spring semesters for students and community members. Another initiative focuses on facilitating teacher workshops on personal financial management and economic education. Semi-annual teacher train-the-trainer workshops on the Stock Market Game and Investing are conducted throughout the academic year.
UNIVERSITY INSTITUTE FOR STEM, ENVIRONMENTAL RESEARCH AND BIOTECHNOLOGY

ENVIRONMENTAL RESEARCH AND TECHNOLOGY TRANSFER CENTER (ERT²C)
ESTABLISHED: SEPTEMBER 1, 1992
DIRECTOR: DR. BOBBY WILSON
PHONE: 713-313-1060

Our primary goal is to address training, research problems, and technology transfer issues as they relate to the environment; by increasing the number of under-represented minority graduates in science, mathematics, engineering, and technology (STEM).

Research focuses on the analysis of toxic elements and compounds in a closed environment, trace metals in soil, soil sediments, air and wastewater processes, wastewater contaminants, and environmental policy and law. We are involved in the development of novel approach to water treatment technology using photo catalytic carbon nanotubes (CNTs) with antimicrobial properties to combat the problems associated with infectious microorganisms in drinking water.

Our “Core Analytical Facility” is an important component of the research infrastructure at Texas Southern University. The mission is to achieve regional, national, and international recognition as a quality environmental analytical laboratory and environmental research program. This mission will be achieved through the characterization of environmental toxicants in the ambient environment (air, soil, and/or water) and the investigation of the mechanisms involved in the toxicity effect. In order to further reach our mission to increase the number of under-represented minority graduates in the STEM fields, the ERT²C hosts high school and undergraduates interns in the summer.

Collaborators: Dr. C. J. Tymczak, Professor of Physics; Dr. Renard Thomas, Interim Chair and Associate Professor of Health Sciences; Dr. Xin Wei, Professor of Chemistry; Dr. Sonya Good, Associate Professor of Chemistry

C-BER: CENTER FOR BIONANOTECHNOLOGY AND ENVIRONMENTAL RESEARCH
ESTABLISHED DATE: OCTOBER 2008
INTERIM DIRECTOR & PI: DR. ADEBAYO OYEKAN
PHONE: 713-313-7499 FAX 713-313-7932
WEBSITE: HTTP://COST.TSU.EDU/WEBPAGES/NASA_URC_CBER.HTML

The NASA Center for Bionanotechnology and Environmental Research (C-BER) comprises a team of faculty researchers and educators from the colleges of Science & Technology, Business, Education, Law, and Public affairs as well as collaborating faculty from the University of Houston, University of California Santa Cruz, Norfolk State University, Jackson State University, Texas A & M University and Stanford University.

MISSION: The mission, which is closely aligned with NASA’s Exploration Systems Mission Directorate is to evaluate environmental and human health concerns related to manned exploration of space. Thus, techniques for detecting, monitoring and controlling microorganisms are being developed; and the effects of microgravity, radiation and other space travel-induced stress factors on living organisms are investigated with the intent of developing countermeasures. In collaboration with NASA, the mission is to train and educate future Scientists, Engineers, Mathematicians and Technology (STEM) while integrating molecular biology, bioinformatics, bionanotechnology with chemical and biochemical analysis. In this current effort we will develop advanced technologies to enable novel solutions to the great health challenges facing humans during long-term space duration missions.

TASKS: The research of C-BER focuses on

- key environmental factors such as microgravity, radiation and other space travel-induced stress factors on living organisms.
- The effects of microgravity and radiation on the cell at the genome, proteome, cell, tissue, organ, and organism levels
- identification of biomarkers of stress factors and development of countermeasures.
- Development of bioassays and devices for microbe detection and monitoring, building upon current hardware developed at various NASA Centers.
- Biosensors for pathogen and microbe detection
- chemo-sensors of environmental stress.
- training opportunities for students, postdoctoral fellows and faculty.

Investigators:

Shishir Shishodia, Ph.D., Dept. of Biology
Fawzia Abdel-Rahman, Ph.D., Dept. of Biology
Hector C. Miranda, Jr., Ph.D., Dept. of Biology
Marguerite Butler, JD, MLIS, TMS of Law
Jason A. Rosenzweig, Ph.D., Dept. of Biology

Mahmoud A. Saleh, Ph.D., Dept. of Chemistry
Nancy L. Glenn, Ph.D., Dept. of Mathematical Sciences
Demetrio Kazakos, Ph.D., Dept. of Mathematical Sciences
Claudette Merrell Ligons, Ed.D., Curriculum and Instruction
The mission of the RCMI program at TSU is to enhance the research capability and infrastructure, to strengthen minority scientist’s competitiveness in conducting biomedical and behavioral research and to promote studies in medically related fields that disproportionately affect minority health. This program is currently funded by National Institute of Health in supporting the Center for Biomedical and Health Research Excellence (CBHRE). The purpose of the CBHRE is to support the conduct of research on two diseases, cancer and cardiovascular, which are leading causes of death in Houston, the state of Texas and the nation. The RCMI program is being reinvented and reinvigorated. The goals of the program are to: 1) upgrade research infrastructure to enhance the university’s biomedical research capacity and help promote a research rich environment; 2) enable investigators to become more successful in obtaining competitive extramural support for the conduct of biomedical research, particularly on diseases that disproportionately impact minority populations; and 3) foster vibrant environments conducive to professional development in biomedical sciences. Based on these goals, at the end of five years of RCMI support the CBHRE proposes multiple outcomes including substantial increases in publications citing NIH support; more proposal submissions; more grants awarded; increased number of investigators receiving “mainstream” extramural grant support; and increased number of professional development activities. The CBHRE will institute a Pilot Project Program using a rigorous set of criteria and investigators supported by this program will undergo professional development activities that will help them gain independence within two years of completion of the CBHRE program. The CBHRE will be organized into the following activities and/or cores: Administrative Core, Collaborations and Partnerships, Pilot Project Program, Professional Development, Assessment and Evaluation, Environmental Toxicology Research Core, Molecular Biology Research Core and Pharmacology Research Core. Each activity and/or core is designed to support the purpose, goals and objectives of the CBHRE. The core research laboratories will be organized in a manner that will allow investigators access to the state-of-the-art facilities, instrumentation and service oriented scientific expertise. Multiple investigators will come together to conduct research on cancer and cardiovascular diseases based on discovering common biological, biochemical, genomic, lipidomic, and/or proteomic malfunctions to help understand the mechanistic and clinical relevance of the disease processes.

The Center for Cardiovascular Diseases (CCD) is a joint initiative of the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health (NIH) and Texas Southern University with a mission to discover solutions to health and other problems that disproportionately affect minority health. This program is currently funded by National Institute of Health in supporting the Center for Cardiovascular Diseases. The CCD seeks to expand and strengthen the University’s biomedical research capabilities in order that significant contributions may be made to the improvement of the cardiovascular health status of all Americans, especially African Americans. The Center serves as the hub of research activities on cardiovascular diseases providing intensive laboratory training experiences for graduate and undergraduate students and serves as a site for structured and supportive faculty development.

**GOALS:** To expand and strengthen the University’s biomedical research capabilities in order that significant contributions may be made to the improvement of the cardiovascular health status of all Americans, especially African Americans. The Center serves as the hub of research activities on cardiovascular diseases providing intensive laboratory training experiences for graduate and undergraduate students and serves as a site for structured and supportive faculty development.

**TASKS:**
- expand and strengthen TSU’s biomedical research capabilities so that the University can make significant contributions to the improvement of cardiovascular health status of all Americans, especially African Americans.
- increase the quality of research and publication efforts of TSU,
- strengthen the overall biomedical research infrastructure
- provide intensive laboratory training for graduate and undergraduate students; and
- foster collegiality and collaboration among TSU faculty and local institutions.

Ongoing projects are evaluating nitric oxide/cytochrome P450 interactions in the cardiovascular system, peroxisome proliferator activated receptors (alpha and gamma) in hypertension, diabetes/obesity, and renal failure, role of humoral factors in subarachnoid hemorrhage (stroke) and diabetes mellitus.

**Investigators/Collaborators:** Adebayo Oyekan DVM, PhD, FAHA (Director); Momoh Yakubu PhD (Associate Professor); Weimin He MD, PhD (Research Assistant Professor/Scientist); Choi Myung PhD Research Associate; Katsuri Rangana PhD (Collaborator); Zivar Yousefipour MS, PhD (Collaborator)
The Center for Health Disparities Research is a joint initiative of the National Heart, Lung, and Blood Institute of the National Institutes of Health and Texas Southern University (TSU) with the goal that the Center for Health Disparities Research will synergize with ongoing research activities at the Center for Cardiovascular Diseases. The center will augment and strengthen TSU’s research capabilities and resources in biomedical and behavioral research.

**GOALS:** The goal of the Center for Health Disparities Research in Cardiovascular Disease and HIV is to reduce disparities in HIV and CVD among disparate populations in the city of Houston. In addition, the Center seeks to enhance the biomedical research capability of TSU in discovering solutions to health and other problems that disproportionately affect urban minorities. These efforts should close the gap in mortality and morbidity associated with HIV and CVD among disparate populations, including African Americans and Hispanics.

**TASKS:** Working collaboratively with professional and lay communities to develop cutting edge biomedical and behavioral science research, the major tasks are: Prevention and control of cardiovascular disease through healthy eating and physical activity; Promotion of cardiovascular healthy living behaviors; Professional education and community service

**KEY FUNCTIONS:** Creation of new scholarly works that provide results that push the frontiers of public health science; Research and development; Translation and dissemination of evidence-based programs and practices; Collaboration with community partners; Policy development and analysis

**Investigators/Collaborators:**
Adebayo Oyekan  DVM, PhD, FAHA (Director); Angela Meshack DrPH, Assistant Professor, Department of Health and Kinesiology; James Essien DrPH, Professor, University of Houston (Member, Advisory Board); Mustafa Lokhandwala PhD Professor, University of Houston (Member, Advisory Board); Ronald J. Peters, Jr., Dr.P.H. Associate professor of behavioral sciences at the University of Texas School of Public Health.

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**UNIVERSITY INSTITUTE FOR COMPUTATIONAL SCIENCE AND ENGINEERING**

**NSF CENTER FOR RESEARCH ON COMPLEX NETWORKS (CRCN)**

**ESTABLISHED – SEPTEMBER 1, 2011**

**DIRECTOR: DR. WEI WAYNE LI**

**PHONE: 713-313-1871/WEBSITE: CREST.TSU.EDU**

The Vision of the proposed CRCN is to become a nationally recognized center of excellence in multidisciplinary research developing and using advanced networking methodology, integrating research with education and profoundly impacting society via the advancement of technologies by enabling transformation in science and environmental diagnostics. The Mission of the Center is to conduct innovative and multidisciplinary research of national significance in the area of complex networks and expand the pool of minority and underrepresented students to pursue advanced graduate studies to meet the future needs of the nation in critical principles and technologies of network research. The Goals of the center are provided in the following: (1) To perform cutting-edge research and develop a technology platform through implementation of a cross-disciplinary and synergistic infrastructure at TSU and to establish TSU as an internationally renowned center of research in the areas of wireless, computational, and urban transportation environmental networks. (2) To develop novel theoretical models and computer simulation algorithms for the study of complex networks in wireless, computational and urban networks and to use these algorithms in practical real world applications, to achieve the advancement of the knowledge of the complex networks; integration of knowledge from diverse scientific areas to focus on the understanding of complex networks, and targeted practical applications in real world complex networks. (3) To positively impact underrepresented minority (URM) undergraduate, graduate and Ph.D. students by improved and enriched Center related research and educational experiences. (4) To implement and promote diversity in STEM disciplines, through innovative and relevant educational outreach initiatives and to recruit, retain and train members of URM groups. This will create a nationwide workforce and prepare minority students for leadership positions in the fast-changing global, scientific, engineering, and government sectors.
Texas Southern University’s High Performance Computing Center (TSU-HPCC) was established to promote research and teaching on campus through integrating leading-edge high performance computing and visualization for the faculty, staff and students of Texas Southern University. The HPCC provides consulting and assistance to campus researchers with experimental software and/or hardware needs. We also provide training in parallel and grid computing. HPCC will serves as a liaison between various teams that are engaged in research. We work to support, configure and port applications to HPCC resources. HPCC has computational resources which include two Linux clusters. Ares, installed in December 2008 has sixteen dual-slot quad-core nodes with Intel Xeon 5350 2.0 Ghz processors with 8 Gigabytes of memory connected via dual Gigabit eternets. The full parallel cluster has a total of 128 cores and a total memory of 128 Gigabytes, with a peak speed of 0.672 Teraflops. Hades, installed on January 2010, has eight dual slot hyperthreaded quad core nodes with the Intel E5520 2.33 GHz Xeon Processor with 12 Gigabytes of Memory connected via a 10 Gigabit connected via an Ultra low latency Arista 7124S switch. The full parallel cluster has a total of 128 virtual cores and a total memory of 96 Gigabytes, with a peak speed of 0.783 Teraflops.

The High Performance Computing Center at TSU has been awarded a grant of $220,000 by the National Science Foundation for expanding its research capabilities. The funding secured will allow a doubling of the present computational resources, lifting TSU to a competitive position in term of capabilities, similar to ones offered by Rice University and surpassing University of Houston’s. Directed by Dr. Tymczak (Physics), and co-directed by Dr. Grincanu (Physics) and Dr. Khan (Computer Science); the High Performance Computing Center’s goal is to enhance learning and improve student achievement at Texas Southern University by integrating state-of-art technology into the classroom. Computational Sciences and High Performance Computing are rapidly becoming more and more relevant in many industries, and therefore TSU students have a chance to get first hand training in modern computational techniques, giving them a strategic advantage in the labor market. Our resources have been supporting a growing community of researchers who apply the intensive computational techniques to solve complex problems in Physics, Chemistry, Computer Science, Biology and Engineering. Our vision is that Texas Southern University becomes a regional leader in promoting a mobile learning environment, outside the traditional classroom, by integrating new innovative technology and advanced computational concepts.

The Innovative Transportation Research Institute (ITRI) at TSU was developed in the fall of 2006 by expanding the former Urban Traffic and Air Quality Lab (UTAQL), which was first established in 2000. Recently, ITRI received funding as a member of five-institution consortium Trans-LIVE (Transportation for Livability by Integrating Vehicles and the Environment), a Tier One National University Transportation Center (UTC) funded by U.S. Department of Transportation, which also includes University of Idaho, Virginia Tech, Old Dominion University, and Syracuse University. The goals of ITRI are to develop, evaluate, optimize, and recommend comprehensive strategies for traffic congestion mitigation, mobile source emission reduction, fuel consumption saving, urban transportation planning, and ITS development, through the smart utilization of advanced technologies, large scale computer simulation methods, complex modeling systems, and state-of-the-art lab equipment.

ITRI conducts research and outreach through five designated efforts: (1) transportation modeling and simulation, (2) vehicle emission testing and air quality analysis, (3) Intelligent Transportation System (ITS) technology applications, (4) driving behavior studies, and (5) education, training, and technology transfers. ITRI is equipped with state-of-the-art lab facilities such as: mobile traffic van, full-motion driving simulator, MiniTranStar (real-time traffic surveillance system through Houston TranStar), and portable emission measurement systems. ITRI has conducted research projects for Federal Highway Administration (FHWA), National Science Foundation (NSF), National Institute of Standards and Technologies (NIST), Air Force Research Laboratory (AFRL), Texas Department of Transportation (TxDOT), Houston Advanced Research Center (HARC), Southwest Region University Transportation Center (SWUTC), and other public and private entities. Beginning 2012, ITRI cosponsors a Joint Maritime and Trans-LIVE Summer Transportation Academy (STA) program together with Port of Houston Authority (PHA) for high school junior and senior students to promote their interests in transportation studies. In 2013, ITRI launched a K-12th grade educational outreach by implementing a transportation and environmental curriculum for primary and secondary schools in the Houston area.
GOALS: To provide an interdisciplinary cadre of professionals that serve as a focal point to advance the transportation industry and add to the body of knowledge through research. Also, provide an experiential laboratory for students facilitating critical exploration and subsequent dialog about transportation issues.

TASKS: Active projects in bus route structuring and bus rapid transit, high speed and intercity rail, transit-oriented development and land use planning, emergency evacuation and security, transportation policy, intelligent transportation systems including automated and connected vehicles, freight and logistics, and sustainable transportation initiatives. Research results in state-of-the-art knowledge and projects at the forefront of the transportation field. Of note is the Petrochemical Incident Location System -- PILS, an interactive web-based tool, providing the database of reported hazardous incidents on a GIS platform.

CTTR has developed a broad-based expertise in public participation and marketing techniques for transportation career training; findings exist on various aspects of public transit usage, demographic and attitudinal studies. CTTR examines interrelationships between public transportation and social, economic, and physical environments. Research outcomes are disseminated through conferences, symposia, and workshops; journal publications, published reports, books and a periodic newsletter (Transcript). The center maintains liaison with urban community organizations and agencies throughout the nation. Center researchers have established close ties between secondary education and the transportation workforce. Part of this effort is TSU’s designation as a host site for the National Summer Transportation Institute, which celebrated its 14th anniversary last year. Institutes have been held in Texas City, Beaumont, Port Arthur, as well as Houston. CTTR also established the Transportation Security Institute (TSI) Program for K-12 students, which was hosted last summer. Committed to remain on the forefront of transportation arena, a recent examined the deployment of solar-powered traffic control devices and evaluated the installation and maintenance costs of solar panels and LED retrofits versus traditional incandescent bulb installations. Using data gathered in Houston, Texas researchers found that retrofitting traditional incandescent bulbs to LED, while initially costly, will yield benefits in less than five years. And with the installation of solar panels, energy consumption would be pushed to virtually zero. Also, researchers are investigating critical questions about the aging population and driving safety. COLLABORATIONS: CTTR leads the TSU National Transportation Security Center of Excellence (NTSCOE), an initiative of the Department of Homeland Security. CTTR is a member of the Southwest Region University Transportation Center – a consortium with Texas A&M University and the University of Texas, the Hazards Center for Disasters at the University of North Carolina and the Severe Storm Center (SSPEED) with Rice University.
Profiles of Colleges/Schools
The College of Science and Engineering (COST) is dedicated to integrating sciences and contemporary technologies, through education, scholarly activities, and community service; meeting the needs of a diverse graduate and undergraduate student population while addressing critical urban issues within a global economy. The College offers 10 B.S. degrees, 5 M.S. degrees, and one interdisciplinary Ph.D. degree through 10 academic departments, Aviation Science and Technology, Biology, Chemistry, Computer Science, Engineering Technology, Environmental Science and Technology, Industrial Technology, Mathematics, Physics, and Transportation Studies.

The College is engaged in several areas of basic and applied research. Research activities in the college revolve around a number of Research Centers. These include the NASA Research Center for Biotechnology and Environmental Health (NASA/URC), the Center for Research on Complex Networks (CRCN), the Center for Transportation Training and Research (CTTR), the National Transportation Security Center of Excellence for Petro-Chemical Transportation (NTSCE-P), the Innovative Transportation Research Center (ITRC), the High Performance Computing Center (HPCC), and the Environmental Research and Technology Transfer Center (ERTTC). There also exist many stand alone research programs managed by individual faculty members.

The College has developed numerous laboratory facilities that support the faculty and students in their research endeavor, including Cell Signaling Research Lab, Enhanced Core Analytical Lab, MiniTranStar Lab, Full-Motion Driving Simulation Lab, Mobile Traffic Lab, Portable Emission Measurement System Lab, Full-Motion Flight Simulation Lab, Virtual and Remote Accessible Lab, Advanced Networking Lab, and IPTV and Multimedia Networking Lab. Some of the major equipment available on campus to our researchers and collaborators include a Preconcentrator System 7100 and Canister equipment, Agilient 6890 with MSD GC, Agilient 7500A ICP/MSD, Agilient Series 1100 HPLC/MSD, Dionex DX-600 Ion Chromatograph, FTIR Spectrometer, Centrifuges, Scintillation Counter, Differential Scanning Calorimeter, Tensile Strength Analyzer, Thermal gravimetric Analyzer, SEM as well as others too numerous to list.

The mission of the College of Education at Texas Southern University is "to provide competent career professionals for effective service in urban schools, utilizing research, collaboration, and application in seeking solutions to teaching, learning, and behavioral challenges facing urban populations". The College provides courses of study leading to academic degrees in four instructional departments.

The Department of Counselor Education prepares counselors, who value equity and equality, to meet the demands of a culturally and linguistically diverse clientele. Graduates are prepared for a wide range of positions, such as community/school counselors, counselor educators, advocates, consultants, and administrators.

The Mission of the Department of Curriculum and Instruction is to provide an education for pre-service teachers, post-baccalaureate teachers, educators and specialists that will enable them to assure a developmentally appropriate and equitable education for students from diverse populations. The Master of Education and Doctor of Education degree programs offer advanced studies for experienced educators.

The Department of Educational Administration & Foundations offers Masters’ and Doctoral degrees in Educational Administration. The mission is to prepare individuals who are competent and capable, and who possess a strong awareness of their responsibility to organize, lead and manage efficient and effective educational institutions.

The Department of Health and Kinesiology prepares majors in both Health and Human Performance and serves the general needs of fitness and skill development for the general student body. The department's mission is to prepare students as competent teachers, leaders, researchers, behavioral scientists and health administrators who are able to serve urban and non-urban populations.

Three broad categories frame the research activity in the College of Education. These include Student Achievement, Professional Development and Leadership. Specific research areas include adult learning styles, homeless students, retention and graduation patterns, especially in STEM fields, significance of HBCUs, critical race theory, licensure examination passage rates, American Muslims at HBCUs, reducing HIV stigma, and exercise programs for seniors.
Thurgood Marshall School of Law

The mission of the Thurgood Marshall School of Law is to expand opportunities for the underserved in the legal profession; prepare a diverse group of students for leadership roles in the legal profession, business and government; and offer leadership in teaching, research, and service. Since 1947, Thurgood Marshall School of Law has been a catalyst for initiating courageous conversations and a progenitor of equality, diversity, and opportunity. As a community of change agents, our law school community has empowered the disenfranchised and underserved by preparing lawyers to practice law and to shape social policy. With this empowered heritage, our highly diverse law school faculty is a community of internationally and nationally recognized scholars whose legal scholarship enriches, embraces, and celebrates an array of legal issues in energy, legal pedagogy, health care, and the U.S. Constitution, among others. Thurgood Marshall School of Law’s primary degree offering is the Juris Doctor (J.D.). The law school’s Immigration and International Law Institute also offers a certification in International and Immigration Law. Moreover, the law school’s Earl Carl Institute for Urban and Social Policy provides students the opportunity to research various social policies in conjunction with their law studies. TMSL also offers a joint J.D.-M.B.A. degree in conjunction with TSU’s Jesse H. Jones School of Business as well as a joint J.D.-M.P.A. degree from the university’s Jordan-Leland School of Public Affairs.

Barbara Jordan - Mickey Leland School of Public Affairs

The Barbara Jordan - Mickey Leland School of Public Affairs (BJ-ML SOPA) was originally established in 1974 and reestablished in 2002 as a cornerstone to fulfilling Texas Southern University's special purpose mission as an institution of higher education for urban programming. The school offers degrees in Administration of Justice, Public Affairs/Public Administration, Political Science, and Urban Planning and Environmental Policy. The mission of the Barbara Jordan-Mickey Leland School of Public Affairs is to educate a new generation of global change agents committed to addressing and offering solutions to the global urban challenges of the 21st century. To fulfill this mission the faculty of BJ-ML SOPA is actively engaged in theoretical and practical research in our degree granting areas. To support this research the school has established the Barbara Jordan Institute (BJI) which assist its faculty and other scholars efforts to create, enhance, and expand intellectual capital in America and globally. An academic journal will be published by BJ-ML SOPA through the BJI as a part of its commitment to academic achievement and the intellectual pursuit of knowledge.

The School of Communications

“Believe in the dream and create the opportunity”

The mission of the School of Communication, which includes the Center for Professional Media Studies, is to educate professionals to a high level of excellence in the disciplines of mass and human communication. Ranging from human communicative interaction to digitally driven mass communication. The unique and rich history of Texas Southern University, and the individual and collective perspectives of its students, allows the school to prepare and position its graduates for leadership in communications industries throughout the state, nation and world. The Center for Professional Media Studies is home to the 35 year-old plus radio station KTSU-FM, a state-of-the-art radio station. The School of Communication also houses a multi-million dollar cable television production and broadcast facility, production and laboratory facilities for print media. The School is committed to an interdisciplinary academic experience dedicated to the development of leaders and skilled practitioners in the several disciplines of human and mass communication. The vision of the School is to foster a collegial community of faculty, staff and students who collectively and individually strive for leadership in the fields of communication, scholarship, education, and information services. We work to develop and evaluate programs that foster students’ ethical, social, professional, and intellectual development in the communications fields. While nurturing students’ capacities to think skillfully, and critically, we also strive to deepen their commitment to social values such as kindness, helpfulness, personal responsibility, and respect for others. We believe these qualities are essential to leading humane and productive lives in a democratic society.
The TSU College of Pharmacy and Health Sciences (COPHS) plays an integral role in providing the health profession industry manpower for the city of Houston, the State of Texas and the nation. The mission of the COPHS is to produce quality health care professionals, especially African-Americans and other ethnic minorities, who are competent in health care delivery, including the provision of patient-centered care and other health care services and programs.

The School of Pharmacy was established in 1949 and graduated its first class consisting of 13 students in 1952. For over 60 years, the College has distinguished itself by graduating 27% of the Black pharmacists practicing nationwide and 55% of Black pharmacists currently practicing in Texas. The college has also produced an impressive list of graduates from diverse racial and ethnic backgrounds. TSU through the College of Pharmacy and Health Sciences is the 42nd member institution of the Texas Medical Center (TMC) and has expanded its programs to a 30,000 square foot facility located on the TMC John P. McGovern campus, only eight minutes from the TSU main campus.

The mission of the COPHS is to produce quality health care professionals, especially African-Americans and other ethnic minorities, who are competent in health care delivery, including the provision of patient-centered care and other health care services and programs. In fulfilling its purpose, the College is committed to providing an innovative, productive and receptive learning environment for research and scholarly activities and services; and developing cross disciplinary programs to reduce health disparities among minority and other disadvantaged populations.

In Fall Semester 2009, the College had an enrollment of over 1,500 pre-professional and professional students. Notably, the COPHS is the only academic college in the state to offer the doctor of pharmacy (PharmD) degree and five health sciences programs leading to bachelor of science degrees in environmental health, health administration, health information management, clinical laboratory sciences and respiratory therapy. Currently, the TSU environmental health program is the only National Environmental Health Science and Protection Accreditation Council (EHAC) accredited program in Texas. The college also offers graduate programs leading to a MS degree in health care administration and MS and PhD degrees in pharmaceutical sciences.

The instructional and research objectives for the COPHS are achieved by 48 full-time and 14 part-time faculty. The COPHS also benefits from the instructional efforts of a large cadre of voluntary faculty and preceptors.

The research programs in the College are anchored by the RCMI Institute for Biomedical and Health Disparities Research; the NHLBI Center for Cardiovascular Diseases and the NCMDH Center of Excellence in Health Disparities Research- Community Cardiovascular Disease and Stroke. Areas of research of particular interest to the college include asthma, atherosclerosis, cancer, hypertension, neurotoxicology, novel drug delivery systems, pharmacokinetics, renal disease and stroke.

The following is a list of academic program accreditations and a certification: BS Clinical Laboratory Science (National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)) ▪ BS Environmental Health (National Environmental Health Science and Protection Accreditation Council (EHAC)) ▪ BS Health Information Management (Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM))

**Jesse H. Jones School of Business**

Half a century following its establishment, the Jesse H. Jones School of Business (JHJ) at Texas Southern University (TSU) continues to make history as the first Historically Black College and University business school to receive accreditation in 1967, and the fastest-growing school within TSU with approximately 1,900 students. Since its inception, JHJ has produced leaders and learners who have helped shape communities, cities, states, and nations around the world.

In recognizing the demands that leadership imposes on managers and the special challenges that face our students, the School of Business emphasizes the development of self-confidence, poise, and communication skills. Our commitment is not just jobs for our graduates, but providing them a foundation for life-long leadership.

That foundation begins with our building, which is the showpiece of the Texas Southern University campus. The 78,000 square foot building on three floors, features 23 classrooms, as well as complete facilities for the Department of Business Administration, Department of Accounting, Gerald B. Smith Center for Entrepreneurship and Executive Development, Economic Development Center, Center for Economic Education, Business Student Services, Career Services Center, and an Administrative Suite. All classrooms are state-of-the-art, including the latest in multimedia, and networked to allow links to a vast number of capabilities such as distance learning.

The building is a learning teaching environment that simulates the corporate environment. In addition, this facility enhances the community by having space such as the 75-seat Lecture Hall that is utilized for community functions. The building strongly reinforces the mission of the Jesse H. Jones School of Business, which is “to provide the professional education essential to those who aspire to positions of responsibility in business, government and community service”.

The concept of the building as a first-class facility is carried through all areas, from the 200-seat auditorium with its cherry wood paneling, to the two Executive Classrooms designed to meet the needs of Houston’s business community or the busy executive pursuing an MBA. The Jesse H. Jones School of Business projects a business ambiance, combined with the capability to implement current and emerging technologies.
THOMAS F. FREEMAN HONORS COLLEGE

The program in the Thomas F. Freeman Honors College includes elements that ensure that scholars develop and apply research perspectives and skills that prepare them for their lives as citizens and leaders in their local, national, and world communities in the age of the global. At the center of that preparation is a background in the liberal arts and sciences that students need to develop in order to understand the universe. They secure that background in their general education (university core) courses, courses on the three major themes in the College (the Interdisciplinary, Ethics/Aesthetics/Philosophy, and Local/National/Global, themes), and a computer skills course. In HON 101, Multidimensional Phenomena and Interdisciplinary Studies, students clarify aspects of, and examine imperatives in, their majors. In HON 202, Ethics, Aesthetics and Philosophy in the Age of the Global, they study ideals that guide understanding, judgment and practice in the imperatives. In HON 203, Relationships Among the Local, National and Global, they place the imperatives within such contexts as local, national and global communities. In HON 207, Computer Use in Research, Presentations and Multimedia, they develop the skills applicable in conducting research, preparing reports and presentations, and preparing and publishing electronic portfolios. In at least two courses in general education, two upper-level courses within their majors, and one approved upper-level course outside their majors, students apply the themes, and if possible, the skills. They ideally would do so in ways that enhance their understandings of the imperatives. Students also must complete a terminating course in which they apply their education. This course may be an internship, or a research or creative or professional project, in which they focus on one of the imperatives they will have studied in earlier courses. They will receive guidance from faculty members (for the projects) or from faculty members and site supervisors (for the internships). One result of this course will be a special document that follows the conventions of the research report. In addressing the imperative in the internship or project and the related document, students will meet the following requirements: they will identify its local or proximate, regional or national, and global, aspects; they will apply qualitative and quantitative methods; they will integrate insights from at least three disciplines; they will apply at least one ethical, aesthetic or philosophical principle in clarifying the objective(s), describing the methodology, and discussing the implications. Thus they will apply the range of insights and research skills they will have acquired in the College and University. During their programs of study, students in the Honors College will make presentations to College, University and external audiences, who will offer them feedback on their work on the imperatives. The College plans to give special awards to students who produce exemplary internship reports or research/creative/professional project reports. The College also plans to compile these reports into special collections, and to publish their highlights. Through the terminating course, students will develop insights and skills they will use as they pursue further education and as they develop and implement new ideas in the work place. In addition, in the Honors College program that culminates in the terminating course, students will develop the habit of acquiring sound knowledge over extended periods in preparation for making critical differences as members of their local, national or global communities.

COLLEGE OF LIBERAL ARTS AND BEHAVIORAL SCIENCES

The College of Liberal Arts and Behavioral Sciences is the most diversified instructional unit at the University. Its aim is to educate every individual to live more knowledgably, responsibly and humanely. In an effort to have highly employable graduates, the College seeks to provide the knowledge and understanding necessary for its majors to perform successfully in their specific discipline, as well as in education, mass communications, politics, the international areas and the performing arts. The College of Liberal Arts and Behavioral Sciences is composed of the departments of English, Fine Arts, Foreign Languages, History, Geography and Economics, Human Services and Consumer Sciences, Psychology, Social Work, and Sociology. Through general and specialized courses and programs, the College endeavors to acquaint students with the scope, knowledge, and methods of the humanities, arts, communications, and social and behavioral sciences. The College prepares students at the pre-professional level for further study in the professional schools within the University with academic majors, minors, interdisciplinary programs, and course sequences. Above all, it seeks to stimulate and develop intellectual curiosity, research skills, and imaginative creativity in the students and in the various other constituents of the University community. The College strives to enrich the cultural atmosphere of the University by providing lectures, concerts, theatrical production, and art exhibits. The College of Liberal Arts and Behavioral Sciences offers sixteen baccalaureate degrees and seven master degrees: Bachelor of Arts in English, Bachelor of Arts in French, Bachelor of Arts in Spanish, Bachelor of Arts in Art, Bachelor of Arts in Music, Bachelor of Arts in Theater, Bachelor of Arts in History, Bachelor of Arts in Economics, Bachelor of Arts in General Studies, Bachelor of Science in Dietetics, Bachelor of Science in Human Service and Consumer Sciences, Bachelor of Arts in Psychology, Bachelor of Arts in Social Work, and Bachelor of Arts in Sociology. Graduate Degree offerings include Master of Arts in English, Master of Fine Arts in Music, Master of Arts in History, Master of Science in Human Services and Consumer Sciences, Master of Arts in Psychology and Master of Arts in Sociology. Aiding the above departments in providing specialized training in selective areas of knowledge is the College Research Center. The mission of the Research Center is to stimulate, produce and enhance research in respective disciplines within the College. Given the capabilities within the College, the focus of the Center is on, but not limited to, the study of African Americans. The capabilities are as follow: African American History, African History, African American and African Art, African American Literature, Slavery and Religion History, Latin American History, Women History, Race Riots, Afro-Texan History, European History, Jazz, Music Composition and Percussion, American Literature, Foods and Nutrition, Drug and Substance Abuse, Micro and Macro Economics, and Family and Domestic Violence. The Ronald E. McNair Program is also housed in the College within the Department of Human Services and Consumer Sciences under the direction of Dr. Shirley Nealy. The purpose of this program is to provide support services to facilitate the entry of an increased number of first generation and/or low-income students into graduate and terminal degree academic programs. To advance the research goals of the college as well as the university, research and/or graduate faculty have been given a reduced workload.
## Seed Grant Awards 2014 - 2015

<table>
<thead>
<tr>
<th>Primary Investigator</th>
<th>Title of Research Topic</th>
<th>Award Amount</th>
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<tr>
<td><strong>College of Liberal Arts and Behavioral Sciences</strong></td>
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<tr>
<td>Judith Anglin</td>
<td>The Effects of Nutritional Status on APOLI Gene Variants Expression</td>
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<td><strong>College of Science and Technology</strong></td>
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<td>Yunjiao Wang</td>
<td>Relations Between Boolean Network Systems and Coupled ODE Systems</td>
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<td><strong>College of Pharmacy and Health Sciences</strong></td>
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<td>Uche Anadu Ndefo</td>
<td>The Use of Academic Detailing to Decrease Prescription Drug Costs</td>
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<td>Sunny Ohia</td>
<td>HydrogenSulfide: New Therapeutic Target for Intraocular Pressure Lowering</td>
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<td>Antoinette S. Christophe</td>
<td>The Impact of High Reliability Organizational Performance on Levels of Commercial Mobile Alert Service (CMAS)/ Wireless Emergency Alerts (WEA) and Strategic Transit System Planning in Disaster Mitigation and Response Efforts</td>
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<td><strong>Jesse H. Jones School of Business</strong></td>
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<td>Joseph Boyd</td>
<td>Study of Impact of an Incentive Based Carbon Tax System to Reduce Carbon Emmissions from Fossil-Fired Power Plants in Texas</td>
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<td>C.B. Claiburne</td>
<td>Facilitating Future Thinking, Critical Thinking and Ethical Decision Making Using Hybrid Learning Multitouch Tablet Technology</td>
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<td><strong>Rod Paige College of Education</strong></td>
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<td>Yoruba Mutakabbir</td>
<td>Hispanic Students' College Preference and Knowledge of HBCU's</td>
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<td><strong>Total</strong></td>
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## Research Travel Grant Award Recipients 2015

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<th>TITLE OF GRANT/PRESENTATION</th>
<th>AMOUNT</th>
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<tr>
<td>Selvam Chelliah</td>
<td>Performance of Structure Based and Ligand Based Virtual Screening Methods for ten selected Anticancer Targets</td>
<td>$1,548.00</td>
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<td>Lily Cheung</td>
<td>Outcomes of Metformin Use with Gastric Bypass Surgery</td>
<td>$1,499.12</td>
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<td>Jeffrey Lowe</td>
<td>Community Land Trusts and Third Ward Texas</td>
<td>$1,200.00</td>
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<tr>
<td>Trushna Parekh</td>
<td>Coming Home to Treme? Black Gentrification in Treme, New Orleans</td>
<td>$1,525.70</td>
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<td>Haiqing Sun</td>
<td>Women Filmmakers’ Exploration of Afro-Cuban Culture</td>
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<td>Momoh Yakubu</td>
<td>“Cerebral Hypoperfusion and Cerebrovascular Protein Alterations Induced by diabetes”</td>
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<td>Momoh Yakubu</td>
<td>2015 Experimental Biology Meeting</td>
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<td><strong>TOTAL</strong></td>
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