

ANNUAL RESEARCH SYMPOSIUM

April 6, 2017



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Organizing Committee

Anil Chourasia

(Physics & Astronomy, Anil.Chourasia@tamuc.edu, Ext. 5491)

Derald Harp

(Agricultural Sciences, Derald.Harp@tamuc.edu, Ext. 5329)

PROGRAM

Session S1 (KDM Science Building, S-127)	12:00 PM -- 1:12 PM
Session S2 (KDM Science Building, S-123)	12:00 PM -- 1:12 PM
POSTER SESSION	1:00 PM -- 2:30 PM
Session S3 (KDM Science Building, S-127)	2:30 PM -- 3:42 PM
Session S4 (KDM Science Building, S-123)	2:30 PM -- 3:42 PM
Keynote Talk, Awards Dinner, and Presentation of Awards (BA Room 343)	6:00 PM -- 8:00 PM

SESSION S1

Room: KDM Science Building, S-127

Chair: *Dr. Stephen Starnes*
Department of Chemistry

- | | | |
|----------|------|--|
| 12:00 PM | S1.1 | Students' Perceptions of Accounting Ph.D. Prep Programs in the Texas A&M University System
<u>Kyria Aho</u> , Virginia Fullwood, and Opara Michael
<i>Department: Accounting</i>
<u>Undergraduate</u> (College: Business) |
| 12:12 PM | S1.2 | An Empirical Investigation of the Relationship Between Coupons and Market Shares of National Brand and Private Label Food Products
<u>Artak Meloyan</u> and Rafael Bakhtavoryan
<i>School of Agriculture</i>
<u>Graduate</u> (College: School of Agriculture) |
| 12:24 PM | S1.3 | A Qualitative Phenomenological Study of North Texas Female Superintendent's Perception of Leadership Styles, Qualities, and Career Path to the Superintendency
<u>Deana Steeber</u> and Warren Ortloff
<i>Department: Educational Leadership</i>
<u>Graduate</u> (College: Education and Human Services) |
| 12:36 PM | S1.4 | A&M Commerce Alumni Survey
<u>Susmita Bashir</u> , Dan Su, and Shonda Gibson
<i>Department: Institutional Effectiveness and Research</i>
<u>Graduate</u> (College: Business) |
| 12:48 PM | S1.5 | Study of Cu/Hf Interface by X-ray Photoelectron Spectroscopy
<u>Justin Seth Pearson</u> and A. R. Chourasia
<i>Department: Physics and Astronomy</i>
<u>Graduate</u> (College: Science and Engineering) |
| 1:00 PM | S1.6 | Algebra I interventions in Mathematics and Special Education: A metasynthesis
<u>Rebecca Dibbs</u> , Brittany Hott, Cameron Carter, Daniel Rios, Taylor Kline, Campbell Reid, and Meghann Holt
<i>Department: Mathematics</i>
<u>Faculty</u> (College: Science and Engineering) |

SESSION S2

Room: KDM Science Building, S-123

Chair: *Dr. Doug LaVergne
School of Agriculture*

- 12:00 PM S2.1 **Measuring the Quality of Higher Education**
Calier Stinson, *Melissa Crews, Mary Cheek, Natalia Assis, and Shonda Gibson*
Department: Marketing and Business Analytics
Undergraduate (College: Business)
- 12:12 PM S2.2 **Comparison of Large Deviation Inequalities for Markov Chains**
Michelle Rosenbaum and *Thomas Boucher*
Department: Mathematics
Graduate (College: Science and Engineering)
- 12:24 PM S2.3 **On Campus, Online and Off-site Students' Attitudes towards University**
Natalia Assis, *Stephen Reysen, Shonda Gibson, and LaVelle Hendricks*
Department: Psychology, Counseling, and Special Education and Institutional Effectiveness and Research
Graduate (College: Education and Human Services)
- 12:36 PM S2.4 **Cohort Comparison: An Assessment of Incoming Freshmen Global Competence**
Olatundun Modile, *Jennifer Hudson, Shonda Gibson*
Department: Marketing and Business Analytics and Quality Enhancement Plan (Institutional Effectiveness and Research)
Graduate (College: Business)
- 12:48 PM S2.5 **Inference of the Integrative Gene Regulatory Network Using Multi-omics Data**
Neda Zarayeneh and *Sang Suh*
Department: Computer Science
Graduate (College: Science and Engineering)
- 1:00 PM S2.6 **Using Multiple Linear Regression Modeling to Predict Students' Success**
Hari Priya Mamilla, *Dan Su, Shonda Gibson and Chris Warner*
Department: Institutional Effectiveness and Research
Graduate (College: Education and Human Services)

SESSION S3

Room: KDM Science Building, S-127

Chair: *Dr. Brittany L. Hott*
Department of Psychology, Counseling, and Special Education

2:30 PM S3.1 **Role of Reactive Oxygen Species in Post-Traumatic Stress Disorder (PTSD) in Zebrafish**

Bernadette Johnson, Madeleine Morris, and Venu Cheriya
Department: Biological and Environmental Sciences
Undergraduate (College: Science and Engineering)

2:42 PM S3.2 **U. S. Demand for Fresh Fruit Imports**

Hovhannes Mnatsakanyan, Jose A. Lopez, and
Rafael Bakhtavoryan
School of Agriculture
Graduate (School of Agriculture)

2:54 PM S3.3 **Into the Foggy Dew: The Great War, the Easter Rising, and Irish Masculinity**

Nick Sprenger and Sharon Kowalsky
Department: History
Graduate (College: Humanities, Social Sciences, and Arts)

3:06 PM S3.4 **Influence of Global Travel on Students' Global Competence**

Angad Bhalla, Jennifer Hudson, and Shonda Gibson
Department: Marketing and Business Analytics and Quality Enhancement Plan (Institutional Effectiveness and Research)
Graduate (College: Business)

3:18 PM S3.5 **Creating a Culture of Continuous Improvement on a University Campus Through Professional Development Opportunities Covering Institutional Effectiveness Topics**

Melissa Crews and Shonda Gibson
Department: Higher Education and Learning Technologies
Graduate (College: Education and Human Services)

3:30 PM S3.6 **The Effectiveness of Computer guided Programs and the State of Texas Assessments of Academic Readiness**

Marcus Ysasi and Chuck Holt
Department: Educational Leadership
Graduate (College: Education and Human Services)

SESSION S4

Room: KDM Science Building, S-123

Chair: *Dr. Sojung Kim*
Department of Engineering and Technology

- | | | |
|---------|------|---|
| 2:30 PM | S4.1 | The Professional Development Needs of Rural East Texas Algebra Teachers
<u>Campbell Reid</u> , Daniel Rios, Taylor Kline, Amelia Martin, Meghann Holt, and Ricky Gaji
<i>Department: Psychology, Counseling, and Special Education</i>
<u>Undergraduate</u> (College: Education and Human Services) |
| 2:42 PM | S4.2 | The Neutralization of the Work Sphere: Women and World War I Propaganda
<u>Elaina Friar Moyer</u>
<i>Department: History</i>
<u>Graduate</u> (College: Humanities, Social Sciences and Arts) |
| 2:54 PM | S4.3 | Predictive Analytics in Higher Education
<u>Tejaswini Roogi Srimanth</u> , Carlos Rivers, and Shonda Gibson
<i>Department: Competency Based Education</i>
<u>Graduate</u> (College: Business) |
| 3:06 PM | S4.4 | A Phenomenological Study Describing the Role of Learning Liaisons on Secondary Campuses
<u>Karen Woodworth</u> and Deborah Goodwin
<i>Department: Educational Leadership</i>
<u>Graduate</u> (College: Education and Human Services) |
| 3:18 PM | S4.5 | An Evaluation of Three PSAT Prep Programs in a Large Metropolitan District
<u>James L. Sellers</u> and Deborah Goodwin
<i>Department: Educational Administration</i>
<u>Graduate</u> (College: Education and Human Services) |
| 3:30 PM | S4.6 | Cattle Trade Flows in Texas and Foot and Mouth Disease
<u>Emilee Peterson</u> , Osli Ogunc, and Frannie Miller
<i>Department: Economics and Finance</i>
<u>Undergraduate</u> (College: Business) |

POSTER PRESENTATIONS

KDM Science Building Foyer (1:00 PM -- 2:30 PM)

- P1. A Novel Role for Agouti Gene in Stress**
Harmanpreet Kaur, Karthika Venugopalan, Israel Chavarri,
Anne Davenport, and Venu Cheriya
Department: Biological and Environmental Sciences
Undergraduate (College: Science and Engineering)
- P2. The Soul of an Organization: Measuring Factors**
Israel Garcia Jacinto and Warren Ortloff
Department: Educational Leadership
Graduate (College: Education and Human Services)
- P3. Customer Retention Strategies based on Multichannel Consumer Behaviour Analysis**
Vivek Vardhan Vandrangi, Yuying Shi, and Chris Myers
Department: Marketing and Business Analytics
Graduate (College: Business)
- P4. The Challenges of Instructional Coaching on a Bilingual Campus**
Laura Adirana Mejia and Julia Ballenger
Department: Educational Leadership
Graduate (College: Education and Human Services)
- P5. Cytokine Independent Abnormal Proliferation and Differentiation of AML Cells**
Madeleine Morris, Sirisha Chakrapalli, and Venu Cheriya
Department: Biological and Environmental Sciences
Undergraduate (College: Science and Engineering)
- P6. Performance-Based Pay and Collective Teacher Efficacy**
Aimee Cherry and Chuck Holt
Department: Educational Leadership
Graduate (College: Education and Human Services)
- P7. TAMUC Alumni GPS**
Vidhi Goti, Satya Dev Garikapati, and Frannie Miller
Department: Economics and Finance
Graduate (College: Business)

- P8. Effects of BPA on Cancer Development during Pre- and Post-pubertal Exposure**
Bernadette Peltier and Venu Cheriya
Department: Biology and Environmental Sciences
Undergraduate (College: Science and Engineering)
- P9. Tracking Educational Administration Doctoral Enrollment by Academic Year**
Ancy Thomas and Chuck Holt
Department: Educational Leadership
Graduate (College: Education and Human Services)
- P10. Career and Technical Education Administrator Preparation in the State of Texas**
Candace McGowan and Deborah Goodwin
Department: Educational Leadership
Graduate (College: Education and Human Services)
- P11. Cadherin Mediated Homotypic Cell–Cell Interaction Confers Cytokine Independent Growth and Proliferation Of AML Cells**
Sirisha Chakkapalli, Madeleine Morris, Zahra Barati, and Venu Cheriya
Department: Biological and Environmental Sciences
Graduate (College: Science and Engineering)
- P12. Enantioselective Recognition of Chiral Porphyrins Diamino-1, 1-Binaphthalene Hybrids**
Sulihat Mudasiru and Stephen Starnes
Department: Chemistry
Graduate (College: Science and Engineering)
- P13. Investigation of the Selected Transition Metal Binding Characteristics of Methanobactin from *Methylosinus trichosporium* OB3b**
Jacob W. McCabe, Rajpal Vangala, and Laurence A. Angel
Department: Chemistry
Graduate (College: Science and Engineering)
- P14. Board of Directors and School Administrators: Factors affecting the dynamics of a working relationship in Islamic schools**
Madiha Talat and Warren Ortloff
Department: Educational Leadership
Graduate (College: Education and Human Services)
- P15. Neuroendocrine Disruption by Ethinyl Estradiol and Bisphenol-A in Male Zebrafish**
Taelah Wooten and Izhar Khan,
Department: Biological and Environmental Sciences
Graduate (College: Science and Engineering)

- P16. Sodium Carbonate as a Catalyst for the Formation of Bio-Oil from *Chlorella vulgaris***
Jonathan Flores, Ever Rodriguez, Nicole Humphries, Sam Kaiser, Francisco Rogers, and Ben W. Jang
 Department: Chemistry
Undergraduate (College: Science and Engineering)
- P17. Zn(II) and Cu(I/II) Co-ordination to alternative Metal Binding Peptide using Ion Mobility – Mass Spectrometry and Fluorescence Spectroscopy Techniques**
Swetha Chinthala and Laurence A. Angel
 Department: Chemistry
Graduate (College: Science and Engineering)
- P18. Teacher Perceptions and Attitudes about Inclusion for Students with Disabilities**
Sheri Campbell-Kaiser and Jackie Ray Thompson
 Department: Educational Leadership
Graduate (College: Education and Human Services)
- P19. GRIP: A Novel Functional Genomics Platform to Identify Tamoxifen Resistant Genes in Breast Cancer cells**
Zahra Bartai, Sirisha Chakkappali, and Venu Cheriya
 Department: Biological and Environmental Sciences
Graduate (College: Science and Engineering)
- P20. Teacher**
Clark A. Lowery Jr. and Ray Thompson
 Department: Educational Leadership
Graduate (College: Education and Human Services)
- P21. A Phenomenological Qualitative Study Describing Principal Leadership Practices that Build Instructional Leadership Capacity in Assistant Principals**
Tiffanie N. King and Warren Ortloff
 Department: Educational Leadership
Graduate (College: Education and Human Services)
- P22. Mesoporous Catalyst For The Synthesis Of Biodiesel**
Mohammed Irfan Zakir Omer and Ben Jang
 Department: Chemistry
Graduate (College: Science and Engineering)

- P23. Alumina supported Palladium catalyst for Liquid-phase Semi-hydrogenation of Alkynes**
Syed Shah Abdullah Hussaini, Ben Jang, and Bukuo Ni
Department: Chemistry
Graduate (College: Science and Engineering)
- P24. G1P3 promotes Breast Cancer Metastasis by increasing Aveolae Mediated Endocytosis of E-Cadherin**
Nobel Chowdhury, Jason Mccullough, and Venu Cheriya
Department: Biological and Environmental Sciences
Graduate (College: Science and Engineering)
- P25. Protein Kinase C Mediated Histone H3K27 Tri-methylation augments Breast Cancer Cell Metastasis**
Anna Bowsher and Venu Cheriya
Department: Biological and Environmental Sciences
Graduate (College: Science and Engineering)
- P26. A Data-Driven Analysis of Rate-My-Professor' Student Reviews on Universities**
Gunaseelan Tamilchezhian, Jinoh Kim, and Truong-Huy Nguyen
Department: Computer Science
Graduate (College: Science and Engineering)
- P27. The Challenges Aspiring African American Women Principals Experience in Attaining and Meeting the Demands of the Principalship**
Amanda Turner McCarther and Warren Ortloff
Department: Educational Leadership
Graduate (College: Education and Human Services)
- P28. Repeated Predator Stress Impairs Working Memory and Induces Neuroinflammation**
Ami Bhakta, Param, Karthik, Euitaek, and Kodeeswaran Parameshwaran
Department: Biological and Environmental Sciences
Graduate (College: Science and Engineering)
- P29. High Surface Area Palladium Catalysts, for the Selective Hydrogenation of Diphenylacetylene**
Kenneth J. MacKenzie, Jessica Velazquez, Syed S. A. Hussaini, Bukuo Ni and Ben Jang
Department: Chemistry
Graduate (College: Science and Engineering)

P30. Isolation of a Pyrimidine Biosynthetic Pathway Mutant in *Pseudomonas monteilii*

Jayendra Chunduru and Thomas P. West

Department: Chemistry

Graduate (College: Science and Engineering)

P31. G1P3, a Mitochondrial Anti-apoptotic Protein Regulates Neuronal Cell Spreading and Differentiation

Anne Davenport, Harman Kaur, Joseph Fisher, and Venu Cheriyaath

Department: Biological and Environmental Sciences

Graduate (College: Science and Engineering)

P32. Co-precipitation synthesis of palladium and cerium solid solution as efficient catalysts for selective hydrogenation of acetylene in ethylene

Seunga Kim and Ben W. L. Jang

Department: Chemistry

Graduate (College: Science and Engineering)

P33. Developmental Nicotine Exposure Impairs Hippocampus Dependent Memory and Cholinergic Function in Mice

Kartheek Gavini, Euitaek Yang, Ami Bhakta, and Kodeeswaran

Parameshwaran

Department: Biological and Environmental Sciences

Undergraduate (College: Science and Engineering)

Keynote Talk

Room: BA 343

Time: 6 PM

Chair: Mr. Joseph Doke

Organic semiconductors for solar cell and display applications

Dr. Heungman Park
Department of Physics & Astronomy

For the past several decades, inorganic semiconductors such as silicon have been the key materials in electronic devices. During the last decade organic materials have been vigorously studied for their potential applications in next generation optoelectronic devices such as OLED (organic light emitting diode) and solar cells. They have many advantages over inorganic materials. Most organic semiconductors are less expensive, flexible and versatile. However their material properties are still not well-understood compared to inorganic materials. In this presentation, the basic material properties of both organic and inorganic semiconductors, and the working principles of OLED and solar cell devices will be reviewed. The research projects of the organic semiconductor physics lab at TAMU-Commerce will be also introduced.

ABSTRACTS

Students' Perceptions of Accounting Ph.D. Prep Programs in the Texas A&M University System

Kyria Aho

Advisor: Dr. Virginia Fullwood

Co-Advisor: Dr. Opara Michael

Department: Accounting

College: Business

Category: Undergraduate

The shortage of Ph.D. holders in accounting has been documented extensively by various professional accounting bodies like the AICPA (American Institute of Certified Public Accountants) and the AAA (American Accounting Association). However, there is limited knowledge regarding the feasibility of proposed recommendations of the AICPA and AAA on how to solve the problem. One of their recommendations was that schools without Ph.D. programs and with large master's programs could emulate the very successful accounting Ph.D. prep program offered at Brigham Young University (BYU). Since BYU is the only university offering such program now, any school that follows suit will gain a comparative advantage over its counterparts. Nevertheless, the establishment of any program on campus is time consuming and cost intensive. Hence, the need for this research. The goal is to assess students' perceptions of accounting Ph.D. prep programs in the Texas A&M University system. This would allow the participating universities to make an informed decision regarding the establishment of an accounting Ph.D. prep program. These schools would know how many students are interested and willing to enroll in the program if it is offered. This data is crucial in completing the cost and benefit analysis of implementing the AICPA and AAA recommendation.

S1.2

An Empirical Investigation of the Relationship between Coupons and Market Shares of National Brand and Private Label Food Products

Artak Meloyan

Advisor: Dr. Rafael Bakhtavoryan

College: School of Agriculture

Category: Graduate

No other form of promotional tools can substitute coupons in promotional campaigns. Due to their unique dual impact (price discount and informational stimulant) on consumption, coupons are widely used by different manufacturers and stores. However, to the best of our knowledge, no prior research has been done regarding the analysis of the impact of coupons on market shares of national brand and private label food products. To fill this void, the goal of this study was to examine the relationship between coupons and market shares in the context of national brand and private label food products by estimating the Almost Ideal Demand System model and using the Nielsen Homescan panel data on household purchases of ready-to-eat cereal, yogurt, and spaghetti sauce from January of 2012 through December of 2014.

Estimation results revealed a significant relationship between coupon values and market shares of the food product brands considered. However, the effects of coupon values on the market shares were varied for national brands and private labels. In particular, with the exception of other brands of yogurt, for national brands, market share elasticities with respect to coupon values were positive, suggesting that market share of national brands increased with an increase in coupon values. For private label of cereal and spaghetti sauce, market share elasticities with respect to coupon values were negative, indicating that an increase in coupon values led to a decline in their market shares.

**A Qualitative Phenomenological Study of North Texas Female
Superintendent's Perception of Leadership Styles, Qualities,
and Career Path to the Superintendency**

Deana Steeber

Advisor: Dr. Warren Ortloff

Department: Educational Leadership

College: Education and Human Services

Category: Graduate

The superintendent serves as the CEO of a district. There is a large discrepancy between the number of females and males serving in the superintendency. While the majority of educators are women, this has not translated to an increase in female superintendents. This qualitative study uses a phenomenological approach to look at the perspectives of five north Texas female superintendents regarding their qualities, leadership styles, and career path.

Keywords: superintendent, career path, actual barriers, perceived barriers, phenomenology

A&M Commerce Alumni Survey

Susmita Bashir

Advisor: Dr. Dan Su and Dr. Shonda Gibson

Department: Institutional Effectiveness and Research

College: Business

Category: Graduate

A&M-Commerce Alumni Survey is conducted by the staff in the department of Institutional Effectiveness and Research. The study purports to collect information about A&M-Commerce alumni's perceptions of their previous academic experiences; current employment information since workforce data has become an important measure of students' success for institution education qualities. There are a total 18 questions addressed in the survey, including both quantitative and qualitative type of questions. Multiple choice, Likert-scale-point, ranking, and text entry questions are the major form for collecting data. The data collected from the survey is going to be used for institutional improvement purposes, program review, marketing, advancement, alumni relation. The designated alumni students from the university will be sent an email invitation to participate in an online survey via Qualtrics. Three questions (hypothesis) will be remarked in the study:

1. Students' sense of connection is positively correlated with their extra-curricular activities;
2. Students' sense of connection is positively correlated with their GPAs; and
3. Students' GPAs are positively correlated with their future income.

Current presentation is the procedures of the early stages of the study such as obtaining IRB certification, literature review, instrumentation validation.

Study of Cu/Hf Interface by X-ray Photoelectron Spectroscopy

Justin Seth Pearson

Advisor: Dr. A. R. Chourasia

Department: Physics and Astronomy

College: Science and Engineering

Category: Graduate

The Cu/Hf interface has been characterized by x-ray photoelectron spectroscopy. Thin films (thicknesses ranging from 100 nm to 150 nm) of hafnium were deposited on a silicon substrate. About 80 nm of copper was then deposited on such samples. The e-beam method was used for the deposition. The samples were annealed for 30 min at temperatures of 100, 200, 300, 400, and 500°C. The inter-diffusion of copper and hafnium was investigated by sequential sputter depth profiling and x-ray photoelectron spectroscopy. The interdiffusion in each case was analyzed by the Matano-Boltzmann's procedure using the Fick's second law. The interdiffusion coefficients and the width of the interface as determined from the data have been correlated with the annealing temperature.

S1.6

**Algebra I interventions in Mathematics and Special Education:
A metasynthesis**

Rebecca Dibbs

Coauthors: Brittany Hott, Cameron Carter, Daniel Rios, Taylor Kline, Campbell Reid, & Meghann Holt

Department: Mathematics

College: Science and Engineering

Category: Faculty

Access to, and completion of, a quality algebra course by 8th grade is positively linked with completion of higher-level mathematics courses, admission to college, and entry into STEM majors. Yet, only 8% of American students successfully complete algebra 1 by 9th grade. Therefore, it is important that interventions are in place to support all students' access to Algebra 1. The purpose of this qualitative meta-synthesis was to categorize the algebra intervention research in special education and mathematics education using meta-grounded theory. This talk will discuss the methodology and preliminary findings from the initial analysis.

Measuring the Quality of Higher Education

Calier Stinson

Advisor: Melissa Crews, Mary Cheek, and Dr. Shonda Gibson

Co-Author: Natalia Assis

Department: Marketing and Business Analytics

College: Business

Category: Undergraduate

Institutions of higher education measure the quality of education offered in order to ensure students are being taught the appropriate competencies for their respective fields of study. Two methods by which Texas A&M University-Commerce approaches the task of measuring the quality of education include: (1) meeting the university's regional accreditation body's institutional effectiveness requirements and; (2) applying for higher education quality awards such as the Texas Quality Awards. By assessing the quality and effectiveness of their educational environment, universities are able to demonstrate positive outcomes in student learning. A practical ramification of this ability to establish a quality standard includes receiving accreditation status, without which a university cannot award valid degrees or receive federal funding for financial aid (Southern Association of Colleges and Schools Commission on Colleges, 2017). Engaging in the application for a quality award further helps universities look at how organizational processes contribute to students' progress towards graduation, a key performance metric in the education industry (Quality Texas, 2017). This spring semester, I had the opportunity to participate in an internship with the Department of Institutional Effectiveness and Research, where I learned the definition and implications of measuring the quality of education. My projects supported the efforts to assist faculty and staff in understanding the process of documenting progress towards achieving goals and student learning outcomes and the requirements of the Texas Quality Awards application process (Department of Institutional Effectiveness and Research, 2016). Universities should continue their efforts to measure the quality of education and share its importance with university and community stakeholders as a demonstration of their ability to promote student learning and as validation of the value of their awarded degrees.

S2.2

Comparison of Large Deviation Inequalities for Markov Chains

Michelle Rosenbaum

Advisor: Dr. Thomas Boucher

Department: Mathematics

College: Science and Engineering

Category: Graduate

This work utilized computer simulation to compare large deviation inequalities for Markov chains. Several bounds have been developed to determine the expected error for the approximation. Three such bounds were explored. The performance of Hoeffding's bound and two generalizations of Hoeffding's bound were compared both graphically and quantitatively.

On Campus, Online and Off-site Students' Attitudes towards University

Natalia Assis

Advisor: Dr. Stephen Reysen and Dr. Shonda Gibson

Co-Author: Dr. LaVelle Hendricks

Department: Psychology, Counseling, and Special Education and
Institutional Effectiveness and Research

College: Education and Human Services

Category: Graduate

The higher education sector is a rapidly growing industry in the United States and throughout the world, with enrollment and graduation rates growing significantly over the past ten years. In addition, the changing economy and reductions in government spending on education are forcing universities to adapt and become more competitive. Better understanding stakeholders (i.e., students/graduates) experiences and the factors that contribute to the relationship between the university and community are important considerations in assessing how well the university is accomplishing its mission. Past research has shown that organizational identity is correlated with a wide range of attitudes, behaviors, and content variables. Mael and Ashforth (1992) found that organizational identification with alma mater was associated with: antecedents of organizational distinctiveness, organizational prestige, and absence of intraorganizational competition. In previous research, factors associated with membership of university graduates have commonly been investigated through small samples of students after graduation. The current study aimed to capture a more accurate representation of student experience, attitudes, and opinions before students graduate and compare on campus, online and off-site students' attitudes towards the university.

S2.4

Cohort Comparison: An Assessment of Incoming Freshmen Global Competence

Olatundun Modile

Advisor: Jennifer Hudson and Dr. Shonda Gibson

Department: Marketing and Business Analytics and Quality Enhancement Plan
(Institutional Effectiveness and Research)

College: Business

Category: Graduate

Previous research has shown that students are neither formally educated nor trained to understand global dynamics, trends, systems and make informed decisions with full knowledge or awareness of global implications. However, a survey carried out by The American Association of Colleges and Universities (AAC&U) showed that employers expect educational institutions to produce globally competent college graduates capable of functioning in a global environment in addition to the knowledge and skills gained for their various fields. The Global Competency Aptitude Assessment (GCAA) is a tool used to measure an individual's level of global competence through eight dimensions divided into two major areas of competence - internal readiness, consisting of self-awareness, open-mindedness, attentiveness to diversity, risk taking; and external readiness, consists of historical perspective, global awareness, intercultural capability, and collaboration across cultures. This study uses a simple means analysis to compare scores of two groups of college freshmen that joined the university two years apart and were assessed using the GCAA in order to identify statistically significant differences in their global competence levels upon entry. The result aims to discover if there is improved global competence among incoming freshmen in 2016 than before in 2014 owing to the prevalence of global education.

Inference of the Integrative Gene Regulatory Network using Multi-omics Data

Neda Zarayeneh

Advisor: Dr. Sang Suh

Department: Computer Science

College: Science and Engineering

Category: Graduate

Understanding the inference of biological network is very important to gain a clear understanding of the underlying biological mechanisms. Gene regulatory networks (GRNs) that describe the regulatory processes in cells are conventionally using a graph model, where genes are nodes and interaction between genes are the edges. During past decades, numerous computational approaches have been developed to infer the GRNs. However, many of them have focused only on investigations of a single type of genomic data, e.g., gene expression data to infer the molecular interactions of the gene regulatory networks.

Human diseases consist of complex interactions of multiple biological processes and convoluted procedures that include interactions of multiple layers of biological information such as genetic, epigenetic, and transcriptional regulation. With only a single type of genomic data in consideration, the study may lead to inadequate results to completely extract the knowledge of the complex human diseases. Therefore, it is essential for the study to consider multiple genomic data to comprehend an in-depth understanding of the elaborated mechanisms of the human diseases.

Gene expression is produced by consecutive interactions of DNA sequence variations, single nucleotide polymorphism, copy number variation, histone modifications, transcription factor, DNA methylation, and various other factors. The different types of genomics data are called multi-omics data. Because multiple types of genomics information usually provide complementary information relating to the underlying GRN, a model that uses both multi-omics data and gene expression data is expected to improve the accuracy of GRN inference.

In this research, I propose to evaluate an Integrative Gene Regulatory Network inference method (iGRN) that can integrate multi-omics data and their interactions in the gene regulatory network modeled by graph, and afterwards compare this proposed method with some state-of-the-art methods. Copy number variation and DNA methylation are considered as multi-omics data in this research. Simulation of iGRN method is performed to demonstrate the effectiveness of this proposed method in comparison with previous methods and to show the higher accuracy for the gene regulatory inference is gained.

S2.6

Using Multiple Linear Regression Modeling to Predict Students' Success

Hari Priya Mamilla

Advisor: Dr. Dan Su

Co-Authors: Shonda Gibson and Chris Warner

Department: Institutional Effectiveness and Research

College: Education and Human Services

Category: Graduate

On time graduation with satisfying grade point average (GPA) is an important concern in higher education today and it has caught the attention of policy makers, educators and researchers. Students' success is a key factor and can be determined from many aspects. In the current study, overall GPA was used to measure students' success. Multiple Linear Regression Modeling (MLRM) was utilized, with overall GPA as the dependent variable, dropout rate, current GPA and Semester Credit Hours (SCH) as independent variables. The data was obtained from the university students' information system - BANNER. MLRM is used to analyze the influence of three independent variables (Current GPA, SCH and Dropout rate) on a designated dependent variable (overall GPA). Descriptive data analysis and correlation will also be employed. The hypothesis of the study include: the variables selected are correlated; and the independent variables have predictive influence on the dependent variable. The study will explore the relations of the selected variables by statistical means, and eventually establish a strong predictive model for early intervention in students' success performance.

Role of Reactive Oxygen Species in Post-Traumatic Stress Disorder (PTSD) in Zebrafish

Bernadette Johnson

Advisor: Dr. Venu Cheriya

Co-Author: Madeleine Morris

Department: Biological and Environmental Sciences

College: Science and Engineering

Category: Undergraduate

Post-traumatic stress disorder (PTSD) is a psychological disorder with limited treatment options. Molecular mechanisms that cause PTSD remain unclear due to a lack of viable animal models. Considering the behavioral similarities between zebrafish (*Danio rerio*) and humans, their social nature, and functional parallels between select brain regions, we hypothesized that zebrafish will demonstrate PTSD and that antioxidant treatment will prevent PTSD induction. To test this hypothesis, adult zebrafish were exposed to a traumatic event then were tested immediately and three weeks after the event. Traumatized fish were not as social with tank mates, spending on average 61% less time interacting with tank mates than their control counterparts. Traumatized fish also spent 47% less time interacting with the trauma object. A significant difference was noted both immediately, and three weeks after traumatization ($P \leq 0.05$). More importantly pretreatment with N-acetyl-L-cysteine (NAC), an antioxidant, prevented the induction of PTSD symptoms. Fish pretreated with NAC were 3% more interactive with other fish and 17% more interactive with the trauma object than non-traumatized controls three weeks after traumatization ($P \leq 0.05$). In summary, our results for the first time, demonstrate PTSD development in zebrafish and its prevention by an antioxidant.

U. S. Demand for Fresh Fruit Imports

Hovhannes Mnatsakanyan

Advisor: Dr. Jose A. LopezCo-Author: Dr. Rafael BakhtavoryanCollege: School of AgricultureCategory: Graduate

Over the last three decades, U.S. imports of fresh fruits have been constantly increasing at an annual average growth rate of 7% (USITC, 2016). Fresh fruits make up 9% of the total U.S. food imports (UN Database, 2016) with the top seven fruits accounting for 82% of the value of the U.S. fresh fruit imports and Canada and Mexico (NAFTA countries) as the most important trade partners (USITC, 2016). This study analyzes the main U.S. markets and supply sources of the top imported fresh fruits and estimates a Source-Differentiated Almost Ideal Demand System model (SDAIDS) using time-series data, with North American Free Trade Agreement (NAFTA) countries and the rest of the world (ROW) as import sources. Our results suggest that source of origin is an intrinsic quality attribute for most of the fresh fruits analyzed. More specifically, the study found that most uncompensated own-price elasticities are inelastic, most cross-price elasticities are positives indicating that the fruits imported from given sources are net substitutes, and that statistically significant expenditure elasticities are positive implying that the quantity imported of all the fresh fruit analyzed increases as real expenditure for those fruits rises. The results of this study will be useful to policy-makers in regulating the international market of fresh fruits, setting optimal import taxes and price floors, and predicting likely scenarios of imports from Canada and Mexico.

**Into the Foggy Dew: The Great War, the Easter Rising,
and Irish Masculinity**

Nick Sprenger

Advisor: Dr. Sharon Kowalsky

Department: History

College: Humanities, Social Sciences, and Arts

Category: Graduate

This research analyzes the Easter Rising of 1916 that occurred in Ireland. Specifically, this study resituates the Easter Rising within its Great War context, examining the interplay between war-fuelled masculinity and the Irish home front. Beginning with the Woodenbridge speech delivered by John Redmond in 1914 that called for Irish support of the Great War, the Irish population—much like the rest of Western Europe—systematically masculinized themselves to fulfill the demands of the war effort. However, unlike the rest of Europe, the so-called home front was not feminized. Rather, the domestic desire for an Ireland independent from Great Britain created a competing sphere of masculinity—one that defined itself by service to Irish independence rather than in the Great War, yet promoted the similar tenets of militarism, service, and sacrifice. Ultimately, the masculine ideals of the Great War—appropriated by and blended into the domestic movement for Irish independence—created a unique hyper-masculine environment within the Irish home front that facilitated the moment of revolution known as the Easter Rising

S3.4

Influence of Global Travel on Students' Global Competence

Angad Bhalla

Advisor: Jennifer Hudson and Dr. Shonda Gibson

Department: Marketing and Business Analytics and Quality Enhancement Plan
(Institutional
Effectiveness and Research)

College: Business

Category: Graduate

At Texas A&M University-Commerce our focus is to fulfill key components of our institutional values –integrity, innovation, and imagination. We continue to achieve this vision by the design of our Quality Enhancement Plan (QEP). Research and theorists agree global travel experience provides students an exposure to adapt to changes, improves their ability to perceive, value differences and increase resilience and independence. Today's global environment has raised the bar for students to be well aware of global issues, processes and dynamics. Our mission is to cultivate an academic environment that supports, encourages and enables travel and study abroad opportunities through the Global Scholar program. The Global Scholar Program aims to provide students with access to knowledge, skills and engagement to prepare them for an interconnected world. The purpose of this study is to show how Global Travel has left a constructive impact on students of their knowledge and better prepared them for an interconnected world through evaluating Global Competence Aptitude Assessment score (GCAA) after they returned from the trip. The present study analyzed the GCAA score based on the duration of travel between the groups who travelled for a short period against the groups who travelled for a longer period. Past research has shown significant improvement on students GCAA score when they returned from their trip abroad. The current research aims to further analyze the data on a different parameter, duration of travel.

**Creating a Culture of Continuous Improvement on a University Campus
through Professional Development Opportunities covering
Institutional Effectiveness Topics**

Melissa Crews

Advisor: Dr. Shonda Gibson

Department: Higher Education and Learning Technologies

College: Education and Human Services

Category: Graduate

Higher education institutions today face insurmountable pressure to provide regional accrediting agencies documented evidence of student learning through institutional effectiveness processes (Olsen & Scholl, 2014). Although higher level leadership praises the importance of evaluating student learning outcomes, mid- to lower-level administrators and faculty members commonly view the process as onerous or burdensome (Head & Johnson, 2011). This cultivates an environment where efforts towards developing student learning outcomes and goals, administering assessments, analyzing results, and utilizing results to make data-driven decisions is hostilely received or ignored entirely. A case study of Texas A&M University-Commerce's approach to encouraging faculty and staff to strengthen their existing efforts of continuous improvement through professional development opportunities can provide impetus and insight to creating a culture of continuous improvement. Utilizing existing resources on campus through the Center for Faculty Excellence and Innovation and the Office of Training and Development, the Department of Institutional Effectiveness and Research collaborated with university staff to facilitate nine unique professional development events over the course of the 2017 Spring Semester. Each event was customized specifically for either academic programs or support units covering strategic planning and assessment topics. Events were led by peer faculty and staff who offered best practices, lessons learned, and practical applications for participants to implement in their own departments and offices. Although higher education institutions face challenges in evaluating student learning outcomes, methods used to overcome these challenges provide a unique means to understanding the strategic value of the evaluation process of learning outcomes as a whole.

S3.6

**The Effectiveness of Computer guided Programs and the
State of Texas Assessments of Academic Readiness**

Marcus Ysasi

Advisor: Dr. Chuck Holt

Department: Educational Leadership

College: Education and Human Services

Category: Graduate

This study seeks to explore the effectiveness of computer guided intervention programs in the State of Texas and the STAAR (State of Texas Assessments of Academic Readiness). This study will be a quantitative, correlational design study that will focus on students who are tested for End of Course (EOC) examinations. EOC's include English I, English II, Algebra I, Biology, and U.S. History. The computer guided program will be implemented daily as an intervention for students who have historically not been successful in a prior administration of the exam. The sample size is estimated to be around 15-20 students per EOC and will vary based on initial passing rate. Data collected can be further disaggregated into multiple indicators such as Low Socioeconomic Status, Special Education, English Language Learner and others. After data is collected inferences for future studies and further research may be determined as well as the effectiveness of the current implementation model.

The Professional Development Needs of Rural East Texas Algebra Teachers

Campbell Reid, Daniel Rios, Taylor Kline, Amelia Martin, Meghann Holt, Ricky Gaji

Department: Psychology, Counseling, and Special Education

College: Education and Human Services

Category: Undergraduate

Children in rural settings are less likely to have access to quality mathematics courses and perform significantly lower than their suburban counterparts. Fewer students from rural districts demonstrate mastery in Pre-Calculus/Advanced Placement (AP) courses; thus, significantly decreasing their access to higher-level mathematics courses, admission to college, and entry into STEM majors. The National Mathematics Advisory Panel suggests that access to an authentic Algebra 1 course by 8th grade is means to annihilating these gaps. Therefore, teachers need access to quality professional development to ensure students have access to quality algebra instruction. This presentation shares outcomes of the first phase of a project focusing on providing e-professional development and consultation to support rural east Texas Algebra 1 teachers.

**The Neutralization of the Work Sphere:
Women and World War I Propaganda**

Elaina Friar Moyer

Department: History

College: Humanities, Social Sciences and Arts

Category: Graduate

This paper examines visual propaganda regarding women's war work and how propaganda promoted a temporary neutralization of the work sphere visually. This paper does not suggest that gender was neutralized or disregarded in all propaganda, but instead that for women to participate in war work that had been previously dominated by men, propaganda rhetoric towards war work transformed. In an effort to mobilize the masses, Great Britain neutralized gender in propaganda to unite the population in the war effort. While many of the roles women stepped into can be construed as womanly, the extraordinary conditions demanded by the First World War meant that traditionally masculine qualities of certain work were suspended so that women assumed roles previously considered outside of their normal gender sphere.

To trace the evolution of propaganda rhetoric, the paper focuses mainly on analyzing war posters from Great Britain. The timeline of this study extends before 1914, to include anti-suffragist propaganda and rhetoric about the images of the sexes, which were well-established before the war. Expanding the timeline demonstrates the construction of women's roles pre-war. Then the paper analyzes visual war propaganda to reveal the changes that occurred throughout the duration of the war. Gender roles considered normal before the war abundantly appear in World War I propaganda. Once you isolate the strand focused on mobilizing the population into work, a counterbalance emerges that neutralize certain spaces and allows women to step into different roles.

Predictive Analytics in Higher Education

Tejaswini Roogi Srimanth

Advisors: Carlos Rivers and Dr. Shonda Gibson

Department: Competency Based Education

College: Business

Category: Graduate

Institutions of higher education are operating in an increasingly complex and competitive environment. The purpose of this study is to identify contemporary challenges facing institutions of higher education and explores the potential of Data/predictive analytics in addressing these challenges. Most institutions are under intense pressure to maximize student retention and shorten time to graduation. The focus of this study is to explore the use of predictive analytics in Higher Education to improve student access and success. The study examines how historical data can be used to identify persistence trends and inform a continuous improvement cycle.

This study presents examples of working predictive analytics models from Texas A&M University-Commerce, showing how high school percentile is a better indicator of student persistence over test scores at our institution. It will also show how Competency-Based Education students are breaking negative historical persistence patterns affecting our transfer student population. A discussion of the findings indicate how predictive analytics insights can help shape new administration policies and how new education models are contributing to student success.

S4.4

A Phenomenological Study Describing the Role of Learning Liaisons on Secondary Campuses

Karen Woodworth

Advisor: Dr. Deborah Goodwin

Department: Educational Leadership

College: Education and Human Services

Category: Graduate

To help teachers develop the necessary skills required to improve achievement for all students, professional learning communities are being formed in schools to support teachers' collaboration on improving their practice. One suburban Texas district has implemented an instructional coaching model to build capacity in teachers and promote a more learner-centered environment for students. Each campus employs a lead instructional coach, called a learning liaison, whose primary job is to mentor beginning teachers, assist teachers in developing professional learning communities, and in designing professional development for teachers on the campus. This qualitative study uses a phenomenological methodology to describe the experiences of the learning liaisons as they support instruction on secondary campuses. The research questions include: How are effective learning teams formed? What challenges does the learning liaison experience in her role as a campus instructional leader? Repeated readings of the learning liaisons' interviews allowed the researcher to identify five major themes of their experiences: collaboration, trust, relationships, isolation, and value added.

An Evaluation of Three PSAT Prep Programs in a Large Metropolitan District

James L. Sellers

Advisor: Dr. Deborah Goodwin

Department: Educational Administration

College: Education and Human Services

Category: Graduate

This evaluation is designed to examine the effectiveness of the college exam preparatory programs within the Garland Independent School District: Boot Camp, Path College Career, and Scholars Academy. The usage of the Preliminary Scholastic Aptitude Test/National Merit Scholarship Qualifying Test (PSAT/NMSQT) for fall 2014 and fall 2015 were used to determine program effectiveness. Fall 2014 was used as a baseline administration with program effectiveness based on fall 2015 achievement.

Random comparison samples were used to gauge program effectiveness for both the Boot Camp and Path College Career programs. The Scholars Academy sample was comprised of students achieving within the top 100 sophomore scores in fall 2014 but chose to not participate in the Scholars Academy program.

Within each program, program participants and their respective comparison samples scored at the same approximate level on the fall 2014 PSAT/NMSQT prior to any program participation. When examining fall 2015 PSAT/NMSQT achievement after program completions, students participating in the Path College Career and Scholars Academy statistically outscored their respective comparison samples. Boot Camp participants and their comparison sample scored at the same approximate level on both the fall 2014 and fall 2015 PSAT/NMSQT administrations.

When determining college and career readiness, a greater percentage of Boot Camp and Path College Career participants met the college and career benchmark score than their respective comparison samples. All Scholars Academy participants and sample students, regardless of fall 2014 or fall 2015, met the college and career benchmark score.

Cattle Trade Flows in Texas and Foot and Mouth Disease

Emilee Peterson

Advisor: Dr. Frannie Miller, PhDCo-Author: Osli Ogunc, PhDDepartment: Economics and FinanceCollege: BusinessCategory: Undergraduate

Foot and Mouth Disease (FMD) is known as the Economic Disease due to its historically economically disastrous impacts. The current model used to determine vaccine stores and outbreak preparation does not account for intrastate trade flows through sale barns, sparking the focus of this study. The United States Department of Agriculture's recent decision to allow fresh beef imports from a FMD infected country as well as Canada's and the United States' recent cases of Bovine Tuberculosis both increase relevance of this study. The research involved collecting data from cattle sale barns across Texas and analyzing it in QGIS to estimate cattle movement and compare movement and infection to models from existing literature. Results showed that the role of livestock movement through trade is severely underestimated in existing literature on disease spread and its potential economic implications. While there have been a few papers (Shields and Mathews, 2003 and Gorsich et al., 2016) that have specifically focused on modeling livestock trade, they have used data obtained from interstate livestock movements. This paper is the first that specifically focuses on the combination of intrastate and interstate movements that result from livestock auctions. Using the data, a geographic information system (GIS) based model was created and compared to the output of the Schroeder, et al. model. Results showed that cattle trade movement was undercounted by 83.4% in Texas and that the number of infected animals was severely underestimated. The implications of cattle movement being underestimated are that the U.S. is not prepared for the volume and rate of spread of an outbreak, and that stamping out may not be a feasible response.

A Novel Role for Agouti Gene in Stress

Harmanpreet Kaur

Advisor: Dr. Venu Cheriya

Co-Authors: Karthika Venugopalan, Israel Chavarri, and Anne Davenport

Department: Biological and Environmental Sciences

College: Science and Engineering

Category: Undergraduate

Stress, a common yet debilitating mental condition, affects people of all ages. Although several molecular mechanisms have been associated with stress, variations in individual stress responses remain unclear. Considering the role of epigenetics in behavior modulation, we hypothesized that the epigenetic variations within individuals control their stress responses. This hypothesis was tested in an agouti (Avy/a) mouse model, in which epigenetic modifications of DNA control coat color and metabolism, however, its behavioral effects remain unclear. Therefore, using the open field test, anxiety and exploratory behavior in Avy/a and a/a control mice were compared. Results from a weight and age-matched randomized study (non-agouti mice n=24; agouti mice n=33) identified that Avy/a mice had a significant increase in explorative behavior ($p<0.05$), as seen in increased center grid movements (28.71x) when compared to non-agouti mice (9.89x). This suggests a reduction in the basal level of anxiety in Avy/a mice. Additionally, yellow Avy/a, whose coat color occurs as a result of a hypomethylated agouti gene promoter, had significantly lower exploratory behavior than slightly and heavily mottled Avy/a mice. Moreover, histological examination showed hypothalamic dissimilarities and immunoblot analysis identified the altered expression of agouti signaling target proteins in a/a mice, suggesting a link between epigenome mediated agouti signaling and anxiolytic behavior in mice. In summary, our study suggests that varying epigenetic modifications lead to varied behavioral responses.

The Soul of an Organization: Measuring Factors

Israel Garcia Jacinto

Advisor: Dr. Warren Ortloff

Department: Educational Leadership

College: Education and Human Services

Category: Graduate

Ethics and soul are critical factors to live a good life as well as to manage a good organization (Bolman & Deal, 2013). In today's world, it is easy to lose sense of ethicality and thus diminish the soul of an organization in the pursuit of personal agendas and values that do not represent the organization's core values. According to Ronald W. Rebores (2014) the ultimate goal of an ethical person is the consolidation of his/her attitudes and dispositions in order to become oriented toward meaningful relationships with other people in both personal and professional level (p.27). Under this premise, the soul of an organization is defined as the foundation for ethics, the bedrock that holds core values and beliefs in perfect harmony; which in the end, is translated in a positive culture and a healthy climate. People in an organization contribute positively or in detriment of the organization's soul by embracing who they are and what they bring to the table in correlation with the organization's core values and beliefs. Through the use of a survey, ethical values and sense of character are measured in order to establish the position of faculty members and students of an elementary school. Items measure levels of confidence about who we are, what we care about, and what we deeply believe in. According to Whitmyer (1993) a sense of unity and human exchange mold the "soul of the community" (as cited by Bolman & Deal, 2013, p. 401). Items in the survey not only provide significant data about status of ethicality in the institution but also how much every member provides his/her part to generate the soul of the organization regardless their position in the hierarchical human resources scale. More studies will have to be conducted in order to measure the quality of the institution in terms of state accountability, climate, and culture. It will also be appropriate to run multiple regression analysis in order to determine the correlation between these variables, and whether these factors are good predictors that influence levels of "soul" in the organization.

Customer Retention Strategies based on Multichannel Consumer Behaviour Analysis

Vivek Vardhan Vandrangi

Advisor: Dr. Chris Myers

Co-Author: Yuying Shi

Department: Marketing and Business Analytics

College: Business

Category: Graduate

Retail business environment has changed substantially in recent years providing many channel options to consumers. The multichannel shopping environment is driving many consumers to choose between online, offline, and delivery channel opportunities in the information search and product purchase stages of a shopping experience.

Previous research on multi-channel consumer behaviour states that customer returns are related in a nonlinear fashion to multichannel shopping. Customers who buy across multiple product categories are also likely to purchase across multiple channels (Venkatesan & Kumar, 2005). Researchers have consistently found cross-buying to be a good predictor of lifetime duration (Reinartz & Kumar, 2003), purchase frequency (Venkatesan & Kumar, 2004), and customer equity (Rust, Zeithaml, & Lemon, 2004). Limitation of these studies has been addressed in this paper, we consider the customer lifetime value of multi-channel customers' vs single-channel customers. Similar research state that consumers perceive "convenience" and the ability to "search for the lowest price" as reliable factors that influence their web purchases (Shailendra Gajanan & Suman Basuroy, 2007).

Our study analyses multichannel consumer behaviour by studying a fast-casual dining market segment Hello Curry brand located in India which is similar to Chipotle, USA.

Our dataset constitutes 176,926 independent purchase occasions made over a period of 1 year 4 months (April 2015 to July 2016) in an Indian start-up company Hello Curry Ltd. The data has been analyzed with the statistical tests of significance by using R Software and IBM Watson Analytics (Popular Analytical tools). Preliminary analysis of the data could predict customer channel choice and purchase pattern. Results of this study are prominent in refining the business strategy.

The Challenges of Instructional Coaching on a Bilingual Campus

Laura Adirana Mejia

Advisor: Dr. Julia Ballenger

Department: Educational Leadership

College: Education and Human Services

Category: Graduate

Currently, in the state of Texas, bilingual education is a part of the majority of districts due to the increase in the Hispanic population. As educators work to meet the needs of these students, they need to continue to integrate current educational practices. The instructional practice of instructional coaching is being implemented at the majority of districts to support teachers and in turn affect student achievement (Knight, 2011). An instructional coach is there to support the teachers and students of the campus. There are challenges that appear as instructional coaches and administrators attempt to implement the practice of instructional coaching on a bilingual campus.

This phenomenological study explores the challenges of using instructional coaches on bilingual elementary campuses. The study was conducted by interviewing various staff members on a bilingual campus including teachers, instructional coaches, and principals. Data was collected on “what” and “how” the participants experienced instructional coaching throughout their careers. Interviewees were encouraged to share their true experiences whether they are positive or negative. A goal of the study is to identify ways in which to improve the practice of instructional coaching at instructional campuses. The ability to identify strengths and weaknesses of various programs will enable key themes to be established. Key themes will give help identify how the practice of instructional coaching on bilingual campuses can succeed so that teachers are helping students improve academically. It will identify ways in which to improve the practice of instructional coaching on a bilingual campus as well as how different campuses have attempted to overcome various challenges.

Key Words: bilingual education, instructional coaching, staffing bilingual schools, bilingual program implementation

Cytokine Independent Abnormal Proliferation and Differentiation of AML Cells

Madeleine Morris

Advisor: Dr. Venu Cheriya

Co-Author: Sirisha Chakrapalli

Department: Biological and Environmental Sciences

College: Science and Engineering

Category: Undergraduate

Acute myeloid leukemia (AML) is a type of blood and bone marrow cancer which leads to abnormal proliferation and differentiation of hematopoietic cells. Studies showed that cytokine independent survival and differentiation plays an important role in AML progression, but the effected molecular pathways remain unknown. Identifying the cytokine independent pathways will assist in designing new drug targets for AML treatment. To address this, we established the cytokine independent cell line UT-7/END from the leukemia cell line UT-7, which depends on cytokines such as erythropoietin (Epo) for growth and survival. UT-7/END can survive and proliferate significantly in the absence of Epo compared to UT-7/Epo. UT-7/END differentiates into macrophage like elongated cells and attaches to the cell culture flask in absence of Epo. We hypothesize that Epo-independent abnormal survival and differentiation of UT-7/END was triggered by under expression of E-cadherin and antiapoptotic pathways result in AML progression. Down regulation of e-cadherin expression in UT-7/END was supported by significantly lower expression of CDH1 and CDH2 in immunostaining and qPCR analysis. To decipher molecular pathways that drive UT-7/END cell survival and differentiation, HumanHT-13 v4 BeadChip gene expression array was conducted with UT-7 and UT-7/END cells to uncover the underlying pathways in their survival and differentiation. The gene expression analysis was used to ascertain which genes promote negative regulation of apoptotic signaling pathway (HSPA1A, HMOX1, ITGAV, and SOS1) in the Epo-independent cell line UT-7/END. In conclusion, uncovering the upregulation of antiapoptotic pathways involved in abnormal survival and differentiation independent of Epo will demonstrate the potential cytokine independent AML progression.

Performance-Based Pay and Collective Teacher Efficacy

Aimee Cherry

Advisor: Dr. Chuck Holt

Department: Educational Leadership

College: Education and Human Services

Category: Graduate

Performance-based pay programs are becoming increasingly popular in the field of education. As with most new programs, there are many aspects of the school that are affected when this compensation change is made. Research has shown that teacher motivation, practices, and time allocation are all affected by the implementation of performance-based pay programs. However, there is currently no research that delineates the relationship between performance-based pay programs and collective teacher efficacy. Collective teacher efficacy is defined as the belief that the efforts of the faculty can affect positive change on the students in their school. The proposed study seeks to determine whether or not this relationship exists through a quantitative survey analysis given to teachers who work in schools with traditional pay programs and performance-based pay programs. This study would serve to fill a void in the current research, giving educational leaders additional information as they consider implementing performance-based pay programs.

TAMUC Alumni GPS

Vidhi Goti and Satya Dev Garikapati

Advisor: Dr. Frannie Miller

Department: Economics and Finance

College: Business

Category: Graduate

The Purpose of this Alumni GPS study is to deal with messy data and visual communication. It involves the creation and study of the visual representation of data, meaning "information that has been abstracted in some schematic form, including attributes or variables for the units of information". A primary goal of data visualization is to communicate information clearly and efficiently via statistical graphics, plots and information graphics. We discover different insights out of the raw data into open source platforms to locate our alumnus. The focus of the study is to elaborate different parameters and segments our data to arrive at time series analysis. This will enable us to examine historical data to identify different trends over a period of time using SAP Lumira, Tableau and other related software. This study will indicate correlation between the job market and the majors that is offered by our university.

Effects of BPA on Cancer Development during Pre- and Post-pubertal Exposure

Bernadette Peltier

Advisor: Dr. Venu Cheriya

Department: Biology and Environmental Sciences

College: Science and Engineering

Category: Undergraduate

Bisphenol A (BPA) is a ubiquitous endocrine disruptor found in common plastic products and leaches in consumable goods. Once consumed by humans, BPA can cause adverse health effects and may influence the development of breast cancer. Several animal studies have demonstrated the effects of prenatal, perinatal, and pubertal BPA exposure. The results indicate that BPA can trigger neoplastic transformation with prenatal and pubertal exposures and alter mammary gland morphogenesis and development with perinatal exposure. No studies have yet compared the effects of pre-pubertal and post-pubertal exposure. We hypothesize that BPA exposure time, with respect to reproductive cycle, will differentially affect breast cancer development and progression in mice. To test and compare pre-pubertal and post-pubertal exposure to BPA on the development of breast cancer, two groups of ten mice were treated with BPA daily for three weeks either pre-pubertally or post-pubertally. A group of ten control mice were not treated. All experimental groups were then treated with 7,12-dimethylbenz[a]anthracene (DMBA) to accelerate mammary carcinogenesis. Thus far, 60% of pre-pubertal mice, 30% of post-pubertal, and 0% of control mice have developed tumors. Histologically, both pre- and post-pubertal tumors were all identified as invasive ductal carcinoma, however, pre-pubertal tumors appeared to be in an early stage of infiltration than post-pubertal tumors. The tumor growth rate of pre-pubertal mice was significantly higher than post-pubertal and control mice ($p = .0461$). However, post-pubertal mice survival following tumor development was significantly lower than post-pubertal mice ($p = .0364$). Mice of this group either required earlier euthanization due to tumor burden or died, suggesting that the cancer they developed was more aggressive. Overall, results suggest that BPA exposure pre-pubertally more greatly predisposes toward breast cancer development, but mice that are exposed post-pubertally that develop breast cancer may experience a more aggressive form.

Tracking Educational Administration Doctoral Enrollment by Academic Year

Ancy Thomas

Advisor: Dr. Chuck Holt

Department: Educational Leadership

College: Education and Human Services

Category: Graduate

The Educational Leadership department works on addressing the needs of its students coming from diverse populations by offering courses with minimal travel and economic constraints on students as the course work offered is online. Every year we have approximately 200 students graduating from our Doctoral and Masters Programs. Our staff is a team of Committed Faculty and Administrators who use a variety of innovative and inventive teaching methods to prepare students to grow into the finest Principals, Superintendents, and other public school administrators in the state of Texas.

Thanks to the high standards of our scholarships and professionalism of our department, almost every year we have an increase in the number of the students who take classes on a regular basis. We believe this is because the word about the quality of studies and degree we offer has been spreading at a rapid pace. As seen in the attached Table, 20 to 30 students will be ready to finish their Comprehensive examinations and the Residency Requirements each Summer and Spring. Upon earning Doctoral Candidacy, they begin writing their Dissertations, enrolling each Fall and Spring.

The past Academic year (2016-2017) was a good year for the Doctoral program with consistent sized cohorts of students in both Fall and Spring cohorts. In both of these cohorts, amongst the students who are taking classes (Active students), approximately 75% of them were on track with no lag in their course work. An equal number of active students are taking classes this semester (Spring 2017), to progress toward the program completion.

The existing faculty have the responsibility for approximately 20 Dissertation students each. This research confirms that the incoming cohorts of 20-25 new students each Fall and Spring outpaces the out-going graduates. The time taken for completion of Dissertations vary as each topic and research method may require different layers of research and data computation.

**Career and Technical Education Administrator Preparation
in the State of Texas**

Candace McGowan

Advisor: Dr. Deborah Goodwin

Department: Educational Leadership

College: Education and Human Services

Category: Graduate

Career and Technical Education (CTE) has evolved throughout the history of the United States and has become more than just preparing students for a few skills-based jobs. Modern CTE includes many different disciplines with rigorous courses of study that relate to business and industry trends in the areas that these programs serve. With the complexities of CTE in modern day and the strict guidelines of grant funding, it is more important now than ever to have administrators who understand the programs, funding, data reporting, and leadership in a unique environment that extends beyond the school into colleges and the workforce. This qualitative study explores the experiences of current CTE administrators paths to their positions, the unique challenges of the job, and the assistance available to CTE administrators in Texas.

Keywords: Career and Technical Education, Administrator, Leadership Training

Cadherin Mediated Homotypic Cell–Cell Interaction Confers Cytokine Independent Growth and Proliferation Of AML Cells

Sirisha Chakkapalli

Advisor: Dr.Venu Cheriya

Co-Authors: Madeleine Morris and Zahra Barati

Department: Biological and Environmental Sciences

College: Science and Engineering

Category: Graduate

Acute myeloid leukemia (AML) is an aggressive blood and bone marrow cancer that lead to ~ 10,430 US deaths in 2016. Aberrant hematopoietic stem cell proliferation and differentiation results in AML formation. Since cytokine signals control leukemogenesis, we hypothesized that cytokine independence confers survival and proliferative advantages to AML progenitor cells. To test this hypothesis, we isolated a novel subline UT-7/Epo null (UT-7/EN), after long-term culture of UT-7/Epo, an epo-dependent erythroleukemic cells in cytokine free media. The UT-7/EN cells survived and proliferated without Epo whereas Epo was indispensable for the survival of parental UT-7/Epo cells ($p < 0.0001$). Moreover, cell–cell adhesion was markedly increased in UT-7/EN cells which formed clumps as they grown. Comparison of the gene expression profiles of UT-7/Epo and UT-7/EN cells using HumanHT-12 v4 BeadChip array and ontology analysis identified upregulation of genes involved in homotypic cell–cell adhesion (CDH1, CDH2, SERPINE1 and CCL-5). Moreover, in **qRT-PCR** analysis, the expression of CDH1 (34 fold) and SERPINE1 (41 fold) was increased significantly in UT-7/EN cells ($p < 0.05$). Cadherins (CDH1 and CDH2) are known to promote leukemic proliferation through cell-cell interactions. Therefore, our results demonstrate that homotypic cell–cell adhesion overcome Epo independence and promote survival and proliferation of AML cells.

Enantioselective Recognition of Chiral Porphyrins Diamino-1, 1-Binaphthalene Hybrids

Sulihat Mudasiru

Advisor: Dr. Stephen Starnes

Department: Chemistry

College: Science and Engineering

Category: Graduate

Biological molecules such as proteins exist as chirally pure single enantiomers which selectively recognize chiral substrates or selectively catalyze the biosynthesis of single enantiomer chiral products. This project aims to mimic biological molecules in the body. In this report, host complexes consisting of tetraphenylporphyrins (TTP) diamino-1,1-binaphthalene were synthesized by attaching (S)-(-) 2, 2-diamino-1,1-binaphthalene and (R)-(+)-2,2-diamino-1,1-binaphthalene to TTP isocyanate in order to improve the selectivity of this host in its chiral guest binding properties, with the ultimate goal of studying affinities of host to the guests. Chiral guests studied were L-nicotine, R and S mandelate, and D-n-acetyl and L-n-acetyl phenylalanine. Proton NMR, Mass spectrometry, UV-Vis and CD spectroscopy were used to characterize the compounds and study their chiral host-guest binding properties. We proposed that R-guests will bind selectively with R-TTP host molecules while S-guest will bind preferentially to S-TTP molecules. L-Nicotine was found to show moderate selectivity with the S-TTP complex compared to other guests studied that showed little to no selectivity in the host-guest complex. Future work will focus on synthesizing new host-guest complexes and studying their chiral recognition properties.

Investigation of the Selected Transition Metal Binding Characteristics of Methanobactin from *Methylosinus trichosporium* OB3b

Jacob W. McCabe

Advisor: Dr. Laurence A. Angel

Co-author: Rajpal Vangala

Department: Chemistry

College: Science and Engineering

Category: Graduate

The methanobactin (Mb) from *Methylosinus trichosporium* OB3b (1154.26 Da) is a member of a class of metal binding peptides identified in methanotrophic bacteria. Methanobactins will selectively bind and reduce Cu(II) to Cu(I), and mediate the acquisition of the copper cofactor for the enzyme methane monooxygenase. Methanobactins will also bind other metal ions and mediate their solubilization and transportation *in situ*. The structure of Mb consists of nine amino acids and two modified regions containing enethiol-oxazolone rings which are the bidentate binding sites for Cu(I). However, the binding characteristics for Ag(I), Pb(II), Co(II), Fe(III), Mn(II), Ni(II), and Zn(II) have not been determined. The goal of this study is to compare the binding of these metals to the $[\text{Mb}+\text{Cu(I)}-n\text{H}]^{(n-1)-}$ complex using traveling wave ion mobility mass spectrometry (TWIMS). The arrival time distribution (ATD) for each metal complex and free mb-OB3b was used to quantify the apparent binding affinity and measure their collision cross-section at various pH points. In addition, collision-induced dissociation of the disulfide reduced $[\text{Mb}+\mathbf{M}]$, was used to locate the binding sites of the individual metal(I/II) ions ($\mathbf{M}$), and the normalized collision energy, breakdown curve was measured to determine the relative stability of the disulfide reduced $[\text{Mb}+\mathbf{M}]$ complexes. Selected mass spectrometry titration studies were repeated using fluorescence spectroscopy to compare gas-phase and solution-phase techniques.

Board of Directors and School Administrators: Factors affecting the dynamics of a working relationship in Islamic schools

Madiha Talat

Advisor: Dr. Warren Ortloff

Department: Educational Leadership

College: Education and Human Services

Category: Graduate

The organizational structure of Islamic schools in America places a Board of Directors (BOD) at the top of the decision-making chain. BOD members are often laypeople and community members, with little educational experience, and are in charge of supervising the school's administration. Current research on the topic exists in the context of Jewish schools which are similar in organizational structure, but not Islamic schools. This research proposal aims to discover the factors that affect the relationship between the BOD and administrators of Islamic schools. This study will be conducted in two phases: in the first, quantitative phase, surveys created by the researcher will be sent to all BOD members and school administrators across the country. Responses will be parsed for patterns and themes, leading to the second, qualitative phase of the study, where participants are selected based on the themes to be explored in depth. Data gathering will involve interviews, observations, and other communication between researcher and participants. The analysis of data shall include the creation of a codebook, with the assistance of a coding software program. This research study aims to lay the foundation for future research to be conducted on this topic.

Neuroendocrine Disruption by Ethinyl Estradiol and Bisphenol-A in Male Zebrafish

Taelah Wooten

Advisor: Dr. Izhar Khan

Department: Biological and Environmental Sciences

College: Science and Engineering

Category: Graduate

The kisspeptin (Kiss)-gonadotropin releasing hormone (GnRH) system has a highly conserved function across all vertebrates and has emerged as a potential target of neuroendocrine disruption by estrogenic chemicals. Aquatic animals in particular become highly susceptible to adverse reproductive problems caused by endocrine disruption including hormonal imbalances, failed gonadal development, or impaired reproduction. The purpose of this study is to determine the mechanisms of disruption caused by estrogenic chemicals on Kiss-GnRH system controlling vertebrate reproduction. In two separate experiments, adult male zebrafish were injected with 0.1, 1, and 10 nmol/kg of ethinyl estradiol (synthetic estrogen in birth control pills) and 0.1, 1, and 10 μ mol/kg of bisphenol-a (chemical used in manufacturing of plastics) on days 0, 7 and 14 of the experiment with the control group receiving sham injections. On day 21 of the experiment whole brain tissue samples were collected and gonads were evaluated for histological changes. Preliminary BPA data show kisspeptin levels decreased in the mid dose, but not in the low or high dose groups, displaying a U-shaped response with the relatively low doses of BPA used in the experiment. Results of this study will demonstrate possible role of kisspeptin in mediating feedback regulation of GnRH by estrogenic chemicals of environmental concern in zebrafish as an alternative vertebrate model for biomedical research.

Sodium Carbonate as a Catalyst for the Formation of Bio-Oil from *Chlorella vulgaris*

Jonathan Flores

Advisor: Dr. Ben W. Jang

Coauthors: Ever Rodriguez, Nicole Humphries, Sam Kaiser, and Francisco Rogers

Department: Chemistry

College: Science and Engineering

Category: Undergraduate

In the wake of oil spills, nuclear reactor meltdowns, and the lingering implications affecting the planet, researchers look for greener, renewable fuel sources, with less harmful impacts on the environment. Many countries have begun converting their main energy supply infrastructure to include the use of more renewable energy sources. Despite varying opinions, it is known that the petroleum fuel supplies of our planet are limited, and natural energy sources have proven to be difficult to harness for our needs. We know that in nature crude oil is produced after a bio-mass, such as the contents of a swamp, is covered with earth and introduced to heat and pressure over time. Using a specialized reactor we will be introducing our bio-mass to hydrothermal liquefaction (HTL), as a means of recreating the conditions for the conversion of bio-mass to bio-oil. *Chlorella vulgaris* is a green algae, with a high fat content, expedient growth rates, and is CO₂ absorbent. With this research we will be using sodium carbonate (Na₂(CO₃)₂) as a catalyst to convert *Chlorella vulgaris*, from a bio-mass into a bio-oil. Our research is aimed at optimizing conditions by finding the ideal; solvent, heat, pressure, catalytic loading, and reaction time, required to achieve a near 100% conversion, and yield of bio-oil. We will analyze the oil produced using thermogravimetric analysis (TGA) to determine rate of decomposition, and bomb calorimetry to determine energy content in kJ/cm³. We hope to prove our methods capable of synthesizing an oil with a high energy content, and a low carbon footprint.

**Zn(II) and Cu(I/II) Co-ordination to alternative Metal Binding Peptide
using Ion Mobility- Mass Spectrometry and Fluorescence Spectroscopy
Techniques**

Swetha Chinthala

Advisor: Dr. Laurence A. Angel

Department: Chemistry

College: Science and Engineering

Category: Graduate

Methanotrophic bacteria are the prokaryotic organisms that oxidize methane to produce a small copper chelating molecule called methanobactin (Mb) and are unique in their ability to utilize methane as sole source of energy. The methanobactins produced by *Methylosinus trichosporium* (mb-OB3b), currently characterized as modified chromopeptides that bind to Cu(I) and other metals with high affinity, are assumed to mediate copper acquisition from the environment for particulate methane monooxygenase (pMMO) enzyme. Current research involves study of Cu(I/II) and Zn(II) binding to alternative metal binding peptide with sequence CH₃CO-His₁-Cys₂-Gly₃-Pro₄-Tyr₅-His₆-Cys₇-NH₂ (amb_{5B}, MW-856.99 Da) as a function of pH and Zn(II), Cu(I/II) concentration using fluorescence and ion mobility- mass spectrometry techniques. Structural importance of disulfide linkage and metal binding profile of analog methanobactin will be studied. Collision induced dissociation (CID) experiments will be conducted to induce fragmentation of peptide ions in gas phase using mass spectrometry. A binding profile of the analog methanobactin with metal ions like Zn(II) and Cu(I/II) will be developed in comparison to fluorescence spectroscopy.

Teacher Perceptions and Attitudes about Inclusion for Students with Disabilities

Sheri Campbell-Kaiser

Advisor: Dr. Jackie Ray Thompson

Department: Educational Leadership

College: Education and Human Services

Category: Graduate

The effective inclusion of special education students in the general education classroom is a task requiring a myriad of practices, supports, and collaborative solutions. As campus administrators evaluate the needs for the delivery of inclusive special education services, the experiences and opinions of general education teachers grow increasingly important. Given the differences in general and special educator pre-service training, the general education teacher's views of special education and their own competence with struggling learners may be particularly insightful (Fuchs, 2009-2010). The general education teacher is also critical to the success of the inclusive program, yet may be left out of the planning and evaluative process (Smith and Leonard, 2005). This hermeneutic phenomenological qualitative study uses a series of semi-structured face-to-face interviews to solicit general education teacher experiences and perspectives regarding the inclusion of special education students into their classrooms. The study was conducted to better understand general education teachers' experiences and subsequent needs for more effective inclusion of special education students.

GRIP: A Novel Functional Genomics Platform to Identify Tamoxifen Resistant genes in Breast Cancer cells

Zahra Bartai

Advisor: Dr. Venu Cheriya

Co-Author: Sirisha Chakkappali

Department: Biological and Environmental Sciences

College: Science and Engineering

Category: Graduate

Despite the success of tamoxifen as a targeted therapy in ER+ breast cancer, ~40% of patients are intrinsically resistant or acquire resistance during treatment. Therefore, we designed a novel high-throughput genome wide functional genomic strategy called GRIP (genome wide random insertion of promoter), to identify intrinsic antiestrogen resistance genes. In a proof-of-concept pilot study, GRIP vector induced the expression of antiestrogen genes and conferred tamoxifen resistance in MCF-7 cells (MCF-7TAM1), an estrogen dependent breast cancer cell line. In MCF-7TAM1 cells, GRIP induced the expression of PI3K which is known to antagonize tamoxifen. To clone additional genes involved in tamoxifen resistance, a GRIP library of 1 million clones was screened 3 resistant colonies were identified. While cells transduced with empty vector failed to form any colonies in tamoxifen containing media, GRIP-selected colonies survived in tamoxifen. To identify genes responsible for acquired resistance which develops over time, MCF-7 Breast cancer cells were cultured in estrogen free media and exposed to incrementally increasing concentrations of tamoxifen. While majority of MCF-7 cells were sensitive to tamoxifen, 2 colonies developed resistance over a period of 5 months and survived in 4.5 μ M of tamoxifen. In summary, using an innovative functional genomics screen we identified tamoxifen resistant clones that may elucidates antiestrogen pathways and recurrence of ER+ breast cancers.

Teacher

Clark A. Lowery Jr.

Advisor: Dr. Ray Thompson

Department: Educational Leadership

College: Education and Human Services

Category: Graduate

According to Hayes (2014), “Roughly half a million U.S. teachers either move or leave the profession each year—attrition that costs the United States up to \$2.2 billion annually.” The data doesn’t stop there, as “High-poverty schools experience a teacher turnover rate of about 20 percent per the calendar year—roughly 50 percent higher than the rate in more affluent schools Hayes 2014).” Not only does the education system have this high turnover rate, but the areas of the highest need have a significantly greater turnover rate. Hayes continues to move and show that not only are we losing teachers, but we are not keeping but about 50% of our teachers past the five-year mark. Between 40% -50% of teachers leave within five years (2014). In “1987–88, the modal, or most common experience level, was fifteen years; by 2008, the typical teacher was in his or her first year of teaching. Because the economic downturn beginning in 2007–08 slowed the rate of increase in the number of beginning teachers, by 2011–12 the modal teacher was someone in his or her fifth years how the overall experience of teachers has dropped in the past 25 years since 1987 (Hayes 2014).”

This study will take a mixed-methods approach in order to evaluate what strategies for teacher retention and which do not. This study looks to identify teacher preparation programs that work, areas where programs can improve, and once on campus how leaders can retain teachers.

**A Phenomenological Qualitative Study Describing Principal Leadership
Practices that Build Instructional Leadership Capacity
in Assistant Principals**

Tiffanie N. King

Advisor: Dr. Warren Ortloff

Department: Educational Leadership

College: Education and Human Services

Category: Graduate

During this time of increased accountability for schools, principals have to determine more efficient ways to use resources, including their assistant principals. Accountability measures are used to examine the effectiveness of teaching and learning. Instructional leadership is essential to this process. However, there is a need for assistant principals to be supported through principals building their instructional leadership capacity to effectively impact teaching and learning. This transcendental phenomenological qualitative study examines principals' leadership practices that build instructional leadership capacity in assistant principals. Data sources will include transcribed scripts from semi-structured interviews with 5 elementary principals. The research will focus on leadership practices that contributed to 1) modeled situational leadership behaviors, 2) intellectual stimulation, 3) leadership opportunities, 4) and individualized support provided by the principals. Campus principals need to know specific practices to build instructional leadership for their assistant principals.

Mesoporous Catalyst For The Synthesis Of Biodiesel

Mohammed Irfan Zakir Omer

Advisor: Dr. Ben Jang

Department: Chemistry

College: Science and Engineering

Category: Graduate

Depletion of fossil fuel has been a big threat to humans along with environmental pollution, the interest to create and use plant oils and animal fats as biodiesel has been constrained up to these years and now has been put into use. In this paper starch is investigated as the precursor to synthesize various mesoporous catalysts with pore size 2 – 50 nm, for the esterification of oleic acid with methanol as the probe reaction for the production of biodiesel. The results show that the activity of mesoporous catalysts is a function of surface properties such as surface areas, porosity, acid density, etc. and the functional groups attached to the structure can be depicted by Fourier Transform Infrared Spectroscopy, acid-base titration and Nuclear Magnetic Resonance Spectroscopy. It is concluded that careful attention is needed during each stage of catalyst preparation, such as gelatinization, retrogradation, exchange, drying, and sulphonation, to result in catalysts with high acid density values for the production of biodiesel.

**Alumina supported Palladium catalyst for Liquid-phase
Semi-hydrogenation of Alkynes**

Syed Shah Abdullah Hussaini

Advisor: Dr. Ben Jang and Dr. Bukuo Ni

Department: Chemistry

College: Science and Engineering

Category: Graduate

Hydrogenation primarily refers to the treatment of a compound with hydrogen; this can be further explained as the chemical reaction between a molecule and hydrogen in the presence of a catalyst. The semi hydrogenation of alkynes to alkenes is an important transformation that is followed by both chemical and pharmaceutical industries and thus the catalysts that specialize in such conversions are highly demanded. In this paper the investigation focuses on the uses of γ -alumina supported palladium for liquid-phase semi-hydrogenation of two substrates: ethyl phenylpropiolate and diphenyl acetylene. The semi-hydrogenation reactions are carried out in 3-neck bottles under H_2 atmosphere. The products are isolated by extraction, separation and low pressure distillation. H-NMR spectroscopy is used to determine the composition of the products. The composition results are to calculate the conversion and selectivity of reactions to measure the efficiency of catalysts under different reaction conditions.

G1P3 promotes Breast Cancer Metastasis by Increasing Caveolae Mediated Endocytosis of E-Cadherin

Nobel Chowdhury

Advisor: Dr. Venu Cheriya

Co-Author: Jason McCullough

Department: Biological and Environmental Sciences

College: Science and Engineering

Category: Graduate

G1P3, a target of immuno-endocrine signaling is associated with poor prognosis in breast cancer. Recent studies from our group identified a role for G1P3-induced mitochondrial reactive oxygen species (mtROS) in breast cancer metastasis. Gene expression array and network analysis identified dysregulation of vesicle mediated endocytic pathway in G1P3 expressing cells (MCF-7^{G1P3}). Plasma membrane localization of E-cadherin, a cell-to-cell adhesion molecule, is known to suppress cancer cell metastasis. Therefore, we hypothesized that increased endocytosis of E-cadherin by G1P3 induced mtROS promote cancer cell metastasis. Although E-cadherin protein levels were similar in MCF-7^{Vector} and MCF-7^{G1P3} cells, immunofluorescence studies identified altered membrane localization of E-cadherin in MCF-7^{G1P3} cells. In MCF-7^{Vector} cells, E-cadherin was predominantly on plasma membrane, whereas in MCF-7^{G1P3} cells, E-cadherin was localized in cytosol and in endocytic vesicles. Subsequently, in subcellular fractionation studies, relative to MCF-7^{Vector} cells, E-cadherin in membrane fractions was reduced (1.5X) in MCF-7^{G1P3} cells with a concurrent increase (6.45 X) in cytosolic fractions ($P \leq 0.05$). Moreover, quantitative RT-PCR and immunofluorescence analysis identified upregulation of Caveolin-1, a major mediator of endocytosis in MCF-7^{G1P3}, that co-localized with E-cadherin, indicating caveolae mediated endocytosis of E-Cadherin. Mito-TEMPO, a mitochondrial ROS scavenger, reversed G1P3's effects on E-cadherin endocytosis and increased its membrane localization. In summary, our results demonstrate a novel mechanism of G1P3 induced metastasis by augmented caveolae mediated E-cadherin endocytosis rather than suppressing its expression. Interrupting G1P3 mediated E-cadherin endocytosis may prevent metastasis to improve clinical outcomes in breast cancer patients.

**Protein Kinase C Mediated Histone H3K27 Tri-methylation
augments Breast Cancer Cell Metastasis**

Anna Bowsher

Advisor: Dr. Venu Cheriya

Department: Biological and Environmental Sciences

College: Science and Engineering

Category: Graduate

Despite advances in breast cancer (BC) therapies, metastasis leads to >90% of mortalities. While several mechanisms have been associated with metastasis, the role of histone modification mediated chromatin remodeling in BC metastasis remains unclear. Inductions of several transcriptional repressors are associated with metastasis. Since protein kinase C (PKC) is a potent inducer of metastasis, we hypothesized that PKC-induced repressive histone codes promote BC cell metastasis. This hypothesis was tested by activating PKC with PMA and testing its effect on the tri-methylation of histone 3 at lysine 27 (H3K27me3), a repressive marker, on BC cell migration and invasion. PKC activation significantly increased the migration of MCF-7 (1.97x) and MDA-MB-436 (1.17x) cells ($p < 0.05$). Consistent with this, there was a significant increase in migratory structures in PKC activated MCF-7 and MDA-MB-436 cells ($p < 0.05$). Moreover, PKC activation promoted the invasive capacity of both non-metastatic (MCF-7, 2.10x) and metastatic (MDA-MB-436, 7.19x) BC cells ($p < 0.05$). Assessment of histone tri-methylation using western blot and immunofluorescence identified a significant induction of H3K27me3 by PKC in MCF-7 and MDA-MB-436 cells ($p < 0.05$) that was reversed by DZNep, a pan tri-methylation inhibitor and by BIM-1, a PKC inhibitor. More importantly, DZNep inhibited PKC-induced migration and invasion of both MCF-7 and MDA-MB-436 cells ($p < 0.05$). In summary, these results demonstrate a role for PKC-induced histone repressive mark H3K27me3 in promoting BC cell metastasis.

A Data-Driven Analysis of Rate-My-Professor' Student Reviews on Universities

Gunaseelan Tamilchezhian

Advisors: Dr.Jinoh Kim and Dr. Truong-Huy Nguyen

Department: Computer Science

College: Science and Engineering

Category: Graduate

Assessing the educational qualities of the academic institutions is essential for future improvements. The RateMyProfessors.com (RMP) data is a helpful resource for this purpose, since it contains self-selected students' quantitative scores and verbal reviews for both professors and institutions, which could be used to identify the potential areas for improving the educational qualities of the academic institutions. With its importance, there has been a body of research analyzing the RMP data, but the existing research simply focused on the quantitative scores or considered only professors' reviews. This project initiates a new research approach that incorporates the verbal reviews as a means for the qualitative analysis with the quantitative scores. To this end, I propose to develop a new methodology to enable a data-driven analysis of the RMP's university reviews, with the following steps: (i) sentiment analysis of the verbal comments, (ii) aspect-based sentiment analysis to extract the specific aspect of the verbal comments, (iii) clustering of institutions with respect to the sentiment analysis results, and (iv) correlation study with the quantitative scores for interpretation. This project will present new findings and observations made with the RMP dataset pertinent to Texas universities and colleges which will be beneficial to improve the quality of the academic institutions.

The Challenges Aspiring African American Women Principals Experience in Attaining and Meeting the Demands of the Principalship

Amanda Turner McCarther

Advisor: Dr. Warren Ortloff

Department: Educational Leadership

College: Education and Human Services

Category: Graduate

The purpose of this phenomenology study is to understand what contributes to the underrepresentation of African American principals in public elementary school settings. Five African American female aspiring principals who hold a principal certification will describe experiences and challenges they face as they seek a principalship. In addition, five African American female principals will describe their experiences and challenges they face in the principalship. A phenomenological methodology will be used to answer research questions related to the challenges aspiring African American principals experience in attaining and meeting the demands of the principalship. The study will consist of semi-structured interviews with participants who will be identified through snowball sampling. In-depth interviews will allow participants to share the challenges and barriers they experience that influence the underrepresentation of African American women principals. Participants' responses will be transcribed, analyzed and organized by their responses. Responses will be used to identify significant statements to determine cluster themes. Finally, textural and structural descriptions are used; a synthesis of meanings and essences of the experience will be described. The significance of the results will provide a framework to increase the number of African American women in the principalship.

Repeated Predator Stress Impairs Working Memory and Induces Neuroinflammation

Ami Bhakta

Advisor: Dr. Kodeeswaran Parameshwaran

Co-Authors: Dr. Param, Karthik, and Euitaek

Department: Biological and Environmental Sciences

College: Science and Engineering

Category: Graduate

PTSD is a complex debilitating mental disorder afflicting those who have endured traumatic events. The absence of a comprehensive understanding of its pathogenesis and disease mechanisms poses difficulties in developing effective therapeutics for consistent relief. The purpose of this project is to find a robust animal model that parallels the full spectrum of PTSD-like symptoms in humans. In this study, we designed a mouse model to investigate the effects of repeated predator stress in behavioral outcomes and molecular signaling in the hippocampus, a medial temporal region in the brain susceptible to structural and functional aberrations in PTSD. For 28 consecutive days, young mice (C57BL/6) were exposed to adult Long Evans rats; thereafter, their behavioral and molecular changes in the hippocampus were analyzed. Our results indicate that repeated predator exposure impairs hippocampus dependent memory, but does not develop hyperactivity, anxiety, or anhedonia. Furthermore, while the hippocampus of stressed mice displayed an elevation in Interleukin (IL-1 β) protein expression and a downregulation of corticotrophin releasing factor (CRH) gene expression, significant alterations in neurotrophin expression such as brain derived neurotrophic factor (BDNF) and nerve growth factor (NGF) were not detected. Our findings demonstrate that chronic stress impairs hippocampus dependent memory and this adverse effect may be linked to perturbations in inflammatory and hormonal signaling in the hippocampus of mice. These results can be preliminary steps in elucidating pathogenesis of the PTSD in humans.

High Surface Area Palladium Catalysts, for the Selective Hydrogenation of Diphenylacetylene

Kenneth J. MacKenzie

Advisor: Dr. Bukuo Ni and Dr. Ben Jang

Co-authors: Jessica Velazquez and Syed S. A. Hussaini

Department: Chemistry

College: Science and Engineering

Category: Graduate

There has been a growing interest in catalyzed hydrogenation, as a means of chemical synthesis in the pharmaceutical, petrochemical and food industries. These industries use metal based catalysts as a means of mass producing common chemical products (such as fats and oils, ammonia, vitamin A, and polymeric monomers). Using heterogeneous catalysts, for easy separation, alkynes can be selectively reduced to alkenes and not to alkanes. With this research, we hope to analyze the conversion, and selectivity potentials of an array of palladium catalysts in the hydrogenation of diphenylacetylene. We hypothesize that these catalysts can be used to hydrogenate close to 100% of the substrate, to the cis- and trans- stilbene, without producing significant amount of bibenzyl. The results show that high conversion and relatively low selectivity or high selectivity and relatively low conversion can be obtained with the catalyst of 0.05%Pd supported on alumina. Continued optimization of catalyst formulation and reaction condition will be reported. Advances in this area of chemical synthesis, would allow manufacturing companies to further employ the values of green chemistry, by using recoverable catalysts, with close to 100% conversion and selectivity towards the production of the desired product. This method of synthesis would lessen the production of wasteful byproducts, minimize solvent use, and reduce reaction times.

Isolation of a Pyrimidine Biosynthetic Pathway Mutant in *Pseudomonas monteilii*

Jayendra Chunduru

Advisor: Dr. Thomas P. West

Department: Chemistry

College: Science and Engineering

Category: Graduate

The isolation of a pyrimidine biosynthetic pathway mutant in *Pseudomonas monteilii* ATCC 700476 was investigated. Initially, the ATCC 700476 cells were subjected to chemical mutagenesis with 1% ethylmethane sulfonate. The mutagenized cells were next subjected to two rounds of D-cycloserine (1 mg/ml) counter selection in glucose minimal medium for 2 hours at 30°C with aeration to eliminate wild-type cells. The surviving cells were screened for uracil auxotrophy and one uracil auxotroph was identified. This mutant grew at 30°C on uracil, cytosine or uridine when either 0.4% glucose or succinate was the carbon source. Also, the uracil auxotroph grew on 50 mg/l orotic acid if glucose was the carbon source. The activities of the pyrimidine biosynthetic pathway enzymes aspartate transcarbamoylase, dihydroorotase, dihydroorotate dehydrogenase, orotate phosphoribosyltransferase and orotidine 5'-monophosphate decarboxylase were measured in the mutant cells grown at 30°C on glucose or succinate minimal medium containing uracil. The activity of dihydroorotase was found to be substantially reduced in the mutant cells whether grown on glucose or succinate as a carbon source in the uracil-containing medium. Overall, this study demonstrates that the isolation of a pyrimidine biosynthetic pathway mutant strain from *P. monteilii* ATCC 700476 is feasible using conventional mutagenesis and selection procedures.

G1P3, a Mitochondrial Anti-apoptotic Protein Regulates Neuronal Cell Spreading and Differentiation

Anne Davenport

Advisor: Dr. Venu Cheriya

Coauthors: Harman Kaur and Joseph Fisher

Department: Biological and Environmental Sciences

College: Science and Engineering

Category: Graduate

Neuronal cell adhesion and spreading is critical for their survival, differentiation and signaling. Recent studies from our laboratory identified a role for G1P3, a mitochondrial localized anti-apoptotic protein in actin mediated cell migration. Since cytoskeletal actin controls cell adhesion and spreading, we hypothesized that G1P3 upregulation in neurons may alter cells spreading and differentiation to affect their function. To test this, G1P3 was stably expressed in SH5Y cells (SH5Y^{G1P3}) and compared their function to vector expressing cells (SH5Y^{vector}). Expression of G1P3 was verified by western blot analysis. In a time course experiment, compared to SH5Y^{vector}, a significantly higher percentage of SH5Y^{G1P3} cells underwent cell spreading at 15 min (4.6x), 60 min (3x), and 2 hrs (10x, $P < 0.05$). Although both SH5Y^{vector} and SH5Y^{G1P3} adhered to the matrix at equal efficiencies, at 24 hours SH5Y^{G1P3} altered their morphology and were epithelial-like. Moreover, all-trans retinoic acid, an inducer of neuronal cells promoted neurite outgrowth in SH5Y^{vector} cells, but not in SH5Y^{G1P3} cells. To identify molecular pathways affected by G1P3, microarray followed by network analysis was performed. In SH5Y^{G1P3} expressing cells, the expression of genes involved in cell spreading, focal adhesion, and axon guidance were overexpressed. In summary, our results for the first time demonstrate the role of a mitochondrial anti-apoptotic protein in neuronal cell spreading and differentiation and elucidate the affected cellular pathways.

Co-precipitation synthesis of palladium and cerium solid solution as efficient catalysts for selective hydrogenation of acetylene in ethylene

Seunga Kim

Advisor: Dr. Ben W. L. JangDepartment: ChemistryCollege: Science and Engineering

Category: Graduate

Palladium based materials are well-known commercial catalysts for selective hydrogenation of acetylene in ethylene for the multi-billion polyethylene industry. Recently, ceria has been demonstrated to show high selectivity and considerable activity for selective hydrogenation at high temperatures. The objective of this investigation is to develop ceria based catalysts with high activity and high selective for the selective hydrogenation of acetylene in ethylene at lower temperatures. The approach is to combine Pd with ceria into one catalyst system using the co-precipitation technique followed by post treatment procedures. Such Pd-ceria catalysts with 0.15% and 0.2% of Pd have been synthesized and studied a various temperatures, including 50°C, 75°C, 100°C, 125°C, 150°C, 175°C, and 200°C after 1 hour of hydrogen reduction at 200°C. The results show that the activity of 0.15% Pd-ceria is good with ~90% conversion at 100°C. However, its selectivity is below 0% due to the hydrogenation of ethylene in the feed. Calcination at 600°C decreases its activity but increases the selectivity. Especially, the calcined samples were shown relatively stabilized activities. Further investigation on the effects of the calcination time and temperature as well as hydrogenation reduction temperature on the behavior of the catalyst will be studied and compared with the 0.2% Pd-ceria catalyst samples. Also, the trend that the results were different according to the low NaOH concentration at the co-precipitation stage. So, more studies about the variables that affects on the co-precipitation of the catalyst samples are needed.

Developmental Nicotine Exposure Impairs Hippocampus Dependent Memory and Cholinergic Function in Mice

Kartheek Gavini

Advisor: Dr. Kodeeswaran Parameshwaran

Co-Authors: Euitaek Yang and Ami Bhakta

Department: Biological and Environmental Sciences

College: Science and Engineering

Category: Undergraduate

One of the striking long-term effects of smoking during pregnancy is cognitive abnormality in children. Several animal studies indicate that rodents exposed to nicotine prenatally show long-lasting impairments in learning and memory that normally require undisrupted function of the hippocampus, a region in medial temporal lobe of the brain. Nicotinic acetylcholine receptors (nAChRs) are highly expressed in the hippocampus and play crucial roles in synaptic development and maturation; these developmental events are temporally regulated and occur during both prenatal and postnatal developmental periods. Nicotine, the major psychoactive compound in tobacco is a potent activator of nAChRs, and the use of tobacco during pregnancy causes aberrant activation of nAChRs resulting in altered nAChR mediated developmental processes. In this study, we used a mouse model of developmental nicotine exposure (DNE) and analyzed hippocampal-dependent memory by performing 8-Arm Radial Arm Maze and Object Recognition Tests. Additionally, acetylcholine (ACh) and acetylcholinesterase (AChE) levels in the hippocampus were studied in conjunction with a cholinergic gene expression analysis. Our results show that DNE reduced hippocampus dependent working ($p < 0.0005$) and object recognition memory ($p < 0.026$). Furthermore, DNE reduced endogenous ACh ($p = 0.003$) and AChE ($p < 0.05$) levels and downregulated High-Affinity Choline Transporter (ChT) gene expression. Collectively, these results suggest that DNE impairs hippocampus dependent memory and this adverse effect is potentially mediated by an altered hippocampal cholinergic system.