4-10-2015

2015 UAB Expo

University of Alabama at Birmingham

8th Annual Undergraduate Research EXPO

April 10th 2015

Abstract booklet

Order of the Day

Time	Event and Location
7:00 - 8:00 am	**Registration**
8:00 am - 10:00 am	**Oral Presentations** Ryals Public Health Building - Rooms 121, 125, 127, 234
10:15 am - 10:30 am	**EXPO Opening Address (+ Coffee Break)** UAB Campus Recreation Center - Main Courts 1-4
10:30 am - 12 noon	**Poster Presentations** UAB Campus Recreation Center - Main Courts 1-4
12 noon - 1 pm	**Lunch (+ Live UAB Entertainment)** UAB Campus Recreation Center - Main Courts 1-4
1:00 pm - 1:45 pm	**Keynote Speaker** Heritage Hall Building - Room 102
1:45 pm - 2:15 pm	**Award Ceremony and Close** Heritage Hall Building - Room 102
2:15 pm	**UAB Campus Tours** Heritage Hall Building - Foyer by Elevators

Keynote Speaker

"So You Say You Like Research?"

Professor Jennifer Pollock is a renown scientist researching the intersection of kidney function and hypertension. At UAB she is integral to creating and leading he new section of Translational Cardio-Renal Research. In addition to secondary appointments in the department of Cell, Developmental and Integrative Biology. Dr Jennifer Pollock is also a member of the Medical Scientist Training Program (MSTP) steering committee and will have a leadership role in the Center for Free Radical Biology. Join us as we hear from Dr. Pollock valuable insights about research opportunities and careers paths!

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Oral Presentations (OP)

Session Time: 8 am – 10am

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2	8:15 - 8:30	2001: A Campaign Odyssey, A Post-Election Study of *Bush v. Gore*
3	8:30 - 8:45	English Education in Egypt
4	8:00 - 8:15	Bioglass Mediated Bone Regeneration by miRNA linked to Wnt Signaling
5	8:15 - 8:30	Proposed Study of the ECA and SMS Recycling Tools
6	8:30 - 8:45	So You Want to Do a Systematic Review? Lessons Learned from the PROSPERO Registry
7	8:45 - 9:00	Glial fibrillary acidic protein is involved in the motility of vesicles containing excitatory amino acid transporter 2 in cultured mouse astrocytes
8	9:00 - 9:15	Structural Basis for Fas-mediated Apoptosis
9	9:15 - 9:30	Effect of Adhesive Coats and Solvents on Bond Strength
10	9:30 - 9:45	The associations between mindfulness, pain catastrophizing, and the nociceptive processing of painful stimuli
11	9:45 - 10:00	Evaluation of Ciprofloxacin and Metronidazole Encapsulated Biomimetic Nanomatrix Gel on *Enterococcus faecalis* and *Treponema denticola*
12	8:00 - 8:15	Development of BaZrO3/NiO Composites for use as Anodes in Proton Conducting Solid Oxide Fuel Cells
13	8:15 - 8:30	Evaluation of Cardiac Mesenchymal Stem Cells (cMSCs) for Heart Repair
14	8:30 - 8:45	Gloss and stain resistance of ceramic-polymer CAD/CAM restorative blocks
15	8:45 - 9:00	Modulation of Glutamate Receptor Decreases Inflammation and Neurodegeneration in Parkinson's Disease
16	9:00 - 9:15	Tbx6 knockout in Zebrafish by way of CRISPR-Cas9
17	9:15 - 9:30	*Pneumocystis* Pneumonia in Mice Lacking Acidic Mammalian Chitinase
18	8:45 - 9:00	Development of a Real-time Foot and Bacterial Traffic Monitoring System for Operating Rooms at Highlands Hospital
19	9:00 - 9:15	When the Dog Bites and Bee Stings: *A systematic review of the impact of trauma on success in African-American adolescents and adults.*

OP Number	Time (A.M.)	Abstract Title
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23	9:45 - 10:00	Group-Based Expressive Writing as Coping Mechanism for Ambivalence about the Future
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25	8:15 - 8:30	The Effects of Insurance on Child Health
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27	8:45 - 9:00	Using Interactive Storytellers to Broaden Participation in Graduate Computing
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29	9:15 - 9:30	What do people think of the Federal Reserve?
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2	The Influence of Women on the Spanish Civil War
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16	**Establishing Ohmic Contacts on Gallium Nitride Using Indium Metal**
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PP Number	Abstract Title
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Full Abstracts

Oral Presentations (OP)

Category 1: Art and Humanities

OP 1

Rite of Passage: Exploring Gender through Poetry

Emmett Christolear
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University Honors Program

English Departmental Honors

Abstract Body

Gender affects us all; it affects our relationships, company marketing, mass media and every other facet of our existence. “Rite of Passage” is a short collection of poetry that explores gender identity, stereotypes and performance. Searching for thing to write about revealed that gender expectations are everywhere: from registering for the draft to buying Legos. The collection primarily focuses on transgender lifestyles, a subject being highlighted by television, but still lacking representation in the written word.

Keywords
Poetry, gender, transgender, stereotypes, writing

OP 2

2001: A Campaign Odyssey, A Post-Election Study of *Bush v. Gore*

By Avi Yadav
Dr. Wendy Gunther-Canada (Advisor), UAB Department of Government

In the Election of 2000, Texas Governor George W. Bush won the electoral vote by only four votes (a margin of 1%) and Vice-President Al Gore won the national popular vote by only 543,895 votes (a margin of 0.5%). The last time such a split occurred was in the Election of 1888, when Benjamin Harrison won the presidency over Grover Cleveland. In extremely close elections, the candidate with the broadest geographic appeal is supposed to be the victor. This is an intentional result of the Founding Fathers' design of the Electoral College: to prevent one region from dominating presidential elections. Each state is guaranteed two Senators and a Representative in Congress, and therefore three electoral votes, regardless of population. Due to its closeness, Americans will inevitably remember the Election of 2000 for its extraordinary conclusion in the state of Florida. For Al Gore, it is just as well. Perhaps historians will devote less attention to the missteps that cost him the presidency *he should have won.* He had lost it mainly because he never exploited his greatest political asset: the remarkably strong economy that emerged during the Clinton / Gore administration. Gore was unable to properly embrace that successful record because he devoted far too much energy to distancing himself from Clinton following the Monica Lewinsky scandal. This case example shows us that campaigns really matter, and how especially important it is for successful incumbents to stick to a message of continuity, rather than change.

Keywords: Civics, Campaigns, Elections, Law, Politics

OP 3

English Education in Egypt

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&

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Abstract Body

In an increasingly globalized world, learning foreign languages is an essential part of education. This is especially true in much of the developing world where employers will not consider hiring anyone not fluent in English in addition to the native language. Unfortunately, failing public education systems often mean that only those wealthy enough to afford elite private schools can obtain the language skills necessary for success.

The documentary *English Education in Egypt* examines the differences between language education in public schools and private schools and the subsequent effects on social stratification in Egypt. It features a series of interviews with Deena Boraie, the President of an international organization called Teachers of English to Speakers of Other Languages (TESOL), Kathleen Saville, a senior instructor at the American University in Cairo (AUC), and Ali Massoud, a tutor in the English Literacy Program at AUC. Together, they explore the complex issues surrounding language education in Egypt.

In Egypt, there is a difference between speaking English and speaking English with an Arabic accent. As the documentary explains, for wealthy students in private schools, the instructors are American or British. For poorer students in public schools, the instructors are Egyptian. The different accents with which one learns to speak English can have staggering ramifications. Employers often associate Arabic accents with poverty and ignorance, a mentality that promotes classism. Students from wealthy families procure lucrative careers while students from poorer families are left unemployed, further widening socioeconomic disparities.

Keywords

Education, Foreign Languages, Egypt, Globalization

Category 2: Biological, Life and Physical Sciences

OP 4

TITLE: Bioglass Mediated Bone Regeneration by miRNA linked to Wnt Signaling

LUBANA AFREEN
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2 School of Dentistry of Ribeirao Preto, University of Sao Paulo, Brazil.

Objectives: Increasing clinical demand for bone regeneration drives a significant effort to develop new biomaterials including Bioglasses in tissue engineering–based therapies. To test mechanical properties, fully crystallized bioactive glass-ceramics, Biosilicate® (Bio) and Biosilicate® for scaffold fabrication (Bio-Sca), have been developed. However, their effect on osteogenesis remains unclear. Fundamental gene regulatory mechanisms including microRNA (miRNA) silencing contribute to key developmental switch for bone regeneration and homeostasis. To test the hypothesis that miRNA regulation affects the process of Bioglass mediated bone regeneration, the effect of 45S5, Bio, and Bio-sca on miRNA expression linked to tissue specific signaling, were evaluated.

Experimental Methods: Pre-osteoblasts from mesenchymal cells (BMSCs) of rat bone marrow were differentiated in osteogenic medium on 45S5, Bio, and Bio-sca discs for 10 days. Tissue culture polystyrene (TCP) was used as the control. Bone markers genes, tissue specific signaling, and miRNAs linked to osteogenesis were evaluated by real-time PCR at day 10. All evaluations were performed in triplicate (n=3) and statistical significance level was set at $p \leq 0.05$.

Essential Results: Gene expression of Runx2, OCN, and ALP were significantly higher in BMSCs cultured on Bioglasses surfaces, compared to TCP. Bioglasses induced the expression of Wnt signaling inhibitors SOST, DKK1, Axin1, GSK3b and BMP signaling, suggesting a switch of signaling to induce osteoblast differentiation. Furthermore, MAPK-3 and MPK-8 were increased while no significant changes were observed in AKT-1 expression. MiRNA analysis of bone marrow derived cells grown on Bioglasses led to the identification of several key miRNAs including miR-665, all of which were found to have downregulated. We also found that miR-665 inhibits both osteogenic differentiation, by repressing the expression of several key signalling molecules, and chromatin factors.

Conclusions: When taken together, we conclude that this novel Bioglass-miRNA regulation could led to a successful bone tissue engineering applications.

OP 5

Proposed Study of the ECA and SMS Recycling Tools

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Abstract: Relational Agents are "computational artifacts designed to build long-term, social-emotional, relationships with their users." They are able to build relationships with their users that increases the user's enjoyment of the application. The disadvantage of this technology is that when the relational agent appears unrealistic, some users will find it challenging to build a relationship with the agent. In addition, due to software limitations on today's smartphones, relational agents may not be able to load on a mobile device. Short Message Service, or SMS, is a method through which six billion messages are sent from person-to-person through mobile phones every day making SMS an alternative interface to which many individuals will have mobile access. Using the Twilio API, an interface was developed with the same conversational functionality as Relational Agents. This paper investigates the potential of SMS interfaces as an alternative to interfaces using an Embodied Conversational Agent in specific scenarios.

OP 6

Title: So You Want to Do a Systematic Review? Lessons Learned from the PROSPERO Registry.

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2. Office of Energetics, Dean's Office, School of Public Health

3. Nutrition Obesity Research Center, University of Alabama at Birmingham

Introduction: The PROSPERO registry of systematic reviews is a database designed to provide a comprehensive record and listing for public access. The aim of the registry is to ensure transparency, avoid redundancy, and provide a knowledge base to navigate current systematic review literature.

Aims: We sought to summarize the various logistical aspects of recently completed systematic reviews that were registered in the PROSPERO database in order to quantify the time and resources required to complete such projects. Our specific research questions were as follows: 1) How many team members/authors were required to complete the review? 2) How much time was required to complete the review and analysis and prepare the manuscript for publication? 3) What is the average efficiency of the search strategy as indicated by the ratio of papers included in the review compared to the number of papers found in the database searches (yield rate)? Methods: Our study examined nearly 200 registered systematic reviews across disciplines to explore the methodology, scope, and logistics undertaken by the authors of each respective review. Results: The amount of time and effort required is sizable. Data indicated the number of references found in the search ranged from 0 to 92,022 (trimmed mean = 3,450), the average yield rate was 13.0%, and the average number of authors per paper was 6.30. Conclusion: Given the expanse of literature, the workload required to complete a systematic review is immense, and further work in the field must consider developing more efficient methods for conducting systematic reviews.

Keywords: systematic review, registry, meta-analysis, qualitative review, metadata

OP 7

Glial fibrillary acidic protein is involved in the motility of vesicles containing excitatory amino acid transporter 2 in cultured mouse astrocytes

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2Department of Physics, University of Alabama at Birmingham
3Department of Biomedical Engineering, University of Alabama at Birmingham

Introduction

Microtubules and actin filaments in the cytoskeleton play an important role in the trafficking of intracellular secretory vesicles. Recently, it has been suggested that long-range vesicle motility in astrocytes may involve intermediate filaments as well.1 Glial fibrillary acidic protein (GFAP) is an intermediate filament that serves a structural role in the cytoskeleton and astrocytic processes. GFAP has also been implicated in the pathology of neurological conditions such as Alexander disease, characterized by the formation of elongated clumps of intermediate filaments including GFAP.2

Aims

We assess the role of GFAP in the trafficking of vesicles containing excitatory amino acid transporter 2 (EAAT2), a plasma membrane protein responsible for the uptake of the excitatory neurotransmitter glutamate from the extracellular space, within the cytosol of cultured mouse astrocytes.

Methods

We tracked vesicles containing fluorescently tagged EAAT2 using time lapse imaging and analyzed the resulting trafficking data using original algorithms, which we describe in detail, to obtain trafficking parameters such as maximal displacement, mean instantaneous speed, and mean square displacement.

Results

Trafficking parameters were compared between groups of cells from three transgenic mouse models—i) GFAP knockout mice deficient of GFAP, ii) mice exhibiting the overexpression of GFAP, and iii) Alexander disease model mice containing a mutation (R236H) in the gene encoding GFAP)—and from their respective genetic backgrounds.

Conclusions

Differences in the trafficking parameters between the astrocytes from these mouse models are indicative of the necessity of GFAP for normal intracellular vesicle trafficking.

1. Potokar M, Kreft M, Li L, Andersson JD, Pangrsic T, Chowdhury HH, Pekny M, Zorec R (2007).

Cytoskeleton and vesicle mobility in astrocytes. *Traffic* **8**, 12–20.

2. Brenner M, Johnson AB, Boespflug-Tanguy O, Rodriguez D, Goldman JE, Messing A (2001). Mutations in GFAP, encoding glial fibrillary acidic protein, are associated with Alexander disease. *Nature genetics* **27**, 117–120.

Keywords

Glial fibrillary acidic protein, vesicular trafficking, cytoskeleton, Alexander disease, glutamate transporters

OP 8

Structural Basis for Fas-mediated Apoptosis

Bliss Chang, Alexandra Samal, Timothy Fernandez, Jamil Saad
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The inability of cells to undergo apoptosis (programmed cell death) is an underlying cause for various diseases. Fas is an apoptosis receptor that has been shown to be implicated in both osteoporosis and various cancers. Several findings have proposed that Fas binds Calmodulin (CaM), a ubiquitous and highly conserved calcium-binding protein. Previous studies have suggested novel roles of CaM in Fas signaling. As such, increased CaM levels have been shown to cause unregulated cell growth and thus suggests a regulatory role for CaM. Importantly, CaM antagonists have been shown to cause apoptosis in cancer cell lines. Furthermore, mutations in Fas have been discovered in various types of cancers. These mutations may cause alterations in structure and thus function. Mice with a mutation of Fas have been identified; importantly, these mice exhibit a deficiency in Fas-mediated apoptosis. Preliminary data has revealed that CaM binds to Fas in a 2:1 ratio and a major structural change occurs due to that mutation. These observations open up an interesting venue regarding the potential role of binding ratios in regulating Fas-mediated apoptosis and the possibility of the mutation disrupting a region of Fas critical for binding CaM. In this study, we characterize the structure of the mutant Fas and identify the binding characteristics between Fas and CaM using structural, biophysical, and biochemical techniques. Understanding of the structural basis of CaM-Fas interaction will lead to a means to identify pharmacological targets for intervention into complex disease mechanisms, such as cancer.

Keywords
Structure, apoptosis, biochemistry, Fas, Calmodulin

OP 9

Effect of Adhesive Coats and Solvents on Bond Strength

Bright J. Chang[1,2], Nathaniel Lawson[1], and John O. Burgess[1]

[1]Department of Biomaterials, Department of Clinical & Community Sciences, University of Alabama at Birmingham School of Dentistry
[2]Department of Chemistry, University of Alabama at Birmingham

Objectives: To measure the dentin shear bond strengths (SBS) of 4 adhesives with varying numbers of coats. **Methods:** 200 extracted human molars were ground to midcoronal dentin. Four adhesives with different solvents (ethanol: Adhese Universal, All Bond Universal, Scotchbond Universal | acetone: Prime and Bond Elect) were applied under the following conditions: 1 coat and light polymerization (CP), 2CP, 3CP, CPC, and CPCP. Each coat of adhesive was applied and agitated for 15sec followed by 10sec of air drying. Z100 composite was placed in a polyethylene tube (d=1.5mm), affixed to the dentin surface and light polymerized (Elipar S10/573 mW/cm^2). After incubation (24hrs, 37°C), samples were debonded at 1mm/min in a universal testing device. The adhesive monomer content was determined by weighing an aliquot of adhesive before and after 24hrs of evaporation. A separate 1-way ANOVA and Tukey post-hoc analysis were performed for each material (alpha=0.05).

Results: (n=10)

	Adhese Universal (AU)	**All Bond Universal (ABU)**	**Scotchbond Universal (SBU)**	**Prime & Bond Elect (PBE)**
CP	28.8±7.1^{a}	33.6±8.8^{a,b}	31.5±8.3^{a}	15.5±7.7^{b}
2CP	32.1±8.3^{a}	29.2±5.3^{b}	31.7±6.6^{a}	24.2±8.4^{a}
3CP	34.6±7.4^{a}	41.2±7.0^{a}	30.7±6.5^{a}	19.3±11.5^{a,b}
CPC	34.0±5.9^{a}	29.3±6.7^{b}	25.9±8.4^{a}	16.3±8.0^{a,b}
CPCP	29.7±7.8^{a}	33.7±7.9^{a,b}	28.2±5.6^{a}	18.1±4.5^{a,b}

Differences between number of coatings was found for ABU and PBE; materials with statistically similar values are grouped with similar letters. Percent concentration of monomer was measured as 73.18±1.29% for AU, 56.9±1.64% for ABU, 67.92±0.45% for SBU, 39.54±1.06% for PBE.

Conclusions: Application of 1C of an acetone-based adhesive (PBE) produced lower SBS than 2C. 1C of ethanol-based adhesives produced equivalent SBS as 2C. Perhaps additional coats are needed with acetone-based adhesives due to a lower concentration of monomer.

Keywords
Adhesive, application technique, dentin, solvent, bond strength

OP 10

The associations between mindfulness, pain catastrophizing, and the nociceptive processing of painful stimuli

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Introduction: Research has shown that individuals who possess high levels of mindfulness are better able to tolerate pain compared to those who possess low levels. Furthermore, mindfulness has been reported as a resiliency factor against chronic pain.

Aims: The aims of this study were to determine the mechanism of action of trait mindfulness on endogenous pain modulation, particularly pain facilitation. Furthermore, this study aimed to elucidate any possible mediating factors, such as pain catastrophizing.

Methods: To address this possibility, our laboratory-based study of younger and older adults assessed individuals' self-reported mindfulness and pain catastrophizing prior to and after completion of a psychophysical pain testing battery. Included in this pain testing were measures capturing pain facilitation and inhibition.

Results: As hypothesized, greater mindfulness was associated with significantly less temporal summation of heat pain and pain catastrophizing. Pain catastrophizing, however, was not associated with decreased temporal summation, which was in contrast to our predictions and previous findings. One possible explanation is that our study consisted of a pain-free non-clinical sample; therefore, the catastrophizing scales used might not be appropriate.

Conclusion: Our results suggest that the primary mechanism through which mindfulness reduces pain sensitivity is by decreasing pain facilitation. Thus, mindfulness might serve as a protective factor against chronic pain. Future studies should include additional objective measures of mindfulness and pain processing as well as a chronic pain population.

OP 11

Evaluation of Ciprofloxacin and Metronidazole Encapsulated Biomimetic Nanomatrix Gel on *Enterococcus faecalis* and *Treponema denticola*

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Objective: Dental pulp tissue can be exposed by mechanical trauma and cariogenic process resulting root canal and/or periapical infection and it can be treated with an endodontic procedure. In order to regenerate pulp-dentin tissue in the infected immature root, a triple antibiotic mixture (ciprofloxacin; CF, metronidazole; MN, and minocycline; MC) has been used for dental root canal medicaments in pulp regeneration therapy. However, tooth discolorations, cervical root fractures, and inadequate pulp-dentin formation have been reported due to the triple antibiotic regimen. Therefore, antibiotic encapsulated biomimetic nanomatrix gel was developed to minimize the clinical limitations above while maximizing a natural healing process in root canal infection. In order to develop the new strategy for providing efficient root canal disinfection and adequate root dentin formation for successful endodontic regeneration therapy, we proposed to test the antibiotic encapsulated biomimetic nanomatrix gel as a drug delivery system.

Materials and Methods: First, minimal bacterial concentrations (MBC) of the selected antibiotics (CF and MN) were evaluated against fourteen representative endodontic bacterial species. Then, defined concentrations of CF and MN was separately encapsulated with injectable self-assembled biomimetic nanomatrix gel to evaluate antibacterial level on *Enterococcus faecalis* and *Treponema denticola*.

Results: Six different concentrations of CF and MN were separately encapsulated with an injectable self-assembled biomimetic nanomatrix gel. Antibacterial effects were demonstrated at the lowest tested concentration of 0.0625 μg/mL on *Enterococcus faecalis* and *Treponema denticola*.

Conclusion and Broader Impacts: These results suggest that each CF and MN encapsulated with the injectable self-assembled biomimetic nanomatrix gel demonstrated antibacterial effect, which could be effective for the root canal disinfection while eliminating MC. In the long term, the antibiotic encapsulated injectable self-assembled biomimetic nanomatrix gel can provide a multifunctional antibiotic delivery method with potential revitalization benefits. Further studies are planned to evaluate combined CF and MN encapsulated with injectable self-assembled biomimetic nanomatrix gel in clinical samples and *in vivo* experiments.

Keywords: ciprofloxacin, metronidazole, *Enterococcus faecalis*, *Treponema denticola,* injectable self-assembled biomimetic nanomatrix gel

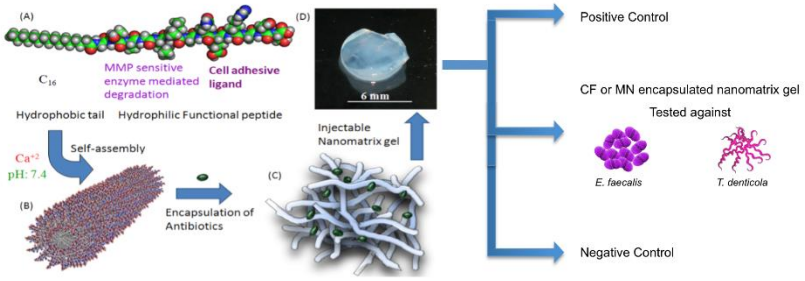

FIGURE 1. General scheme of the experimental design. Antibiotic encapsulated biomimetic nanomatrix gel system was evaluated against the aerobic bacteria, E. faecalis and anaerobic bacteria, T. denticola with three treatment conditions: CF, MN, and no antibiotic. A. Synthesis of peptide amphiphiles (PAs), B. Self-assembly of PAs, C. Encapsulation of antibiotics, D. Experiment design by with three options: Positive control (antibiotic without biomimetic nanomatrix gel), Antibiotic (ciprofloxacin: CF and metronidazole: MN) encapsulated biomimetic nanomatrix gel, Negative control (bacteria only)

OP 12

Development of BaZrO3/NiO Composites for use as Anodes in Proton Conducting Solid Oxide Fuel Cells

Authors and Affiliations
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Introduction: Solid oxide fuel cells (SOFCs) are devices that directly convert chemical into electrical energy through oxidation of a fuel. Currently, there is intense interest in developing new kinds of SOFCs that can reduce the typical 800-1000°C operating temperature of existing cells to the more manageable 400-600°C range, which can be achieved by using doped perovskite-type BaZrO3 protonic conductors as the electrolyte. However, no effective anode materials that are compatible with BaZrO3 have yet been demonstrated. The focus of this work is on developing and characterizing anode materials suitable for integration with BaZrO3-based electrolytes, to enable the next generation of SOFCs.

Methods: The anode material selected for study was BaZrO3-Ni cermet (ceramic and metal). Samples were created by mechanically mixing BaZrO3 and NiO powders, followed by pressing into cylindrical pellets (0.5 inches diameter), and sintering at various temperatures. Because the properties of the initial composite BaZrO3-NiO have a strong influence on the properties of the BaZrO3-Ni obtained after reduction in hydrogen, NiO and BaZrO3-NiO composite were studied as a first step to characterizing these complex materials.

Results & Conclusions: Using optical microscopy image analysis, grain growth and the presence of porosity were observed in BaZrO3-NiO. Analyzing the effect of sintering temperature on the densification of the composite powders showed that the porosity in its microstructure remains relatively constant beyond 1500°C. Electrochemical impedance spectroscopy (EIS) that was carried out on NiO as a reference indicated that there are multiple factors that contribute to the impedance in its structure, and possible sources for each factor are discussed.

Keywords
Solid oxide fuel cells (SOFCs), anode, barium zirconate (BaZrO3), nickel oxide (NiO), electrochemical impedance spectroscopy (EIS)

OP 13

Evaluation of Cardiac Mesenchymal Stem Cells (cMSCs) for Heart Repair

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Cardiac mesenchymal stem cells (cMSCs) are of mesenchymal origin, but express high levels of cardiac specific markers. Their role in intrinsic heart repair is not well understood. The cMSCs can be isolated; however, culture under static conditions alters their phenotype and function. To be used for subsequent cell therapy, cMSCs must be cultured under heart conditions. The difference between the heart and *in vitro* environment is the heart acts as a continuous pump, associated with changes in pressures and stretch with each cardiac cycle. To reproduce these mechanical stresses, we developed the Biomimetic Cardiac Tissue Model (BCTM). This model allows us to subject cardiac cells to different pressure, stretch, and heart rates to mimic physiologic and pathological conditions. Our aim is to evaluate the response of cMSCs to nominal levels (30 mmHg, 5% stretch, 80 bpm) of stress using the BCTM to determine changes in morphology, cytoskeletal organization, and gene expression. Cells were cultured for 3 days within the BCTM and evaluated or maintained in culture for 4 additional days and compared to static controls. Our preliminary data indicates significant cytoskeletal breakdown and reduction in gene expression of α-smooth muscle actin. When maintained in culture for an additional 4 days, cytoskeleton began to be reestablished with an increase in pluripotent stem cell markers NANOG and Oct 4, indicating transformation into a more pluripotent stem cell phenotype. These results suggest that expansion and conditioning within the BCTM can influence cMSC phenotype and function to positively impact cardiac tissue repair and regeneration.

Keywords
Cardiac Mesenchymal Stem Cells

OP 14

Neel Patel

Gloss and stain resistance of ceramic-polymer CAD/CAM restorative blocks

Objective: To evaluate the gloss and stain resistance of several new ceramic-polymer CAD/CAM blocks

Materials and Methods: Specimens (4mm) were sectioned from: Enamic (polymer-infused ceramic), LAVA Ultimate (nano-ceramic reinforced polymer), e.max (lithium disilicate), Paradigm C (porcelain), and Paradigm MZ100 (composite). Specimens were wet polished on a polishing wheel to either 320 grit silicon paper (un-polished, n=8) or 2000 grit silicon carbide papers followed by a 0.05μm alumina slurry (polished, n=8). Initial gloss and color (L*a*b*) values were measured. Specimens were stored in a staining solution at 37°C in darkness for 12 days (simulating 1 year). After storage, L*a*b* values re-measured. Change in color was reported as ΔE_{00} based on theCIEDE2000 formula. Gloss and ΔE_{00} were analyzed by 2-way ANOVA (alpha=.05). Separate 1-way ANOVA and Tukey post-hoc analyses were performed for both polish conditions and all materials.

Results: 2-way ANOVA showed factors material, polish and their interaction were significant for both gloss and ΔE_{00} ($p<.01$). Post-hoc analysis reveals that polished specimens had significantly less color change than un-polished specimens for Paradigm C and LAVA Ultimate. E.max had significantly higher gloss and less color change than all other materials.

Conclusion: The composition and polish of CAD/CAM materials affects gloss and stain resistance.

Clinical Significance: Ceramic-polymer hybrid materials can achieve the high gloss required for esthetic restorations. These materials should be polished in order to minimize staining. If polished, all of the tested materials exhibited clinically acceptable color changes at 1 year of simulated staining.

OP 15

Modulation of Glutamate Receptor Decreases Inflammation and Neurodegeneration in Parkinson's Disease

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Abstract

Parkinson's Disease (PD) is the second most common neurodegenerative movement disorder in the United States. Metabotropic glutamate receptor 4 (mGlu4) binds glutamate in presynaptic terminals of the brain and is localized to the substantia nigra pars compacta (SNpc). Previous studies have shown that mGlu4 activation plays a neuroprotective role in PD, but the role of mGlu4 in inflammatory response is currently unknown. We examined whether treatment of microglia with mGlu4 positive allosteric modulators (PAMs) afforded protection against lipopolysaccharide (LPS)-induced inflammatory response. Major histocompatibility complex II (MHCII) overexpression has been previously shown to play a role in the activation of both innate and adaptive immune responses to α-synuclein aggregation in PD. We are also exploring the role of mGlu4 in microglial MHCII expression in response to PAM treatment and are quantifying results that show inflammation-induced MHCII expression is decreased by mGlu4 PAM treatment. These findings indicate that mGlu4 PAMs have anti-inflammatory properties in addition to protecting against motor dysfunction in PD. This suggests their potential as novel therapeutic agents for the treatment of PD as well as quality of life improvement in PD patients.

Keywords

Parkinson's Disease, glutamate, inflammation

OP 16

Tbx6 knockout in Zebrafish by way of CRISPR-Cas9

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CRISPR-Cas9 is a genome editing technology that enables targeted genome editing. The single guide RNA that guides the Cas9 endonuclease to the targeted gene is cloned by identifying 20 nucleotides of DNA that match a predetermined pattern. We designed a guide RNA construct to target the Cas9 nuclease to exon 2 of tbx6. Knockouts of tbx6 have been shown to cause fused somites or vertebrae in mice. The effects of a knockout of this gene in zebrafish are still unknown. It is suspected that the knockout of tbx6 will have a "cyclops effect" which means that the splitting of the somites will stop to create one eye. Several steps beginning with designing the CRISPRs to putting the new DNA in bacterial cells and then sequencing the new DNA were performed. We created primers to make the single guide RNA. A PCR was then performed on the DNA. The DNA was then sent for sequencing. This is the last stage completed at this point. The end goal of this research is to observe the effects of the CRISPR for tbx6 in zebrafish.

OP 17

Pneumocystis Pneumonia in Mice Lacking Acidic Mammalian Chitinase

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Pneumocystis pneumonia (PCP) is a common fungal lung infection of immunecompromised patients. We studied *Pneumocystis* lung infection in mice that do not produce acidic mammalian chitinase (AMCase KO mice), an enzyme that degrades chitin in fungal cell walls. We began by intra-tracheal injection infecting AMCase KO and control mice with $2x10^6$ *Pneumocystis* cysts (PC). Contrary to our initial hypothesis, the AMCase KO mice had a significantly reduced fungal burden (47046 PC 18s rRNA copy number mean, 136195 PC 18s rRNA copy number mean, p=0.004,) after seven days of infection. Also we observed significant increase in phagocytic activity of AmCase KO alveolar macrophages (0.678%, 0.382%, p=0.0037 at 1 cell to 800 cysts ratio). In order to further characterize the macrophage activity, we observed cytokine profiles of isolated CD11C+ alveolar macrophages via ELIZA assays. AMCase KO CD11C+ cells expressed significantly increased levels of the CXCL9 (MIG) chemokine (p=0.0184, $\bar{x}$=28 pg/mL), a M1 cytokine, as compared to control cells. Finally we observed an increase of eosinophil infiltrates into the lung tissues of AMCase KO as compared to wildtype **(**67636 total eosinophils vs 20095 total eosinophils) after a seven day infection. Preliminary results suggest the increase of M1 macrophages and infiltration of eosinophils may be contributing to the control of *Pneumocystis* infection in a chitinase depleted model.

Keywords: *Pneumocystis,* pneumonia, chitinase, AMCase, macrophage

Category 3: Social, Behavioral and Health Sciences

OP 18

Development of a Real-time Foot and Bacterial Traffic Monitoring System for Operating Rooms at Highlands Hospital

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University of Alabama at Birmingham School of Engineering

Surgical Site Infection (SSI) is a condition where the patient receives an infection during surgery at the site where the patient was opened. They occur 30 days to a year after the surgery and can cause the patient to be readmitted or have a prolonged hospital stay by two weeks. 31,000 to 35,000 patients a year develop SSI. There is a strong linear correlation between airborne bacterial levels and SSI prevalence. Additionally, the amount of people traffic in and out of the OR has been known to correlate with SSI prevalence, as it is expected to push more bacteria-rich air into the OR environment. Other studies have reported that most movement into and out of the OR is not essential. Thus, we aim to create a Traffic and Bacteria Monitoring System that will make hospital personnel aware of unnecessary foot traffic along with alerting them of potentially harmful bacterial levels. Our system uses a plethora of sensors ranging form digital clocks, to proximity sensors, to RFID sensors wired to a specialized Arduino microcontroller to accomplish this. This system will be mounted above the doorway of each targeted entryway into the operating room. When a participant enters through the doorway, his or her presence will set off the proximity sensor. The RFID sensor will read the participants ID badge (which will contain the RFID transmitter) and their entry into the doorway will be recorded along with his identity. By keeping the hospital staff aware of movement in the OR, they will be able to review the data and cut down on unnecessary movement and increase OR efficiency.

Keywords: Microcontroller, Movement Tracking, Bacterial Sensing, Surgery, Engineering

OP 19

When the Dog Bites and Bee Stings: ***A systematic review of the impact of trauma on success in African-American adolescents and adults.***

Gregory Barber Jr.

This research examines the impact of intergenerational trauma and violence on African-American adolescents' development while simultaneously revealing potential detriment in adulthood. Despite recent reports on racially-charged crimes against African Americans and rising death rates due to inner-city violence, the academy has failed to produce substantial research on both the short and long term psychological effects of traumatic events on the African-American psyche. This exposure also leads to a myriad of social, academic, economic and political dilemmas such as decline in high school graduation rates, boost in crime rates and downward movement in social mobility. It was suggested that possible ways to counteract these traumas include implementation of violence prevention programs, positive coping skills and erection of community and recreational centers to combat violence and trauma within communities. Those adolescents, who participated in these programs of actions, were able to properly cope with past traumas and move upward in adulthood. However, those who did not use escapist methods to deal with their past traumas such as drugs, violence and partake in risky sexual behaviors. Because of these results, this research will be the foundation focusing on the impact of trauma on risky sexual behaviors in adolescents and detriment in adulthood.

OP 20

Influence of Gender Identity on Attitudes of Stigma Towards Persons with Mental Illness

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Stigma is a major problem surrounding persons with mental illness, and the foundations of such stigma are unclear. Variables of sex, race and ethnicity, education and age have been cited as potential factors of influence on attitudes of such stigma, but the relationships are tentative. The present study suggests that the ambiguous relationship between sex and attitudes of stigma may be associated with a lack of consideration for gender identity, or one's individual sense of masculinity and/or femininity. The relationship between gender identity and attitudes of stigma toward persons with mental illness has not been well documented. This study aims to determine if one's gender identity has a meaningful influence on their attitudes of stigma toward persons with mental illness. Participants were 269 undergraduate students at the University of Alabama at Birmingham in February of 2015. Students took an anonymous online survey composed of questions drawn from previously validated measures of gender identity and attitudes toward persons with mental illness. Results indicate that one's gender identity does not have a significant influence on attitudes of stigma toward persons with mental illness. However, it was concluded that biological sex was predictive of two of six measures of stigma. This study suggests that, while neither sex nor gender identity is a significant indicator of over all stigma, sex may have a potential influence on explicit measures of stigma.

Keywords
gender identity, sex, stigma, mental illness, attitudes

OP 21

Morality and Addiction: The 12-Step Discourse in the Treatment of Recovering Addicts

Harris Frank

UAB Department of Sociology

Introduction: Despite sparse evidence for its efficacy, the 12-step model for the treatment of addiction is used to some degree by most treatment facilities. While in treatment facilities, recovering addicts are expected to follow strict (moral) rules (e.g. no sex, make-bed, get job) but it is unclear if the motives behind these rules would exist independent of the 12-step narrative.

Aims: The aims of this study are to examine what effect, if any, 12-step discourse has on the moral treatment of clients by addiction counselors. Hypothesis 1 is that the 12-step discourse of addiction is dominant; more precisely, this discourse is the one counselors are most likely to utilize when discussing topics in addiction treatment. Hypothesis 2 is that internalization of the 12-step discourse is associated with non-12-step treatment decisions, with those counselors who internalized the 12-step discourse to a higher degree being most likely to use 12-step language as justification for moral treatment of clients.

Methods: I interviewed four addiction counselors using 15 open-ended questions about their views on addiction treatment and analyzed the transcribed responses using critical discourse analysis.

Results: Critical discourse analysis of the transcribed interviews revealed support for the two hypothesis. Three of the four counselors evidenced adherence to the 12-step narrative and used that framework to legitimize moral treatment of clients.

Conclusions: The way counselors view addicts as well as legitimize treatment decisions is predominantly understood through a 12-step narrative. Hence features of treatment that are ostensibly non-12-step are actually by-products of the 12-step discourse.

Keywords: 12-Step, addiction recovery, addiction treatment, morality, critical discourse analysis

OP 22

Group-Based Expressive Writing as Coping Mechanism for Ambivalence about the Future

Joshua Hill and Jon Watford

Morehouse College

Ambivalence is defined as approach-avoidant conflict, usually about some future event or expectation. College students often suffer from ambivalence when made to make decisions about their long-term future. People who experience such ambivalence about the future often simultaneously self-report higher levels of stress and anxiety. Prior research suggests that expressive writing reduces stress and increases academic motivation in college students. This experiment will investigate whether a group discussion and expressive writing treatment will result in statistically significantly higher reductions in perceived stress and increases in academic motivation more significant results than the expressive writing treatment alone. Forty college students will be selected from Morehouse College for this intervention, which is expected to be completed in April of 2015. In a between-group, pretest-posttest design, students will be randomly assigned to two groups. Both groups will receive an expressive writing treatment, and only the treatment group will receive a group discussion. Stress and academic motivation will be assessed using the Cohen Perceived Stress Scale and the Vallerand Academic Motivation Scale. Results will be analyzed using two ANOVA statistical tests.

Keywords: Expressive writing, stress, motivation, students

OP 23

Campus Safety and Fear of Crime on Campus

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Abstract

Attending college is a large transition for most students, and challenges them to learn not only higher education but also college life. Each student's personal background is different; some may be from urban areas, and some may not. As each college has its own particular environment, UAB a new way of learning and living. As an urban University, UAB is located in the center of the city of Birmingham, AL. The city of Birmingham has been indicated as one of the top 10 most dangerous cities in the United States (violent crime rate: 1,483 per 100,000 population) along with Detroit, St. Louis, Oakland, and Memphis. The incident at the 16st parking deck in October, 2014 brought UAB Community's attention on campus safety. To examine their concerns and perceptions on campus safety, this study conducted a survey research to UAB students. The findings of this study would help UAB community to understand students' concerns about campus safety and fear of crime on campus.

Keywords: Fear, Crime, Campus Safety, Police, Confidence

OP 24

The Effects of Insurance on Child Health

Bria Morgan

Objectives. – To identify the factors that most predict insurance for children and examine the effects insurance has on child health and educational attainment.

Methods. – Data from the National Longitudinal Surveys of Youth (NLSY79) and the Children of the National Longitudinal Surveys of Youth 1979 (NLSY79-Child) were used. When used together, the NLSY79 and the NLSY79-Child data provide a detailed record of U.S. families' socioeconomic circumstances and health. In logistic regression models, we examined the associations of insurance with family structure, socioeconomic status, race/ethnicity, and physical and mental health.

Results. – The effects of physical health were not significant when associated with children's attainment. Mental health was found to be significant at the 0.001 level, meaning mental health is a significant factor that influences children's eventual attainment. Family SES was found to be significant only when controlling for parental occupational prestige and education. Only reporting Hispanic for race/ethnicity decreased the likelihood for educational attainment. Reporting private or employer based insurance increased the likelihood of educational attainment for children.

Conclusions. – Having health insurance increases the likelihood of childhood educational attainment and diminishes the negative effect of mental health. Lacking insurance may produce barriers in the access to care, therefore; making child health more likely to have a negative effect on educational attainment.

KEY WORDS: child health, educational attainment, health insurance, family SES

OP 25

Abstract Title: First-Generation College Students and Class-Attendance

Author(s): Nicole Ogle
Affiliation/Institution(s): UAB Honors College and Department of Sociology Honors Program

In recent years there has been an increase of first-generation students being admitted to universities across the nation. First-generation college students, which are students with neither parent attending college, have been widely shown to have lower retention rates compared to continuing-generation students, students with at least one parent attending college.

Ultimately, the aim of this study is to determine the effects that cause first-generation college students to attend class less than continuing-generation college students and establish why, or even if, first-generation college students are more susceptible to the self-fulfilling prophecy. Different levels of self-efficacy will be evaluated to determine how self-efficacy correlates with academic success.

During the spring semester of 2015, a survey was conducted using students currently enrolled in the Introduction to Sociology (SOC 100) course at the University of Alabama at Birmingham. The main purpose of this survey was to analyze the class attendance rates among first-generation and continuing-generation undergraduate college students. The general self-efficacy and student self-efficacy was also evaluated as part of this study.

Keywords

First-generation, continuing-generation, self-efficacy

OP 26

Using Interactive Storytellers to Broaden Participation in Graduate Computing

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The need for increased participation from under-represented minorities in Science, Technology, Engineering and Mathematics (STEM) fields has been extensively documented and found to be crucial for the growth and development of the United States. This research aimed to address this problem by using interactive storytellers. Interactive Storytelling (IS) is a form of digital entertainment in which the users created or influenced a dramatic storyline through button-based input. Participants do so by issuing commands to the story's primary character, acting as a general director of events in the narrative. In addition, interactive storytelling is a medium where the story can be influenced in real-time by the user of the system. An interactive storyteller was created to teach users strategies when pursuing a doctoral degree in computing. A pilot study was conducted with twenty-five undergraduate STEM majors from two Historically Black College or Universities (HBCUs) to collect initial feedback about the tool, as well as mark their experiences. Overall, students enjoyed working with the agent and were more motivated to attend graduate school as a result.

Category 4: Business, Finance and International Studies

OP 27

Determinants of Tax Evasion in Greece and the Implication on Current Economic Policies

Mary Elizabeth Branton

ABSTRACT

The purpose of this study is to identify the leading factor behind the continued high levels of tax evasion in Greece and determine if current austerity policies successfully address the underlying problem. An empirical case analysis of both structural and cultural determinants relevant to tax behavior and adherence in Greece was collected, with an emphasis on studies surrounding the European debt crisis. After controlling for variations in structural determinants between Greece and other nations within the European Union there continues to be a significant disparity in the prevalence of tax evasion. This suggests that sociocultural determinants carry the greater weight in explaining tax behavior in Greece. Given that current economic polices aim to address structural components rather than cultural ones, questions arise on the efficacy of said programs. Effective public policy must be tailored to account for the specific cultural norms of Greece rather than structural ones. Success or failure in Greece may act as precedent for future policies in other nations.

OP 28

What do people think of the Federal Reserve?

Andrew Richards

UAB

There is an organization that controls our money supply, sets our interest rate, and is comprised of twelve people. This institution is the Federal Reserve. My goal is to see what people think of the Reserve and whether they view it favorably or unfavorably. The way I will get my research is by conducting surveys and by consulting academic journals.

After consulting over 15 academic journals, I have come to the conclusion that most experts do not think favorably of the reserve. Along with reading academic journals, I am going to also collect data by surveying students in my classes. Most of the articles I will use will be scholarly journals.

OP 29

The role of religious, tribal, and national identities in openness to family planning in Afghanistan and Iran

Charity Yoonhee Ryder

UAB Department of Anthropology

Family planning and sexual health in the Middle East and Central Asia have their own distinctive features. Furthermore, research in medical anthropology in the Central Asian republics have been lacking due to a history of conflict and thus lack of access by western researchers. Iran and Afghanistan are two interesting case studies in family planning due to their differences and diversity in religious sect, ethnicities, and government campaigns. Since the early 1990s, Iran has been considered a regional leader in family planning and a model for all Muslim-majority countries to follow. The aim of this study was to determine what are the key factors that influence an individual's willingness to use family planning services. This study consisted of a wide literature review and drew upon an understanding of Islamic/Shari'a politics. Several researchers have argued that family planning acceptance can best be described by the differences between Sunni and Shi'a. However, an individual's openness to family planning is determined by a variety of interacting factors including religious affiliation, tribal/ethnic identity, gender roles, perceived necessity of reducing or increasing population numbers, and the content of local fatwas. Tribal identity in Afghanistan is particularly strong; the major tribes include the Pashtuns, Hazaras, and Tajiks. Although family planning acceptance is a contribution of many interacting factors, it can better be explained by tribal/ethnic identity rather than Sunni or Shi'a affiliation, and this ethnic identity is expressed through local religious explanations and *itjihad.*

Keywords

Afghanistan

Iran

Family Planning

Islam

Poster Presentations (PP)

Category 1: Art and Humanities

PP 1

The Benefits and Value of Spanish Interpreters in Law Enforcement Careers

Rod Ellis II

UAB Department of Foreign Languages and Literatures / UAB Police

College of Arts and Sciences

Faculty Advisor: Dr. Lourdes Sánchez- López

Poster Presentation- Service Learning Category

For the last 30 years about 47% in the southern part of the United States are now Speakers of Spanish. This is due to vocational based migration and better opportunities in education. This shift in the language of the population has presented great challenges for law enforcement personnel. This presentation has a three-fold objective: 1) to help determine how law enforcement agencies can overcome challenges with language barriers; 2) to recommend a solution in law enforcement for serving Spanish-speaking communities; and 3) to suggest environments of understanding and unity between law enforcement personnel and Spanish-speaking cultures. The data analyzed for this study include public data related to agencies with and without Spanish-speaking personnel. The preliminary results indicate that: 1) Law Enforcement agencies that have Spanish-speaking personnel and interpreters are of better service to diverse communities than agencies that lack this type of personnel; 2) Police officers who can speak Spanish build relationships between Hispanic communities and various legal parties; and 3) Officers with the ability to speak some Spanish triumph the language barrier. My service learning experience working with UAB Guest Services during the spring 2015 semester has help me as an police officer to understand the importance of other cultures, embrace humanity fully regardless of social class, status, achievements or credentials, and become a more competent student in my studies of the Spanish language and cultures.

Keywords: Language Barrier - Community Service - Cultural Awareness - Diversity - Law Enforcement

PP 2

The Influence of Women on the Spanish Civil War

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Department of Foreign Languages and Literatures

Faculty Advisor: Dr. Sánchez-López

The Spanish Civil War consisted of the most damaging three years in the history of Spain (1936-1939). The devastation produced more than 600,000 deaths, and the recovery took almost thirty years for the nation to complete. During the war, women played vital roles in their families and, therefore, greatly impacted Spain. Women protected their families' secrets through public relations, promoted the women's rights through education, and provided the benefits of social services. The Spanish women were the silent strategists and the enforcement for education, during the chaos of the Civil War. The roles that the women of Spain played during these three years shaped the direction of the attitudes towards women for years to follow. From 1936 to 1939, there was a significant increase in the number of women that worked outside of the home, which enhanced the empowerment of women. Before the war, the image of women was opaque because they were the hidden support pillars for men. In the years following the war, the image of women was not confined to the household, and the fear of crossing social boundaries had evaporated. There are currently nine women and eight men in the Prime Minister's, José Luis Rodríguez Zapatero, cabinet. The Spanish government has never consisted of so many women. The pivotal change in women's roles during the Civil War opened the path for societal equality, and encouraged women to enter the government. They became important pillars to society and the economy during and after the Spanish Civil War.

Keywords: Women**,** Role**,** Society, Equality

PP 3

Athletics and Academics Affecting University Giving

Jesse Lawley

UAB Business Honors Program

Academic and athletic giving has been an asset to universities worldwide for continued growth of the programs. At the University of Alabama-Birmingham (UAB), giving has contributed to the success for athletics and academics. However, the point of emphasis is whether the undergraduate students at UAB realize the significance of athletic and academic giving. The craze of social media has also increased awareness of giving for universities. Therefore, the experiment surveyed over a hundred UAB undergraduate students with those types of questions in mind. The point of the research is to see if the UAB undergraduate students see the correlation between athletics, academics, and social media. The results show that giving to either academic or athletic giving is key for the success of the programs, and UAB undergraduate students realize the affects of giving will help UAB advance in the future. With the awareness of the undergraduate students, UAB should focus on how to keep the students involved and giving to the university after their undergraduate years are complete.

Keywords

Athletics, Academics, Social Media, Giving, Attitude

Category 2: Biological, Life and Physical Sciences

PP 4

Title: A Method of Increasing Fusion Success Rate and Decreasing Recovery Period Post-Arthrodesis

Authors:

Kevin Acreman, David Cruz, Austin Godwin, Robert Brown

Affiliation/Institution:

University of Alabama at Birmingham, Department of Biomedical Engineering

Abstract:

Post-arthrodesis recovery is dependent upon the ability of an implanted compression plate to introduce a compressive force across a specified joint. Current products are able to create such compression by either use of a ratcheting system, allowing for only incremental adjustments in compression, or through direct insertion of a compression screw longitudinally into bone and across the joint, causing continuous compressive force along with excessive amounts of destruction to the joint and bone tissue in the process. This document proposes a new design for an orthopedic compression plate that will provide continuous compression without causing excessive destruction to the surrounding tissues. Through use of a dual-plate system connected via a compression screw that bridges the specified joint, continuous compression will be created from the spiraling threads of the screw pulling the two plates closer together as the screw is rotated by the surgeon. The two plates will be attached the two segments of bone surrounding the joint via cortical bone screws. The current market size for foot and ankle devices is roughly $3.7 billion and is expected to increase to $4.5 billion within the next three years. Major companies such as Stryker, Tornier, WRIGHT, Synthes, and Osteomed dominate the market. The value proposition is the means of producing a superior and continuous compressive force across a joint post-arthrodesis. Our current customers are individuals who are candidates for foot/ankle surgery and include those who have had severe injury to the foot/ankle region and those who have attempted non-invasive efforts without success.

Keywords:

Arthrodesis, Arthritis, Compression Plate, Metatarsal

PP 5

Orientation Behavior of Diamondback Terrapin Hatchlings

Madeline Adams, Dr. Thane Wibbels

Department of Biology

University of Alabama at Birmingham

Abstract

Orientation behavior can be critical for an animal's survival and is shown in a variety of species-specific patterns. Many turtles have shown to use light and dark shadows or magnetic poles as cues for their orientation towards the sea. The Diamondback Terrapin is one of the only turtles to orient towards the marsh rather than the sea during post-hatchling behavior. Little is known about the Diamondback Terrapin's orientation cues. In this project, we set up an indoor environment with a mock marshland and an open horizon. Each hatchling was placed inside the arena and using an orientation quadrant ring, the turtle's path was recorded. A total of five experimental conditions were tested, mostly concentrating on the light source. We used chi square analysis to compare the data between an old orientation arena and a new orientation arena, gravitational influences, and alternating light distributions. Our results have certain conservational implications. Since the Diamondback Terrapin is a rebounding population, data about their orientation cues may influence coastal reconstruction and building around nesting sites.

PP 6

Title: Thermodynamics of Ethidium with Oxaliplatin-treated DNA

Authors: Apple, E.*[1], Legradi, C.*[1], Quarato, E.*[1], Longmire, M.[1], Graves, D.[1,2]

*** shared equal authorship**

[1] Department of Chemistry

[2]Comprehensive Cancer Center

Using differential scanning calorimetry (DSC) and isothermal titration calorimetry (ITC), the thermodynamics of platinated and unplatinated DNA were compared. These calorimetric methods were used to better understand combined chemotherapy with oxaliplatin and ethidium bromide. Combined chemo therapy is a combination of drug therapy and surgery and/or radiation therapy to stop the spread of cancer cells in the body. Tests were performed to determine the stability of the duplex oligonucleotide, d(CATATGGATATC):d(GATATCCATATG), when treated with oxaliplatin. This stability can be probed by melting profiles of the DNA. The possible number of binding sites changes according to the level of interaction between drug and DNA is determined by ITC. ITC also tells the type of interaction ethidium bromide and oxaliplatin take when together without any outside influences. Implications of this experiment include being able to better understand how the presence of one drug can potentially impact the effectiveness of drugs given later**.**

Key Words: Oxaliplatin, drug-binding, DSC, ITC

PP 7

Serotonin system differences in rats that exhibit distinct stress coping behavior

Anooshah E. Ata, Joshua L. Cohen, and Sarah M. Clinton

Chronic stress can lead to psychiatric disorders. How individuals cope can further influences their risk for developing mental illness. Stress coping styles can be broadly categorized as "proactive" (a fight-or-flight response) or "reactive" (a passive response) that may be driven by differences in serotonin neurotransmission. The present experiment used two rat lines exhibiting distinct stress coping styles, a group showing a proactive coping style (HRs) and the others (LRs) exhibit a reactive coping style. Previous studies display multiple serotonin system differences in the rat lines, including differences in mRNA expression of HRs. HRs are vulnerable to chronic social defeat and LRs are vulnerable to chronic mild stress. HR/LR rats show differences in their 5HT systems that can be seen in the tryptophan hydroxylase (TPH2) and c-Fos, a transcription factor.

This study examined neuronal activation patterns within regions of the dorsal raphe of HR versus LR rats. Rats were first exposed to the defensive burying test. Afterwards, rats were sacrificed and brainstem sections were immunostained for TPH2 (to mark serotonin-containing cells) and c-Fos (a marker of neuronal activation). As predicted, HR rats adopted a proactive response (burying the shock probe after an electric shock stress). LR rats chose a reactive response (becoming immobile after receiving shock). Using dual immunostaining for TPH2 and cFos, we examined neuronal activation within multiple subregions of the dorsal raphe (DR) including its dorsal division (DRD), caudal (DRC), ventral (DRV) and ventral lateral (DRVL) portions. Our analysis so far shows that HR rats display greater activation than LR in select regions of the raphe.

Keywords:

Coping styles, serotonin and tryptophan hydroxylase expression

PP 8

Pediatric Pericardiocentesis Simulation Device

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Pericardiocentesis is a procedure done in order to drain excess fluid in the pericardial sac surrounding the heart. During this procedure, a needle is inserted under the xiphoid process and into the pericardial sac. This procedure poses a chance of puncturing organs in proximity to the pericardial sac, especially in pediatric patients because of their small size. Simulations of this procedure are done in order to familiarize students with this procedure. There is only one product on the market that acts as a pediatric pericardiocentesis simulator; however, this product is relatively expensive and is a stand-alone device. The client, Dr. Nancy Tofil, needs a device that is an inexpensive pediatric pericardiocentesis simulator insert for existing 2-5 year old training mannequins. A two-tray system will be used for the device, with the bottom tray made of acrylic and the top tray made of hardened polyurethane foam. Within the insert is a pericardial sac and heart made of acrylic with a silicone rubber port, which allows for self-sealing during use of the device. The pericardial sac and heart are also filled with colored fluid to mimic the fluid found within the body during this procedure. In order to give an accurate representation of the procedural environment, polyurethane foam models of the liver, lungs, and stomach will also be included. The novelty of this proposed design is that it is an accessory device to pre-existing simulation mannequins and will be relatively inexpensive.

Keywords: Pericardiocentesis, Simulation, Training device

PP 9

Title: Lightning Fitness – A Para-Percussion Ensemble

Authors: Jakemia Barnette, Brittany Boyd, Pranayraj Kondapally, Meghan O'Malley, Ankur Patel

Abstract:

We have designed a Para-Percussion ensemble, which we call Lightning Fitness, to promote exercise among wheelchair users. The device adds therapeutic value to the users by providing an alternative form of exercise. Our aim is to promote exercise among wheelchair users between the ages of 10-80 years. Our design is created by mounting the RockBand portable drum system on an adjustable drum rack along with LED lights. The drums are mounted using boom bars, wood, and drum connectors. The LED lights surround the drums and can be lit up by hitting the drums. A signal is sent from the drums to an Arduino microprocessor which regulates the lights through a combination of transistors and resistors. Our device crates a new type of musical and visual experience while promoting exercise. Depending on each individual's needs, the rack can be manipulated and positioned to personalize and maximize exercise.

PP 10

Structure-function relationships within conserved domains of the Sec7 Guanine nucleotide exchange factor GBF1

Shelby Bergstresser, Jay M. Bhatt and Dr. Elizabeth Sztul

The formation of vesicles that transport proteins within cells requires members of the ARF family of small GTPases. ARFs cycle between an inactive (GDP-bound) form and an active (GTP-bound) form. Only the activated (GTP-bound) ARFs associate with the membrane to facilitate vesicle formation and trafficking. ARF activation is mediated by Guanine nucleotide exchange factors (GEFs), which catalyze the GDP/GTP exchange on the ARF protein. We focus our studies on the GEF called GBF1, which facilitates traffic between the endoplasmic reticulum (ER) and the Golgi. GBF1 is a high molecular weight, multidomain protein consisting of a central sec7 domain that catalyzes ARF activation and additional highly conserved domains with poorly understood functions. We hypothesized that the non-catalytic domains also play a role in GBF1 functionality, and in this investigation focus on the role of the HDS2 and HDS3 domains in GBF1 activity.

Using multi-species alignments of GBF1 orthologs, we identified a number of highly conserved residues in the HDS2 and HDS3 domains and generated mutations in those conserved residues. To study the role of these mutants in cells we also introduced mutations that confer resistance to the drug BFA, namely, E795K for the HDS2 domain mutants and Y828A for the HDS3 domain mutants. These mutant GBF1s were transfected into HeLa cells and the cells were treated with BFA to inactivate the endogenous GBF1. Because the transfected GBF1 mutants are BFA resistant, we then assessed whether they could support Golgi architecture, a process dependent on GBF1 function in vesicle traffic. We performed double-label immunofluorescence to examine the Golgi. Our statistical analyses suggest that the conserved, non-catalytic regions within the HDS2 and HDS3 domain of GBF1 are important to maintain Golgi homeostasis. Our future studies will aim to decipher the molecular mechanism of how the HDS2 and HDS3 domains influence GBF1 function.

Keywords

Guanine Nucleotide Exchange Factor, ARF, Vesicle Trafficking, Golgi homeostasis

PP 11

Chamber for Studying Arteriovenous Fistulas in a Flow-Loop System

Megan Bland[1], Deidre Dawson[1], Allie Haynes[1], Andrew Russell[2], Timmy Lee[3], Palaniappan Sethu[4]

Depts. of Biomedical Engineering[1], Business[2], Medicine – Nephrology[3], Medicine – Cardiovascular Disease[4], The University of Alabama at Birmingham

Abstract Body

Introduction: An arteriovenous fistula (AVF) is a surgical connection between an artery and a vein, typically created for dialysis patients. The AVF is morphologically changed into a sturdier vessel – a necessity for dialysis patients. Unfortunately, 60% fail via neointimal hyperplasia (excess tissue) formation, which narrows the vessel and renders it useless. The mechanism behind this formation is unclear, and an accurate *in vitro* model is needed as a research tool.

Aim: Dr. Palaniappan Sethu at UAB has developed a flow-loop system that mimics hemodynamics of vessels and could be used as one such model. An attachable chamber is needed that will provide perfusion through arterial and venous vessels for AVF study.

Methods: The multi-vessel chamber was designed to accommodate client preferences and engineering constraints. The chamber is plexiglass, enabling visualization of vessels during experimentation. Connection ports, manufactured from Delrin, protrude through chamber walls for attachment of varying vessel sizes inside and flow-loop tubing outside. Appropriate dimensions of the chamber and ports were determined using fluid mechanics. Scaffold tubing was chosen to mimic vessel mechanical properties. Furthermore, a one-way check valve was incorporated for fluid sampling and injection.

Results/Conclusions: Prototype manufacturing is in the final stages. Meanwhile, it was verified that separate flow conditions could be established and that an AVF could be sutured. Further validation will be conducted with the prototype in the flow loop, then experimentation will proceed. This tool will increase understanding of AVF failure and can be used to study other vascular diseases as well.

Keywords

Arteriovenous fistula, Dialysis, Neointimal hyperplasia

PP 12

Title: Influence of carboplatin on DNA stability and ethidium binding

Authors: Blankenship, H.*, Mansour, H.*, Silverwood, L.*, Smith, R.*, Longmire, M., Graves, D.

Combined chemotherapy is the mixing of drugs to kill cancerous cells. Often, this approach utilizes multiple DNA-binding ligands including platinum-based and intercalating drugs. Our project is looking at the way multiple drugs bind to DNA to better understand how combined chemotherapy works. Our model uses a 12 bp duplex oligonucleotide, d(CATATGGATATC):d(GATATCCATATG), and studies both the wild-type DNA and DNA that has been treated with carboplatin. This sequence allows for one primary intrastrand crosslink by carboplatin. We used ITC to analyze the binding of ethidium bromide to these DNA strands. DSC was used to analyze the stability of the platinated DNA and the thermodynamic characteristics of the system. We have utilized spectroscopic and calorimetric methods – namely UV-vis, DSC, and ITC – to better observe the effects of carboplatin on the stability of the duplex and monitor the binding of ethidium bromide in the presence or absence of carboplatin. This approach will allow us to understand the influence of platination on later drug binding and could be suggestive of how these drugs interact *in vivo.*

PP 13

Histological Evaluation of Hatchling Sex Ratios of Kemp's Ridley Sea Turtles Produced at the Padre Island National Seashore Following the Deepwater Horizon Oil Spill

Chelsea Bodin, Elizabeth Bevan, and Thane Wibbels

Department of Biology, University of Alabama at Birmingham

ABSTRACT

The Kemp's ridley sea turtle is known for being the most endangered sea turtle in the world, making it a target for strong conservation efforts. The Kemp's ridley, like all reptiles, exhibits temperate-dependent sex determination. This causes biased sex ratios that can be manipulated to produce a desired ratio, which is a useful tool from a conservation standpoint. After the *Deepwater Horizon* oil spill of 2010, there was concern over how toxin buildup would affect the sex ratios, and if there would be a negative effect on the conservation efforts of the Kemp's ridley. This study evaluated 241 hatchlings from Padre Island National Seashore in Texas that were found dead-in-nest in 2012. The hatchlings are dissected to obtain the gonadal tissue, and then standard histological methods are used to create slides, which are examined under the microscope to determine the sex of the hatchling. The predicted sex ratio is female-biased, which will produce an ideal strategy for the conservation of this critically endangered species. The results indicate that a female-biased sex ratio of 71.6% was indeed produced, which corresponds to data obtained in 2009, 2010, and 2011, indicating that there was no significant change in sex ratios after the *Deepwater Horizon* oil spill.

KEYWORDS

Kemp's ridley; temperature-dependent sex determination; sex ratio; conservation; Deepwater Horizon

PP 14

Analysis of Cosmic Ice Analogs with Terahertz Time-Domain Spectroscopy

Jackson R. Carr and David J. Hilton
Department of Physics, University of Alabama at Birmingham

Abstract

Introduction

Cosmic ices such as water and carbon dioxide are extremely prevalent in the outer regions of the solar system and the interstellar medium, and while we do know many things about cosmic ices, we are less certain of their evolution. Laboratory analogs must be available to astronomers in order to deduce anything from observational data of ices, and most of the measurements thus far have been in the mid to near-infrared regions of the electromagnetic spectrum (EMS)1. However, there are many ways to "see" the cosmos and different perspectives often provide further insight about the subject matter to
astronomers. We are interested in implementing a novel spectroscopic approach to characterize cosmicice analogs within the terahertz region of the EMS. This region is situated between the infrared andmicrowave domains, and many molecular constituents of cosmic ices have unique absorption features atterahertz frequencies.

Experimental Methods

Ultrafast terahertz time-domain transmission spectroscopy detects sub-picosecond dynamics of materials. We will transmit THz pulses through ice films grown in a cryostat by vapor deposition at 5 K. In doing so, we will optically detect the phase and amplitude of the transmitted electric field, which will
allow us to characterize these ices by their unique absorption spectra in the THz region of the EMS2.

Intentions of Research

By conducting this research, we aim to provide astronomers with a catalogue of high-resolution spectral images of our cosmic ice analogs so that they can compare them to observations from space-based telescopes and high-altitude observatories that can detect THz. We also hope to demonstrate the potential of THz spectrometers for future instrument designs in planetary probes and rovers.

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2. Boyd, Robert W. Nonlinear Optics, 3rd ed. Academic Press, Waltham, Massachusetts, (2008).

Keywords

Cosmic ice analogs; terahertz radiation; ultrafast time-domain spectroscopy

PP 15

Do mutations in *Drosophila melanogaster HP1b* affect larval locomotion?

Emaree Cobb, Tandy D. Petrov, and Nicole C. Riddle

The University of Alabama at Birmingham, College of Arts and Science, Department of Biology

The highly conserved Heterochromatin Protein 1 (HP1) family functions in chromatin structure and gene regulation. Our laboratory has generated the first mutations in *HP1b*, one of three somatic homologs of the HP1 family in *Drosophila melanogaster*. Because *HP1b* is highly expressed in the larval central nervous system, we hypothesized that larval crawling behavior might be affected by mutations in *HP1b*. Thus, we observed larval locomotion in *HP1b* mutants third instar larvae. Three genotypes were used in this assay: *yw* (control), $HP1b^{16}$ and $HP1b^{86}$ homozygous mutants. Larval movement was recorded over a 90 second period: Pictures were taken every 15 seconds resulting in a total of seven photos per trial. Larval crawling distance was assessed at the 45 second time mark. Analysis of variance detects a significant difference in the larval position among the three genotypes. These differences suggest that larval movement as measured by this assay is indeed impaired in *HP1b* mutant larvae. Thus my research provides novel insights into the role of HP1B.

Crawling assay

Drosophila melanogaster

Mutation

Larva

PP 16

Abstract Title

Establishing Ohmic Contacts on Gallium Nitride Using Indium Metal

Authors and Affiliations

Andrew M. Cornwell, Jamiyanaa Dashdorj, and Mary Ellen Zvanut

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Abstract

Introduction: Semiconductor materials are essential to daily life in a technology driven society. Numerous practical devices and research studies on semiconductors require that special electrical contacts obeying Ohm's law are produced on semiconductor samples.

Aim: This project attempted to develop a reliable way of creating Ohmic contacts on gallium nitride using metal indium.

Methods: Electrical resistance was measured for a gallium nitride sample using the four-point probe method and a multimeter in two different orientations, with and without electrical contacts, and with and without surface contaminants. No contact measurements were taken first. Then, metal indium fragments were cut off a spool of wire and pressed onto the sample. The sample was then placed on a hotplate for contacts to melt and removed for contacts to cool. Four-point probe and multimeter measurements followed to determine the resistance of the sample with contacts.

Results and Conclusions: Without contacts the current-voltage measures taken displayed Schottky behavior. Schottky behavior forces AC current into unidirectional flow because it creates a barrier electrons can fall from but not surmount. It is common in semiconductor diodes. With surface contaminants and contacts present, linear resistance values of 25kΩ and 1.4kΩ were measured in the two orientations. However, when surface contaminants were removed and contacts attached, a linear resistance value of 2kΩ was measured for both orientations. This suggests that removing contaminants produces more consistent results. Multimeter measurements with contacts but without contaminants averaged 1.9kΩ. Therefore, approximate resistance values of the contaminant-free sample may be obtained with a simple multimeter measurement.

Keywords

Gallium nitride, indium, semiconductor, Ohmic contact(s), four-point probe method

PP 17

Epigenetic Reactivation of Estrogen Receptor-α (ERα) by Erucin and Induction of Apoptosis in MDA-MB-231 Breast Carcinoma Cells

Rachel Daniell and Trygve Tollefsbol, Bidisha Paul (Mentors)
Department of Biology at the University of Alabama at Birmingham

MDA-MB-231 breast carcinoma cells lack the estrogen receptor alpha (ER-α), making this cell line more dangerous and harder to treat than other breast carcinoma cell lines due to its poor response to hormone therapy. This study investigates if erucin, a compound found in large quantities in rocket salad species such as arugula, can lead to the re-expression of the ER-α receptor gene through epigenetic mechanisms in MDA-MB-231 breast cancer cells. MDA-MB-231 cells were treated with 2, 5, 10, 15, and 20 μM of erucin. MTT cell proliferation assay was used to display the concentration at which erucin most effectively killed the carcinoma cells. In future studies the techniques of RNA extraction, Real-time PCR, and Western blot analysis will be used to assess the level of expression of the ER-α receptor gene in treated and non-treated cells. In addition, apoptosis assay will be used to assess erucin's ability to induce apoptosis in MDA-MB-231 cells. It was found that erucin most effectively killed MDA-MB-231 breast cancer cells at a concentration of 15 μM. This data can provide a foundation for future research on whether erucin leads to the re-expression of the ER-α receptor gene, if consuming foods with high erucin content can lead to prevention of breast cancer, and if erucin could be used effectively in combination with currently used chemotherapy drugs.

Keywords: Cancer, Erucin, epigenetic

PP 18

Using the CRISPR-Cas9 system to make single amino acid changes in *Drosophila melanogaster*

Authors: Olivia Delmas and Nicole Riddle

Biology Department, UAB

The heterochromatin protein 1 (HP1) family of proteins is known mainly for their role in heterochromatin maintenance and function, but can function in gene regulation and DNA repair. The *Drosophila melanogaster* HP1a, HP1B, and HP1C proteins are a part of this protein family, and homologs have been found in organisms ranging from yeast to humans. HP1a functions as a homodimer, and dimerization is critical for its function. Dimerization can be prevented by introducing a single amino acid mutation, changing isoleucine at position 191 to glutamic acid. Since HP1B and HP1C share a conserved domain structure with HP1a, it is likely they function as homodimers. To test this hypothesis, we are using the cluster regulatory interspaced short palindromic repeats (CRISPR) system to introduce mutations into the HP1 genes. We are using both S2 cells and flies to test this system. We have created a single-stranded guide RNA (sgRNA) targeted to a position near the I191 site to act as a guide for the Cas9 endonuclease, which will create a double stranded DNA cut. To evaluate the efficiency of the sgRNA in S2 cells, we are allowing the DNA to repair itself by non-homologous end joining (NHEJ), which creates short deletions or insertions. Once we identify a sgRNA that works well, we will use it to produce the desired point mutations. To achieve this goal, we will include a donor construct containing the I191E mutation to prevent dimerization. These new fly lines will allow us to examine the role of dimerization in the function of HP1 proteins.

Keywords: Heterochromatin, CRISPR, dimerization, mutation

PP 19

Chronology, Magnitude and Duration of Expression of Putative Sex-Determining/Differentiation Genes in a Turtle with Temperature-Dependent Sex Determination

Sanjay Desai and Hafez Golzarian

University of Alabama Department of Biology

Abstract:

Our research interests center on the biology and conservation of reptiles with an emphasis on temperature-dependent sex determination (TSD).The research that we are conducting is multidisciplinary and includes field research with conservation programs for marine turtles, as well as laboratory studies on the molecular physiology underlying TSD. In regards to marine turtle conservation, we work with sea turtles and with the diamondback terrapin, a turtle that inhabits bays and salt marshes. We are currently studying the biology of the diamondback terrapin and developing a recovery strategy for this depleted species in Alabama. This includes the evaluation of a head start program for the terrapin. We are also collaborating with a variety of state, federal, and international agencies on conservation programs for sea turtles. In these studies we are generating long-term databases for nesting beach temperatures that affect TSD, and we are evaluating hatchling sex ratios resulting from TSD. We are also evaluating optimal methods for assuring the survival of hatchlings on the main nesting beaches.

Key Words:

Temperature-Dependent Sex Determination (TSD)
Alabama
Gulf of Mexico
Sea Turtle
Diamondback terrapin

PP 20

Mario Espinosa-Hernandez

Biomedical Science

Transdermal Pain Creams Attenuate Pain and Improve Quality of Life in Patients with Chronic Multiple Sclerosis Pain

Multiple sclerosis (MS) is associated with pain and for nearly 50% of these their pain is chronic. The common treatment for these patients is the use of anticonvulsants such as Gabapentin and antidepressants such as Amitriptyline. Because of their adverse effects on the CNS including suicidal ideologies the use of these medications and others in transdermal pain creams was examined in 23 individuals who were diagnosed with chronic MS pain. Using MD Anderson's Brief Pain Inventory (BPI), individuals were asked to rate the severity of their pain, 24hr pain relief, and level that pain has interfered with their physical and emotional wellbeing before or after 1 and 4 weeks of transdermal pain therapy. The results show that pain intensity decreased from 5.5 to 4.8 after 4 weeks with improvement in both physical and emotional quality of life metrics of 19 and 21%. Of this population, 61% indicated that their pain had improved with the most recent 24hr pain reduction of 52% and 52% reported that their pain had decreased by at least 50%. These results show that customized transdermal pain cream can significantly reduce chronic MS pain and improve the quality of life in a population of chronic MS pain sufferers.

PP 21

Optimizing Chromatin Immunoprecipitation (ChIP)

Falahat, Michael; Watanabe, Louis; Riddle, Nicole

Department of Biology, University of Alabama at Birmingham

Abstract

Chromatin immunoprecipitiation (ChIP) is an experimental procedure used to investigate the interactions between proteins and DNA. A large variety of proteins associate with DNA, including histones, transcription factors, and many others as well. Some of these proteins have sequence specificity, while others do not. To gain a better understanding of chromatin structure, it is important to determine the genomic targets of DNA binding proteins. Obtaining such information can help us develop mechanistic models for cellular processes such as DNA replication and gene transcription. The basic steps in performing chromatin immunoprecipitation experiments are: Crosslinking of DNA and protein, chromatin preparation, immunoprecipitation, and analysis of immunoprecipitated DNA. The purpose of this study is to first optimize the experimental conditions to perform ChIP with chromatin derived from D*rosophila melanogaster* larvae, and then in adult muscle tissue. Once optimized, we will use this protocol to investigate chromatin changes occurring in the response to exercise in adult Drosophila.

Key words: *Drosophila melanogaster*, DNA, immunoprecipitation, proteins, chromatin

PP 22

Gene disruption using the CRISPR/Cas9 system to study the role of proteoglycan 4 (PRG4) and nodal-related 2 (NDR2) genes in zebrafish

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¶ Science and Technology Honors Program

*** Department of Genetics**

University of Alabama at Birmingham

The Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) Type II system is the newest and a widely used RNA-guided nuclease-mediated genome engineering system. The CRISPR/Cas9 system can be used to target and cleave specific sequences of the genome. The engineered CRISPR and Cas9 enzyme can be injected into zebrafish embryos to generate gene knockouts and observe the consequences.

We are interested in studying the consequences of disrupting proteoglycan 4 (PRG4) and nodal-related 2 (NDR2) genes in the zebrafish. PRG4 is the gene that codes for proteoglycan, also known as lubricin, which acts as a lubricant in human joints. There are two orthologs of PRG4 in the zebrafish genome - PRG4a and PRG4b.

NDR2 functions as a growth factor for the dorsal and ventral mesendoderm tissue in zebrafish. The NDR2 zebrafish system with a known phenotype was used as a test case for analyzing efficiency of the CRISPR-Cas9 system in our experiments.

Methods: Two exons for each of the genes, PRG4a, PRG4b, and NDR2, were selected using ENSEMBL Genome Browser. Two CRISPR sequences were chosen for each of the genes using the Optimized CRISPR Design website (crispr.mit.edu). Each of the three CRISPR/sgRNA sequences were built into a plasmid vector (pDR274) and then amplified by transforming *E. coli* with the modified plasmid vector. A positive CRISPR/sgRNA clone for PRG4a was sequence verified and the CRISPR/sgRNA synthesized in vitro to be injected into zebrafish embryos.

The successful knockout of these two genes could inform us on the role of PRG4a and NDR2 in zebrafish. This could lead to further insight into the function of these genes and treatments for related conditions in humans.

Keywords: CRISPR, PRG4, NDR2, zebrafish, gene knockout

PP 23

Quantitative Mapping of the metabolic activity of cytochrome c oxidase in the developing brain of a rodent depression model

Golf, S. R., McCoy, C. R., Melendez-Ferro, M., Perez-Costas, E., Stringfellow, S. A., Jackson, N. L., Clinton, S. M.

University of Alabama at Birmingham

Inherent disparities in temperament and emotional reactivity play a formative role in human stress response and predispose certain individuals to psychiatric disorders such as depression and anxiety. Our lab uses a rodent model of temperamental differences to study the neurobiological basis of these traits. Rats were selectively-bred based on high versus low novelty exploration – traits that predict several other emotional behaviors. For instance, Low Novelty Responder rats (LRs) exhibit high anxiety- and depression-like behavior compared to High Novelty Responder rats (HRs). Previous microarray studies in developing HR/LR rat brains identified numerous differences in genes involved in metabolic processes. As post mitotic cells, neurons engage in high levels of metabolic activity, which relies upon oxidative metabolism to provide energy through ATP production. Thus, activity of Cytochrome C Oxidase (COX)– the enzyme responsible for ATP production – strongly correlates with metabolic activity levels within a brain region. The present study used an assay to quantify COX enzymatic activity in several brain regions of developing HR/LR rats. We collected HR/LR brains at three early ages (postnatal days 7, 14, and 21) when metabolic gene expression differences occurred. Our ongoing analyses will create a map of metabolic differences in developing brain regions of HR/LR rats, with a particular focus on regions known to regulate emotional behavior (e.g., hippocampus, amygdala, prefrontal cortex). Results will help to understand how distinct patterns of brain development contribute to the HR/LR behavioral phenotypes, and may highlight specific brain areas that are most altered between developing HR/LR animals.

Keywords

Depression, Anxiety, Neurodevelopment, Cytochrome C Oxidase

PP 24

An expandable and nonstick electrocautery probe for choroid plexus cauterization

Tierra Green[1], Sara Liaghati-Mobarhan[2], Aaya Tarawneh[2], and Tianjiao Zhang[2]

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Body

Introduction Choroid plexus cauterization (CPC) is currently the most effective treatment for hydrocephalus. By cauterizing the functional tissue that produces cerebrospinal fluid (CSF), CPC reduces the amount of CSF produced, reducing intracranial pressure, the direct cause of hydrocephalus. Current cauterization electrodes, however, are not perfect: low contact surface area leads to long surgery times, and tissue adherence to the electrode increases the possibility of unintended damage to the brain.

Aims To remedy the aforementioned problems, we propose a CPC electrode with an increased surface area and a non-stick surface. This design reduces surgery time and tissue adherence, improving surgery effectiveness and safety for the patient. There are no current patents that present a competing claim, and thus our product has high IP potential.

Methods To increase surface area, we form the tip of the electrode into a sheet. The sheet is coiled to allow passage through the small endoscopic channel (Dia < 1.5 mm) used in CPC procedures, and unfolds at the cautery site to produce a curved contact surface. This electrode is manufactured using a nickel titanium alloy (nitinol), which has an inherent non-stick surface and electrical properties similar to the stainless steel electrodes currently in use.

Results and Conclusions We have created a prototype nitinol CPC electrode that can expand at the cautery site, and verified its cautery capabilities in a sheep brain model. We plan to add an encompassing sleeve to the electrode to provide a cleaning mechanism and allow for better control of the probe tip.

Keywords

choroid plexus cauterization, electrocautery, cautery probe

PP 25

Ibasaraboh Iyegha

March 26, 2015

Isolating the TCP Genes: Elucidating Key Plant Defense Pathways in *Arabidopsis thaliana*

Abstract

Arabidopsis thaliana contains 24 plant-specific transcription factors known as the TEOSINTE BRANCHED1-CYCLOIDEA-PCF (TCP) family. These transcription factors target critical downstream genes involved in key plant processes ranging from leaf morphogenesis to plant immunity. Through bioinformatic modeling and transcriptomic analysis, we have discovered common sequence domains in the TCP families that complement a particular microRNA (miR), miR319. The TCP transcription factors with promoter regions that are targeted by miR319 have been found to play an essential role in diverse developmental processes; however, the role of the TCPs in the plant immune system is not fully understood. My aspect of the project was to build towards finding the missing piece of the TCP immunity regulation puzzle. Initially, I worked to clone the key promoter sequences with TCP binding domains into *E. coli* cells via Gateway cloning. First, I prepared PCR amplifications of the targeted promoter sequences from *A. thaliana* using genomic DNA extracted from wild-type Columbia *A. thaliana*. I inserted the PCR products into P4-P1R vectors carrying kanamycin resistance through BP cloning, producing the entry clones for the Gateway cassette system. Next, I transformed the entry clones into competent *E.coli* cells, isolated them on kanamycin selective media, and purified the amplified entry clones. Then, I used the entry clones as the template in LR cloning reactions in order to transfer the genes to MW2 and MW3 destination vectors. As a result, I have cloned the promoter regions of *TCP2, TCP3, TCP4, TCP10,* and *TCP24* targets, and at least 2 clones for each gene are in their expression vectors for use in future downstream target recognition via yeast 1-hybridization. Yeast one-hybridization will identify the protein-DNA interactions between TCP proteins and their targets to better understand how these miR319-regulated proteins affect the plant immune system.

PP 26

Push and Pull Dual Directionality Attachment Wheels for Manual Wheel Chairs

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Abstract Body

1.5 million Americans use manual wheelchairs. However, most manual wheelchair allow users to propel themselves forward is by using repetitive motions of same muscle sets. This is problematic because prolonged usage of these devices cause chronic fatigue, injuries, and muscle atrophy. Rankin et al. reports that 65 percent of the users experienced pain were later diagnosed with torn rotator cuffs or tendinitis. The most common solutions to the problems are motorized wheelchairs, Rowheels®, and the products from Riomobility®. However, these solutions are either too expensive, reduce exercise, or have an unsanitary issues. The current need is to develop an inexpensive attachment for most manual wheelchair; that distributes muscle usage, and provide sanitary conditions for users. Our design is a dual directional two-hand rim wheelchair wheel which allows users to propel forward and backwards by either pushing or pulling on the wheels with each hand rims. This includes a tire, a spur gear differential system, and two hand rims attached to the tire and the gear system. To create dual directionality, the inner hand rim is attached to the wheel to provide regular motion and the outer hand rim attached to the gear to create the inverse motion. The separation of two hand rims allow for a change in motion while moving and avoid users to touch the tires; a common problem found in existing solutions. This design provides equal distribution of muscle usage and thus benefiting the users by preventing injuries and providing exercise to unused muscle sets.

Key words

Manual Wheel Chair, Shoulder Injuries, Muscle Atrophy, and Dual Directionality

PP 27

Runx2 Mediated Osteoblasts Signaling Regulates the Maturation and Development of Immune Cells

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The Runx2 transcription factor is well known for being a central regulator of bone formation. It acts as a master switch by activating and repressing cell growth and phenotypic genes. Deletion of the Runx2 gene results in complete failure of bone formation, and lethality at birth. In the absence of Runx2, mesenchymal cells fail to differentiate into cartilage synthesizing chondrocytes and bone producing osteoblasts. Runx2 actively inhibits fat synthesizing adipocytes. Osteoblasts secrete several factors that are known to regulate development of other cell types in the marrow, including cells of the immune lineage. In this study, we investigated how Runx2 deficiency in osteoblasts would affect the development of B and T cell lineages in the bone marrow.

Objectives: To understand whether mature osteoblasts regulate the development and maturation of immune cells.

Methods: An immunohistochemical approach was used to study the development and distribution of immune cells in wild type and Runx2 mutant mice.

Results: The Runx2 gene was deleted in mature osteoblasts by using osteocalcin-driven Cre-recombinase. We find that the deletion of Runx2 in mature osteoblasts does not affect embryonic bone development in mice. However, post-natal bone development is severely disrupted. The homozygous mutants showed rapid onset of osteoporosis, exhibited sign of premature aging, and died naturally by 5 months of age. Interestingly, these mice showed enhanced fat deposition in the bone marrow suggesting impaired bone marrow microenvironment. B and T cells thrive and mature in this microenvironment. Therefore, we investigated changes in development of immune cells. Femurs from 3 months old wild type and homozygous littermates were harvested and stained for B cell marker proteins using immunohistochemistry. We find a significant increase in the number of cells that were positive for B220, which is a marker of B cells. Interestingly, the dendritic cells, a subpopulation of B cells, were significantly increased in bone marrow of Runx2 mutant mice noted by CD11c and CD11b expression. We also tested IL-17 and TNF α which are 2 key signaling molecules produced by immune cells. We find a robust expression of IL-17 in the bone marrow cells of the Runx2 mutant mice. Surprisingly, the expression of TNF α was

significantly reduced in both the bone marrow and the growth plate of the Runx2 mutant mice.

Conclusion: Mature osteoblasts regulate the development and maturation of immune cells.

PP 28

Multi-Sensory Enclosure for Children with Autism

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[1]Department of Biomedical Engineering / [2]Collat School of Business

Abstract Body

Introduction: Multi-sensory environments are widely used as therapeutic treatment of overstimulation for individuals with Autism Spectrum Disorder (ASD). Our client, Kathy Fournier at the McWane Science Center, has a need to accommodate children with any level of ASD using limited, tentative spaces. This project focuses on a sound-damping, multi-sensory, portable enclosure that will reduce the transmission of external noise from an over-stimulating environment. This enclosure will provide a calming space for autistic children to regroup before exploring other exhibits.

Results: The enclosure was designed using CES material selection software and PTC Creo Parametric 2.0 CAD software. It is composed of sound-damping, light-weight sandwich composite panels in a modular design on wheels for simple disassembly and transport. Polypropylene honeycomb cores and fiberglass face skins were assembled into sandwich composite panels using vinyl ester resin and vacuum bagging techniques. The overall size of the enclosure is 6.5ft tall x 6.5ft wide x 5.5ft deep and capable of reducing sound transmission by at least 25%. Multi-sensory components such as dim lights, soft music, and textured objects, were also added.

Conclusions: This product offers value to numerous crowded and noisy, businesses such as museums, day cares, schools, sporting events, malls, and airports. These enclosures can potentially increase their customer base to include families of children with autism and other individuals with sensory sensitivities that now have a resource available to use for re-grouping during outings.

Acknowledgments: Dr. Alan Eberhardt, Dr. Joel Dobbs, Dr. Uday Vaidya, Ben Willis, Dr. Kristi Menear, and Dr. Dale Feldman

Keywords
Autism, Enclosure, Multi-sensory, Sensory Sensitivities, Sandwich Composite

PP 29

Society for Integrative and Comparative Biology

2015 Annual Meeting

Meeting Abstract

P1-5 Sunday, Jan. 4 15:30 **Exploring Taxon Concepts of Sponges (Porifera) through Natural Language Processing of Systematic Monographs** *JONES, C.L.*; HAMIDI, H.M.; CUI, H.; RODENHAUSEN, T.; WU, H.H.; THACKER, R.W.; Univ. of Alabama at Birmingham; Univ. of Alabama at Birmingham; Univ. of Arizona; Univ. of Arizona; Univ. of Arizona; Univ. of Alabama at Birmingham* dr.bob.thacker@gmail.com

Phylum Porifera contains over 8,000 described sponge species that are represented in systematic monographs ranging from Linnaeus (1759) to Systema Porifera (2002) to now. The concepts underlying the traditional morphological classification of sponges have changed dramatically over the past 100 years, and these concepts often conflict with modern molecular-based phylogenies. To explore and quantify how taxon concepts have changed with advances in both morphological and molecular systematics, we are testing novel natural language processing software, the Explorer of Taxon Concepts (ETC - Beta version), with regional and global systematic monographs of Porifera. ETC enables users to create xml files from the text of semi-structured taxon descriptions, and then parses these files using terms from morphological ontologies and those it discovers from the descriptions. Users then review the terms discovered by ETC, placing the terms into categories (such as anatomical structures, life-history stages, or colorations) and/or combining terms as synonyms. Based on this user feedback, ETC builds a morphological character matrix that incorporates these terms. Users can extensively edit the character matrix, for example, by color-coding data cells and controlling the states that characters can take. Our tests indicate that ETC quickly parses characters associated with numerical measurements, but to assess characters based on the presence or absence of a particular trait, the user needs to carefully categorize the discovered terms.

PP 30

Electron Paramagnetic Resonance Spectroscopic Investigation of Growth Defects in Fedoped Semi-insulating GaN

James E. Jones, Mary E. Zvanut, Ustun R. Sunay
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Introduction

The future of solid-state lighting and modern electronics relies on the progressive development of more efficient semiconductors. The specific electronic material of our focus is Fe-doped GaN. Although the heteroepitaxial growth method for GaN:Fe3+ is precise, defects may be caused by a mismatch between the substrate and film. As a result of a non-ideal crystal structure, the donor acceptor relation may be affected. This will contribute to the performance and overall efficiency of GaN:Fe3+.

Methods

The samples studied were grown 5.3 mm thick on a sapphire substrate. The film was removed from the substrate and cut perpendicular to the growth direction multiple times to extract five 1**Å~**4 mm2 samples. Electron paramagnetic resonance (EPR) spectroscopy was performed to detect Fe3+ point defects. Each sample was orientated with the c-axis parallel to the magnetic field and then rotated through the c – plane with a measurement taken at every 5°

Results

Samples cut close to the substrate exhibit EPR behavior different than those cut further away. We will report the results of simulations of Fe spectra and XRD measurements that further test for misorientations between film and substrate crystals.

Conclusion

This work is still in progress and definitive conclusions have yet to be drawn. Possible explanations of differing EPR spectra include: misorientations at the crystal growth plane resulting in a non ideal crystal lattice, the presence of magnetically unequivalent defect sites, and/or interstitial doping.

Keywords

Electron Paramagnetic Resonance Spectroscopy (EPR), donor-acceptor relation, crystal lattice, Iron doped Gallium Nitride (GaN:Fe3+), X-ray Diffraction (XRD)

PP 31

Title: Influence of cisplatin on DNA stability and ethidium binding

Authors: Key, C.*, Michenkova, M.*, Worrell, A.*, Smith, B.*, Longmire, M., Graves, D.

Cisplatin has been used frequently alone and in conjunction with other DNA-binding drugs for the treatment of various cancers. It has been shown to form crosslinks on the DNA molecule that influence its shape and stability. In this study, we hope to elucidate the influence of cisplatin on the stability of DNA and on its ability to interact with other drugs. Differential scanning calorimetry (DSC) and UV-Vis spectroscopy have been employed to study the stability and melting profile of a duplex oligonucleotide, d(CATATGGATATC):d(GATATCCATATG), that has the ability to form an intrastrand crosslink in the presence of cisplatin. Ethidium bromide has been used as a model for intercalating drugs, and the binding of ethidium to the wild type and platinated DNA can be monitored using isothermal titration calorimetry (ITC). The combination of these methods allows for the comparison of both native and platinated DNA and may help us understand the mechanisms by which combined chemotherapy promotes a greater recovery rate.

PP 32

Hemostatic Film Dispenser and Isolation Chamber for Microscale Hemorrhage Intervention in Pediatric Endoscopic Neurosurgery

Authors: Connor Kimbrell; Dustin Avery; DeMarcus Williams; Michael Stringer

Acknowledgements: University of Alabama at Birmingham Department of Biomedical Engineering; Senior Capstone BME 498/499 Dr. Alan Eberhardt; Dr. Joel Dobbs; Dr. James Johnston

Abstract:

During Neuro-Endoscopic procedures small tears of the vasculature can result in microscopic bleeds that leak into the surrounding fluid, obscuring the camera of the endoscope. Traditionally these bleeds are treated with pressure and flushing, but these are improvised solutions and yield inconsistent results. To address this, we have designed a surgical probe system meant to deliver pre-loaded films, such as mechanical barriers or soluble hemostats, to a wound site through an endoscope channel. The device is composed of an isolation chamber that focuses the blood onto a loaded film that is pushed towards the bleed by a vending motion. Our device has been designed to be manufactured through a combination of 3D-printing, injection molding, and milling- with all prototype pieces being bought as stock or 3D printed of PLA. With this device we seek to see a high consistency, 90%, of bleeds stopped upon first fixation, and to show that hemostasis will occur in less than 8 minutes from time of hemorrhage (traditional intervention can take 8-10 minutes). Thus far we have performed finite element analysis of our device pieces, and have assembled a scaled prototype of our device for testing. To finish our prototype, we wish to perform mock interventions using a fluidic chamber we have assembled. The aim of this testing is to show efficacy of the proposed method. Upon completion and adjustment of the prototype we will submit the device to the UAB School of Engineering and our client, Dr. James Johnston.

PP 33

BRAKE MODIFICATION SYSTEM FOR COST EFFECTIVE COMMERCIAL MODEL ALTERATION: "THE DUCKBILL BRAKE"

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Abstract

Our client Katie Troncale, the Executive Director of the Birmingham AMBUCS branch, seeks to provide an alternative option (outside of AmTryke®) for her clients, so that they may build up their mobility through the use of a bicycle with therapeutic attachments.

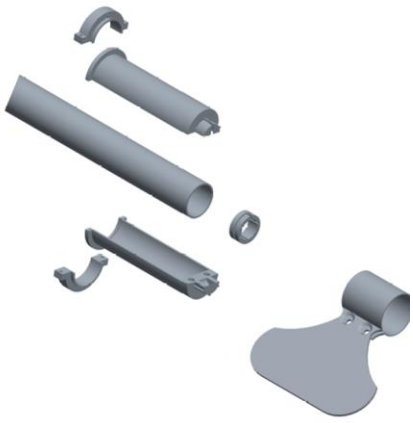

Figure 1: Exploded Creo Brake Assembly

In order to allow individuals with dexterity challenges to use cable bicycle brakes we designed a torsional brake actuator with a hand support paddle. The novelty of our design centers around its cable wheel and support paddle. The paddle is both a fastener to provide compression to the grip assembly and a lever arm that provides a larger surface area to activate the brakes. The wheel has a groove cut along the outer surface that determines the path that the brake cable will follow when the brakes are applied. The groove's diameter was derived using the arc length formula from the travel length of cable on traditional lever brakes.

PTC CREO 3.0 was used to create a 3-D model of the design to aid in machining. For our prototype we have CNC (computer numerical controlled) milled the six piece assembly from PEEK30%CF. The support paddle was cut and machined from sheet steel. The marketable design will consist of an injection molded six piece assembly made of PES 20% glass fiber.

Keywords

Bicycle, Brake, Therapy, Disability

PP 34

Doxorubicin Augments the Expression of the Na^+/I^- Symporter in MCF7 Breast Cancer Cells

Tanya Liveoak, Michaela-Sue Haddox, Doricas Kerr, Ammar Sharif, Hong Lin

UAB Nuclear Medicine Technology Program

Mentors: Dr. Remo George & Professor Norman Bolus, *Nuclear Medicine Technology Program*, Dr. Tino Unlap, *Biotechnology Program*

Abstract Body

INTRODUCTION: The sodium/iodide symporter (NIS) is a transmembrane glycoprotein with 13 transmembrane domains and a molecular weight of 87 kDa. NIS mediates the uptake of iodide into follicular cells of the thyroid gland and is the first step in the synthesis of thyroid hormone. This is achieved by transporting two sodium cations (Na^+) for each iodide anion (I^-) into the cell. Studies have shown NIS expression in follicular cancer cells of the thyroid gland and can be exploited in the treatment of thyroid cancer with I^{131}. Recent studies demonstrate that the elevation of NIS expression may be augmented by treatment with the antibiotic doxorubicin and may not be limited to thyroid follicular cells. AIM: This study was conducted in order to test the hypothesis that NIS expression is elevated in the non-metastasized breast cancer cell MCF7 and that this elevation can be augmented by doxorubicin treatment. METHODS: This hypothesis was tested by treating MCF7 cells with doxorubicin at 0.2, 2, and 20μM for 24 hours followed by the measurement of NIS expression using Western blot and immunofluorescence assays. RESULTS: Our studies showed that NIS was elevated in MCF7 cells and this elevation was augmented by doxorubicin treatment. CONCLUSION: The use of the antibiotic doxorubicin in conjunction with radioiodine provides a potential treatment for breast cancer.

PP 35

Name: Roxanne Lockhart, Candace Floyd, Ph.D

Research Title: Exploring the role of O-GlcNAcylation in brain injury

Abstract: The post-translational modification of specific serine and threonine residues of nuclear, cytoplasmic, and membrane proteins by the O-linked N-acetylglucosamine (GlcNAc) transferase (OGT) has been shown to play a critical role in the acute regulation of cellular survival as well as in the pathogenesis of several neurological disorders. This study aimed t o determine whether manipulating O-GlcNAc levels alters disease course in an experiment al model of epilepsy or improves brain health following traumatic brain injury (TBI) in rats. We found that O-GlcNAc levels were altered in the hippocampus of epileptic rats and in ro dents following moderate TBI. O-GlcNAc levels can be increased acutely by inhibiting O-Glc NAcase (OGA), which catalyzes the removal of O-GlcNAc from proteins. One mechanism for rapidly increasing O-GlcNAcylation is by pharmacological inhibition of OGA. A novel and hi ghly specific inhibitor of OGA is now available, *thiamet*-G*.* Following TBI, we found that at th e cellular, organ, and organismal level, that increasing protein O-GlcNAc modification with *t hiamet*-G enhanced cell survival and attenuated cell death. Collectively, these findings demo nstrate for the first time the potential of *thiamet-G* as a therapeutic option for treatment of neuronal dysfunction following brain injury.

PP 36

Occurrence and distribution of putative virulence-associated genes in clinical and environmental *Vibrio vulnificus* isolates

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***Equal effort by these authors**

Introduction: *Vibrio vulnificus* causes wound infections, cellulitis, and septicemia in humans, particularly to those with liver disease or are otherwise immunocompromised, following consumption of raw or poorly-cooked shellfish, or open sores exposed to warm coastal waters. In 2011, COVIS (Cholera and Other *Vibrio* Illnesses Surveillance)/CDC reported 113 cases of *V. vulnificus*-related illnesses, of which 89 were hospitalized and 34 infected individuals deceased. Although a number of virulent-associated genes in *V. vulnificus* have been described, thus far no study has focused on their occurrence and distribution in environmental and clinical isolates.

Objective: The objective of this study was to survey the key *V. vulnificus* virulence-associated genes in selected clinical and environmental isolates and assess potential correlation between the source and disease incidences.

Method: We used duplex PCR amplification method targeting *V. vulnificus* virulence associated genes, *vvhA*, *rtxA*, *hlyU* and *wza* in 23 clinical, and 10 environmental isolates. The PCR parameters were optimized using various primer concentrations and PCR annealing temperatures conducive to reproducible results.

Results: The PCR amplification results exhibited 100% of the clinical isolates positive for *vvhA*, whereas ~78% isolates were positive for *wza*, and ~95% for *hlyU* and *rtxA1*. All 10 environmental isolates showed a positive PCR for the *vvhA*, *hlyU* and *rtxA1* genes, whereas 9 isolates were positive for the *wza* gene.

Conclusion: This study indicates that although *V. vulnificus* virulence-associated genes are prevalent in the environmental isolates, the strains harboring *vvhA*, *rtxA1* and *hlyU* could be the major determinants for disease incidences upon infection in humans.

PP 37

A Ground-Level Seat for Children with Cerebral Palsy

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Introduction: Cerebral palsy is a non-progressive physical and mental disability caused by abnormal brain development in the womb or brain damage within the first month after birth, which often significantly decreases a person's muscle control. The Center for Disease Control and Prevention estimated that 1 in 323 children have cerebral palsy, and that 10,000 children will be diagnosed yearly. Children with cerebral palsy often experience decreased trunk control and an inability to perform ground level activities. ***Aims***: To create a seat that offers the leaning capabilities needed to provide these children with the opportunity to interact with other children at the ground level, and to complete ground-level activities in the classroom and at home.

Methods: CES Material and PTC CREO 2.0 in designing the seat.

Results: The proposed seat consists of a birch plywood base platform with wheel casters, spring actuated brakes, an H-style five-point seat belt, a mechanically adjustable seat back, and full padding. The seat adjusts using a handle attached and located directly behind the back rest that lifts two metal rods that are sticking into the seat's sides.

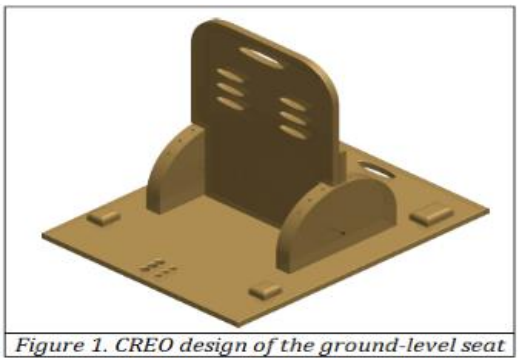

Figure 1. CREO design of the ground-level seat

Conclusion: This seat is intended to be relatively inexpensive, durable, portable, aesthetically kid-friendly, and increase quality of life for children with cerebral palsy by helping them lean forward to participate with other children at the ground-level. It offers value by providing the full range of leaning capability lacking in the market, at a more reasonable price than current products, in order to improve the lives of children with disabilities and provide ease of mind to their parents and caretakers.

Acknowledgments/References: Eberhardt, Alan W., PhD. Associate Dean School of Engineering and Professor, Department of Biomedical Engineering, at the University of Alabama at Birmingham.

Dobbs, Joel, PhD. Professor in the Department of Management, Information Systems and Quantitative Methods in Collat School of Business at the University of Alabama at Birmingham.

Delgado, Marliese. MS, PT Outpatient Therapy Coordinator at the United Cerebral Palsy of Greater Birmingham.

Cooper, Lloyd. Design Engineer for Movi Medical**.**

Feldman, Dale S., PhD. Associate Professor, Department of Biomedical Engineering, at the University of Alabama at Birmingham.

Keywords: Cerebral Palsy, children, ground-level seat, leaning

PP 38

A Paradigm Shift in Beekeeping: A Solution to Sustainable Pollination

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Abstract

Honeybee populations have been on a rapid decline since 2006, stemming from a combination of diseases and parasites, pesticides, monocultures, and flowerless landscapes. The loss of these critical pollinators could contribute to significant challenges in food system security. This research addresses the intellectual gap regarding differences between a top-bar hive, used for small-scale beekeeping, and a traditional Langstroth hive, used for commercial beekeeping, and how hive structure affects hive health and sustainability. To conduct this research, secondary sources were used to compile data on the two differing hive structures and their benefits towards sustainable beekeeping. Primary sources of information will include three experimental beehives, two Langstroth hives and one top-bar hive, that will be observed to record pertinent information regarding the sustainability of resident honeybee populations in both types of hive structures and frequency of treatment with pesticides and antibiotics, which will be a controlled variable on one Langstroth hive.

Initial research indicates that a Langstroth hive structure with prefabricated foundation does contribute to declining honeybee populations, but is only one factor. Intertwining elements such as loss of forage, increasing agricultural monocultures, parasites, and agrichemicals all contribute to honeybee population losses. It is hypothesized that the more viable top-bar hive structure will allow beekeepers to remain free of pesticide application and permit the hive to have better production capacity and communication abilities. Further research comparing these hive structures could contribute to more widespread use of top-bar hive structures, and combat the negative externalities listed above as the agricultural and beekeeping industry shifts into a new, more sustainable pollinator paradigm.

Keywords:

Beekeeping, Environment, Sustainability, Agriculture

PP 39

Transdermal Pain Creams Attenuate Pain and Improve Quality of Life in Patients with Chronic Chest Pain

Shakila Moore
University of Alabama at Birmingham, School of Health Professions, Honors Program

Abstract Body

Chronic pain affects 1 out of 3 people and outnumbers all disease states combined. More than 100 million Americans suffer from chronic pain, 13 million of these from chronic chest pain. Nearly half of these are inadequately treated with opioids being the most common treatment option. Although the use of opioids in our society has sky rocketed, our ability to treat chronic pain has not increased concomitantly. Therefore, the use of customized non-opioid based transdermal pain creams was examined in 242 individuals who were diagnosed with nonspecific chronic chest pain using MD Anderson's Brief Pain Inventory (BPI). Individuals were asked to rate the severity of pain, 24hr pain relief, and level that pain has interfered with their physical and emotional wellbeing before or after 1 and 4 weeks of using their transdermal pain creams. The results show that pain decreased from 5.5 before the treatment to 4.8 after 4 weeks with improvement in both physical and emotional quality of life metrics of 15 and 21%. Of this population, 38% indicated that their use of oral pain medication had decreased and 61% indicated that their pain had improved with the most recent 24hr pain reduction of 40%. These results show that customized non-opioid based transdermal pain cream can significantly reduce chronic chest pain, reduce the use of oral pain medication and improves the quality of life in a population of chronic chest pain sufferers.

Keywords
transdermal pain cream, chronic pain, nonspecific chest pain, opioids

PP 40

The Role of Arabidopsis thaliana GCN2 Kinase in Response to Drought and Salinity Stresses.

Audrey Murphy

Drought is a significant environmental stress faced by plants. This is an issue faced worldwide that can have detrimental affects on the economy and health of a population. Increasing numbers of environments suffer from unpredictable weather patterns and modern agriculture. Soil salinity is another significant factor that limits plant development, germination and yield due to the presence of soluble salts in soils which hold water more tightly than the plants can extract it. As a result, many plants growing on saline salts will exhibit symptoms of drought stress. We are using the model plant Arabidopsis thaliana to gain a deeper understanding of the molecular regulatory mechanisms governing drought and salinity tolerance. In A. thaliana, the GCN2 kinase is an important regulator of endoplasmic reticulum stress and global protein translation levels. When under stress, the GCN2 kinase phosphorylates a translation initiation factor eIF2α , inhibiting further translation. This mechanism is triggered under starvation conditions and immune challenge but little is known about its involvement in abiotic stress responses. In order to investigate the involvement of the GCN2 kinase in drought and salt stress response of A. thaliana, wild type Landsberg eracta (Ler) and mutant gcn2 plants were exposed to sublethal salt and drought stress. The findings revealed the differences in drought and salinity stress response and tolerance of Ler and gcn2. Experimental measures involved exposing control and experimental plants to water deficient soil and differing salt concentrations. Factors such as root length, recovery after induced stress, and plant weight were measured. Our findings show a marked difference in the ability to tolerate an increasingly stressful environment between Ler and gcn2 plants, positioning the GCN2 as an attractive molecule in agricultural interventions to breed crop plants with increased drought and salinity tolerance.

PP 41

CRISPR/Cas9 Genome Editing of Wave Protein 3 Gene in Zebra Fish

Gabrielle Brokamp, Ally Nichols
Dr. Anil Challa

The CRIPSR/Cas9 genome editing system is the latest genome editing technology available. The CRISPR/Cas9 system consists of an mRNA sequence and an enzyme, Cas9. Cas9 mRNA is transcribed from the CRISPR sequence. The Cas9 mRNA sequence builds an enzyme that creates a double-strand break in a targeted area of a genome. "Knock outs" are models in which certain genes are cut out of a genome. The consequence of this is that enzymes in the cell attempt to repair the cut in the genome by filling the space with random nucleotides. The random nucleotides in theory code for nothing and a gene's sequence becomes invalid. The "knock out" model targeted was for the Wave Protein 3 Gene known as "wasf3" and the No Tail Gene known as "ntla." Wave Protein 3 is the gene of focus because its resulting phenotype is unknown. Wasf3 belongs to a class of genes that create proteins responsible for cell response to growth factor. The No Tail Gene is the positive control and produces a phenotype of the absence of a tail fin in Zebra fish. A "knock out" of these models is achieved by designing single stranded primers that together form a CRISPR sequence. These sequences are amplified. The transcribed CRISPR sequence is then injected into Zebra fish embryos. The embryos are digested after injections and the DNA, after isolation, is amplified. Polyacrylamide gels are performed to prove the occurrence of the double-strand break.

PP 42

Electrical Engineering Design Concept Overview

By

Benjamin Okirie, Chauncey Ellis, Branson Eubanks, Tyler Abbott

University of Alabama at Birmingham School of Engineering

Electrical Engineering Department

An autonomous robot that navigates a track and plays three classic road trip games, and brings one playing card to the finish line, was built and prototyped. Teams were constrained to a 5-minute time limit to complete all required tasks. The project was designed to be a course-wide competition among competing student groups, with the winning team participating in the Regional IEEE competition (SoutheastCon 2015). Students were tasked with building an autonomous robot that could compete in the Regional competition by completing multiple games, which included Simon Says, Etch-a-Sketch, Rubik's Cube, and Playing Cards. In addition, the robot was bounded by constraints, which created a set of rules that teams had to adhere to. The team devised its preliminary design based upon the Regional competition's finalized rules document that was released in October of 2014. These rules were used to develop goals for success, constraints for the parameters of design, standards for continuity of design between individual components, and specifications for all designs to adhere to. Goals, constraints, standards, and specifications were all implemented to modularize the project so it could be completed by the deadline. The robot was able to complete the assigned tasks in a timely manner in the UAB race day competition. This concludes the 2014-2015 Senior Design Capstone Project for the Electrical Engineering Program.

References for Design Project:

David Green, Dr. Greg Vaughn, Larry Lokey

Keywords:

Electrical Engineering, UAB, IEEE, SoutheastCon2015, UAB Expo

PP 43

Systems Biology of *Ralsotonia solanacearum* and *Arabidopsis thaliana* Interactions Network

Milza Opper and Ritesh Patel

University of Alabama at Birmingham Department of Biology; Shahid Mukhtar Lab

Ralstonia solanacearum is a soil-borne bacterial pathogen that causes bacterial wilt disease in plants, and it is known to infect over 250 plant species (Peeters et al., 2013). This project aims to identify host targets of *R. solanacearum* in *Arabidopsis thaliana* in order to better understand this deadly phytopathogen. We implemented a large-scale yeast 2-hybrid system to identify the protein-protein interactions. We carried out gateway cloning to isolate a suite of 59 pENTR clones encoding *R. solanacearum* host proteins sequences that we subsequently transformed into bait yeast strain Y8930. The transformed haploid Y8930 yeast strains are capable of producing the essential amino acid leucine; therefore we utilized leucine dropout media to select for successful transformation in the yeast bait strains. We transformed 9,216 plasmids, containing genes coding for *A. thaliana* proteins and the capability of synthesizing tryptophan, into the haploid Y8800-prey strain and cultured the tranformants in tryptophan dropout media. We pooled the Y8930-bait liquid together after three days into 128 sets of 72 transformed yeast strains. Then, we mated the two haploid bait and prey strains in Yeast Extract Peptone-Dextrose (YEPD), and cultured the newly formed diploid strains in tryptophan/leucine dropout media. We then identified and tested all positive growth at 0mmol 3-Amino-1,2,4-triazole (3AT), 1mmol 3AT, 5mmol 3AT, and 10mmol 3AT. Finally, we will amplify the positive interactions by Colony Polymerase Chain Reaction and Sanger sequencing to form an interactome map of the *R. solanacearum* and *A. thaliana* proteins.

Peeters, Nemo, Alice Guidot, Fabienne Vailleau, and Marc Valls. "Ralsonia Solanacearum, a Widespread Bacterial Plant Pathogen in the Post-genomic Era." *Molecular Plant Pathology* 14.7 (2013): 651-62. Web.

Keywords: *R. solanacearum*, yeast 2-hybrid, interactome, *A. thaliana*

PP 44

Temperature Dependent Sex Determination in the Kemp's Ridley Sea Turtle at Padre Island National Seashore in 2012

C. Yoonhee Ryder

UAB Department of Biology

Temperature dependent sex determination (TDSD) occurs in all extant species of sea turtles. The Kemp's Ridley Sea Turtle, *Lepidochelys kempii*, is historically the most endangered sea turtle in the world with population numbers reaching a dangerous minimum of 200 nesting females in the 1980s. Leblanc and her team measured a 1:1 temperature of 30.0°C for the Kemp's Ridley turtle using data collected at the Padre Island National Seashore (PAIS) from 2006 to 2008. This experiment examines Kemp's Ridley hatchlings found dead in nests at the Padre Island National Seashore during the 2012 nesting season. Each hatchling's sex is determined histologically. Histological sex determination data is compared to mean nest temperatures during the middle third of the incubation period to determine the 1:1 temperature and transitional range of temperatures (TRT) and predict sex ratios at specific temperatures. The 2012 PAIS hatchlings have a female skewed 1:1 sex ratio. This is most likely due to the increase in sex specific mortality of females as the turtles develop and mature; females put themselves at risk to predators when they come up to the shore to lay eggs. This new PAIS 2012 data can be compared to other Kemp's Ridley sex determination studies as well as add to the Leblanc and Wibbels Kemp's Ridley Study at PAIS from 2006-2008. Conservationists can use this information to decide the existence, locations, and controlled temperatures of hatcheries.

Keywords

Temperature dependent sex determination

Kemp's Ridley Sea Turtle

Conservation

PP 45

The Effects of Perceived Stress, Sleep, and Cortisol on Fatigue in 8-12 Year Old Central Nervous System Cancer Survivors

Jenny Saag

UAB School of Nursing

Introduction: Medical advances have paved the way for significant increases in the number of children who, with targeted therapies, survive cancer diagnoses and go on to live long lives. However, many face challenging long-term effects as a result of treatment and/or the disease process itself. One key outcome is cancer-related fatigue (CRF), a condition of physical, emotional, and/or cognitive exhaustion related to cancer, which effects quality of life. Issues related to CRF such as sleep/wake disturbance, perceived stress, and physiological stress response (cortisol) are rarely studied, especially in the early post treatment phase. **Aim:** This study looks at CRF and related long-term sequelae seen in childhood CNS cancer survivors. The poster presentation will focus on methodology, including recruitment process, and data collection, as well as explore outcomes of these efforts. **Methods:** Convenience sample of approximately 10 children, ages 8-12 years, with CNS cancer; stable/off treatment 6 months to 5 years, have been recruited thus far from two Southern U.S. pediatric cancer centers for this cross-sectional, correlational study. Multiple questionnaires were administered to both parent and child; additionally a saliva sample was collected at designated morning and afternoon times for evaluation of salivary cortisol level. Participant recruitment has been lower than the intended 40 children for multiple reasons. **Results:** Recruitment proceeded slowly since inclusion criteria were narrow. Further challenges were inability to contact families of potential participants, language barriers, and transportation to required location for data collection. **Conclusions:** If this study maintained broader inclusion criteria and encompassed more clinical sites, participation rates might have been higher.

Keywords: pediatric nursing, childhood cancer, cancer survivors, brain tumor, cancer-related fatigue, stress, cortisol

PP 46

Feed Ration Effects on Body Composition Over Time in the Zebrafish (*Danio rerio*)

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Abstract

The zebrafish (*Danio rerio*) is becoming a well-established animal model in research laboratories with many different biological applications. However, standardized feed management strategies have not yet been fully developed in this species. In particular, the effects of different feed rations on the physiological and molecular processes related to the maintenance of body composition of the zebrafish are still unknown. In this study, we evaluated the effects of different feed rations on weight gain and body composition in adult zebrafish. Three groups of seven month old zebrafish (young adults) were fed one of three rations (1%, 3%, or 5% of mean body weight) of a single formulated diet over a four-week feeding period. During the feeding period, group weights for each treatment were recorded at the initial, 2 week, and 4 week time points. Individual fish from each treatment were also sampled at these time points for lipid analysis. An increase in weight gain was observed in the treatment receiving the 5% ration, while the treatment receiving a 1% ration decreased in weight. The 3% treatment exhibited an increase in weight during the initial 2 weeks, and then plateaued over the last 2 weeks of the feeding period. These data indicate that zebrafish are sensitive to feed ration, affecting overall weight gain and body composition. Standardization of both diet composition and ration will be important in using zebrafish as a biomedical model.

Key words: Zebrafish, Diet, Nutrition, Body Composition, Growth

PP 47

Low-dose ketamine for the treatment of acute pain in the Emergency Department

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Background: Low-dose Ketamine has been used as an analgesic in the pre-hospital and perioperative setting.[1] Recent studies have examined the use of ketamine as an adjunct to opioids in the treatment of acute pain in the emergency department.[1,2] To date there is limited data evaluating the use of low-dose ketamine as a primary analgesic in the emergency department.

Objective: We compared the analgesic effects of low-dose ketamine to morphine and hydromorphone in the treatment of acute pain in the emergency department.

Methods: This was a prospective observational study of patients seen in urban academic emergency department who reported severe acute pain. At the provider's discretion patients were given 0.1mg/kg of ketamine, 0.1mg/kg of morphine, or 0.015 mg/kg of hydromorphone. Pain intensity was assessed at 5 minute intervals until 30 minutes then at 10 minute intervals for 120 minutes using a 10 point verbal numerical rating scale (NRS). Patients were monitored for dissociative side effects using the side effects rating scale for dissociative anesthetics (SERSDA) and were monitored for adverse events.

Results: Of 164 prospectively enrolled patients, 48 received ketamine, 84 morphine, and 34 hydromorphone. When ketamine was used the mean reduction in NRS pain score (SD) at 5/15/30 minutes from initial pain score was 2.7 (±3.6) /2.6 (±3.23)/2.0 (±3.47). Patients receiving morphine reported mean reductions in NRS scores of 2.0 (±2.46)/2.6 (±3.08)/3.3 (±2.86) with mean reductions of 1.6 (±2.54)/ 2 (±2.94)/ 2.5 (±2.48)for the patients who received hydromorphone (see DeLaney Figure 1). At 30/60 minutes the average SERSDA score for dissociative side effects for ketamine was 2.7/0.9, morphine was 1.6/1.2, and hydromorphone was 1.6/1.0. Overall 63.4% of patients reported that they would receive ketamine again, compared to 93.2% and 92.0% of patients who received morphine and hydromorphone.

PP 48

Regulation of DNA methylation and gene expression by extra-coding RNAs

Rhiana Simon, Katherine E. Savell, Nancy Gallus, Esther Song, Mary Katherine Osborn, Jordan Brown, John J. O'Malley, Christian Stackhouse, J. David Sweatt, & Jeremy J. Day

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DNA methylation, a prominent mechanism in epigenetic regulation, can downregulate gene expression and plays an important role in learning and memory. A potential player in epigenetic mechanisms is extra-coding RNA (ecRNA), which is noncoding and nonpolyadenylated, thus we were interested in elucidating the role of ecRNAs in the neuron. Through whole-genome sequencing approaches, we show that ecRNAs arise from gene regions distinct from mRNAs and are ubiquitous in the neuronal genome. Upon excitation of neuronal cortical cell cultures in time course experiments, we also found that ecRNA synthesis is distinct from mRNA synthesis, and like mRNA expression, ecRNA expression is activity-dependent. RNA immunoprecipitation demonstrated that ecRNAs bind to DNA methyl transferase 3a (DNMT3a), which is involved with *de novo* DNA methylation in the neuronal genome. Altogether, our data suggest that ecRNAs are involved in regulating mRNA expression by binding and preventing DNMT3a from methylating neuronal DNA. These results demonstrate an additional mechanism of mRNA regulation and enrich our understanding of epigenetic phenomena.

Keywords: RNA, DNA, epigenetics, learning and memory

PP 49

Novel Targets of Primary Gnathic Malignant Mesenchymoma Tumor Indentified by RNAseq Analysis

Ambika R Srivastava, Hope M. Amm, Mary MacDougall

Malignant mesenchymomas are rare tumors with cell types of mesenchymal differentiation, arising from muscle, fat, and other tissues. Objective: To establish and characterize primary cell population from gnathic malignant mesenchymoma (GMM) specimen, a rare subtype.

Materials and Methods: Surgically removed from a 23-year-old male with IRB approved signed consent. Tumor was dissected, cultured *ex vivo*, and cell populations were isolated from outgrowths (GMM-1). Cells and/or tumor tissue were analyzed by RNAseq, quantitative RT-PCR (qRT-PCR), and immunohistochemistry (IHC).

Results: RNAseq data was used to profile tumor cells in order to identify gene differential expressed in malignant mesenchymoma compared to normal cells. Using the RNAseq data, genes that were overexpressed in GMM-1 cells were then confirmed using qRT-PCR. IHC was conducted using JPH2, WISP2, Notch3, and Jag1 antibodies, showing the expression of these proteins in tumor tissue. Additional Notch targets were also confirmed by quantitative RT-PCR, showing expression Notch signaling targets Hes1, Hes5, and Hey2.

Conclusions: These tests suggest that the Notch pathway is activated. We successfully further establish primary gnathic malignant mesenchymoma cell population, which helps determine tumor markers and therapeutic strategies.

PP 50

Drug Eluting Halloysite Nanotube/Gel Scaffolds for Soft Tissue Engineering

Aaya Tarawneh[1], Hayley Elizabeth Adkins[1], Andrew Wood[2], Vinoy Thomas, PhD[2*]
[1]Department of Biomedical Engineering, [2]Department of Materials Science and Engineering, University of Alabama at Brimingham (*email: vthomas@uab.edu)

Introduction Halloysite nanotubes (HNTs) form naturally in clay and are non-cytotoxic and biocompatible. They have been demonstrated in drug loading and delivery studies and can be copolymerized in hydrogels or electrospun fibers to strengthen other materials. Gelatin, a collagen derivative, is an ideal scaffolding material for soft tissue engineering because of its elasticity and bioactivity but may not have sufficient strength. Electrospinning gelatin and HNTs together may provide a stronger composite scaffold, and the drug delivery vehicle provided by HNTs can be useful in such applications as central nervous system regeneration, to deliver anti-inflammatory drugs or growth factors.

Aims 1) Characterize morphological and mechanical properties of various compositions of electrospun gelatin-halloysite scaffolds. 2) Assess delivery of a model anti-inflammatory drug from gelatin-HNT composite scaffolds for nervous tissue engineering.

Methods Gelatin with various HNT (3-10wt %) compositions were spun into porous scaffolds. Scaffolds were characterized by tensile testing, scanning electron microscopy (SEM), energy dispersive spectroscopy (EDS), Fourier-transform infrared (FT-IR), and hyperspectral analyses. HNTs will be vacuum loaded with a model drug and drug delivery will be assessed over 5 days from HNT (control) and from HNTs composite with gelatin.

Results The spinning parameters were optimized for fabricating- halloysite gel composites. Morphological characterization using SEM revealed fibrous bead-free structures with HNTs. FT-IR, EDS and Hyperspectral microscope imaging (Cytoviva) revealed the presence of HNTs. The drug delivery studies from composite scaffolds are underway.

Conclusions Halloysite-gel scaffolds were successfully fabricated into fibrous-composites. HNT-gelatin fibers can be potentially suitable for soft tissue engineering. Nervous tissue regeneration may benefit from an HNT-integrated method for anti-inflammatory drug release, as inflammation is a major obstacle to functional recovery such as in spinal cord injury.

Keywords , halloysite, biomaterials, electrospinning, drug delivery

PP 51

Brenna Terry
Mentor: Dr. Karolina Mukhtar, Department of Biology

Title: The Role of the *Gcn2* Serine-Threonine Kinase in Response to Osmotic and Heat Stresses in *Arabidopsis thaliana*

Abstract:
General control non-repressed 2, or GCN2, is a transmembrane serine-threonine protein kinase found in eukaryotic cells that serves to repress excessive protein translation in the endoplasmic reticulum of plant cells when they are under stress. In most organisms, the kinase functions by phosphorylating translation initiation factors, most commonly eIF2α, but the complete mechanism in plants has remained relatively unknown. When exposed to harmful or unfavorable environmental conditions, eukaryotic cells translate an excessive amount of proteins to attempt to alleviate the stress. As a result, the cell may be unable to properly fold the all of the proteins, and the mis-folded polypeptides accumulate in the endoplasmic reticulum. GCN2 is a branch of the unfolded protein response, or UPR, that is activated in response to this accumulation of mis-folded proteins in the ER, and it can also serve to regulate proper protein folding in the cell. After its activation, a signal is sent to the nucleus to up-regulate the production of genes for proteins that will be necessary in polypeptide folding in the ER and to down-regulate the transcription of other genes in the nucleus that will not be needed in folding regulation. Some specific stresses have been known to activate the GCN2 kinase in plants, including physical wounding, hormones, UV radiation, and deprivation of amino acids. As plants must endure a variety of stresses throughout their lives, this experiment was designed to observe the possible contribution of the *GCN2* kinase gene under exposure to excessive heat, an abiotic stress that may commonly occur in the natural terrestrial environment of plants, and the alcohol mannitol to mimic osmotic stress that plants may encounter as well.

PP 52

In vitro Evaluation of a Fibro-Porous Hybrid Tubular Graft

Kevin N Thai[1], Harsh N. Patel[1], Sami Chowdhury[1], Vinoy Thomas[2,3*]

[1]Department of Biomedical Engineering, [2]Department of Materials Science and Engineering, [3]Center for Nanoscale Materials and Biointegration (CNMB), University of Alabama at Birmingham (UAB), Birmingham, Alabama 35294.*email: vthomas@uab.edu

Introduction: As half a million coronary artery bypass graft surgeries are being performed annually and one-third of patients does not have viable autologous grafts, there in an unmet need for vascular-substitutes. Current synthetic-grafts (ePTFE & Dacron) face a multitude of problems such as mechanical mismatch, thrombotic clotting, and intima hyperplasia (IH), if their diameter is less than 6 mm. Tissue regeneration of patients own blood vessel using a suitable 3D-scaffold and stem cells could be "the Holy Grail" to this clinical issue.

Aim: To synthesize a small diameter vascular-graft (4-mm) which can replace/repair damaged native blood vessels, promote formation of neo tissue, and bioabsorb over time.

Materials/Methods: A 3:1 polycaprolactone/poliglecaprone polymer was electrospun into tubular grafts (4-mm I.D & 20-cm long). HuBiogel, a protein cocktail, was coated by dip-coating infiltration. Grafts were evaluated *in vitro* for enzymatic degradation and endothelial cells attachment in a dynamic condition.

Results: Mass loss and mechanical property measurements performed over time indicated degradation effects on grafts aged in a lipase solution. Broken fibers were observed by SEM after 4 weeks. Cellular attachment was confirmed on HuBiogel coated grafts; however, cell attachment was lost when grafts were exposed to shear flow.

Conclusion: Loss of mechanical strength and mass in grafts are likely due to enzymatic degradation. Under dynamic flow conditions, it was observed that cellular attachment of vascular endothelial cells was lost. This is likely due to the instability of the protein coated on the graft. Future experimentation will potentially incorporate cross-linking agents to stabilize the matrix.

Keywords: Poliglecaprone, Lipase, Electrospinning, Mechanical properties, Vascular graft

PP 53

Title: **Cortisol Reactivity and Responses to Experimental Pain Stimuli: Gender and Racial Difference**

Name: **Andrew Viegas**

Advisor: **Dr. Burel Goodin (Dr. Diane Tucker and Dr. Robert Sorge on the Committee)**

Department: **Psychology**

Abstract:

Pain is perceived and assessed differently among each individual. Past and current research has shown that women are more sensitive to pain than men while Non-Hispanic Whites (NHW) display a higher pain tolerance and threshold than do their African American (AA) counterparts. For years, researchers have used Quantitative Sensory Testing (QST) to assess pain responses in the laboratory in addition to examining pain sensitivity with environmental or biological factors. Using QST, I compared pain sensitivity scores with basal cortisol levels and cortisol reactivity. Furthermore, I analyzed the disparities between males and females in addition to AAs and NHWs. Cortisol is an important steroid hormone made as a stress response in the adrenal cortex. It has been found to have analgesic and anti-inflammatory effects on pain threshold and tolerance. The aims were to characterize gender and racial difference in pain sensitivity, examine gender and racial differences in basal cortisol levels and cortisol reactivity, and examine the relationships between cortisol an pain responses as well as determine whether these relationships vary by gender and/or race. I hypothesized that males and NHWs will demonstrate lower pain sensitivity, greater basal cortisol levels and reactivity, and demonstrate a stronger relationship between higher cortisol and diminished pain sensitivity compared to their respective female and AA counterparts. Using t tests to compare between both groups, I found no statistical significance in any of the aims, and I concluded that there is not enough information or support to prove a relationship between cortisol levels and expression and pain responses.

PP 54

Using CRISPR/Cas9 system to determine the function of two genes, *fgf24* and *suv39h1*, during embryonic development of zebrafish.

Alexa Wade, Rebecca Massey, and Scarlett Moreno and Dr. Anil Challa*

Science and Technology Honors Program (STH201)

***** Department of Genetics**

Abstract:

The CRISPR/Cas9 system is a novel tool that selectively knockouts genes to study their role in an organism. We are using this system to study the functions of two genes, *fgf24* and *suv39h1*, in zebrafish. *fgf24* gene is involved in the development of the appendages in zebrafish and, in its absence, median fins and lateral fins do not develop (G., H., & K., 2007). We have used *fgf24* as a test case to validate CRISPRs/sgRNA activity. The function of *suv39h1* in zebrafish is unknown. Prior research in human models has indicated that *suv39h1* is involved in regulating the cell cycle and chromatin arrangement (M. et al., 2000). The role of *suv39h1* gene function during zebrafish development would be of interest to many scientists.

To test phenotypic effects of *suv39h1* and *fgf24*, we identified unique target sites in the exonic sequences using the ENSEMBL genome browser, and a CRISPR design website (crispr.mit.edu) to create CRISPR/sgRNAs for each target site. The CRISPRs were cloned into plasmid to facilitate *in vitro* transcription of small RNA using T7 RNA polymerase – complementary oligonucleotides encoding the CRISPR/sgRNA sequence were annealed together to create a double strand and then ligated into the plasmid vector. The plasmids transformed *E.coli*, and positive clones were identified. At this time, we have sequence verified a plasmid containing a *fgf24* CRISPR, which was used as a template for *in vitro* synthesis of the sgRNA. *fgf24* CRISPR/sgRNA, Cas9 mRNA injections into zebrafish embryos are underway. We continue to screen for *suv39h1* CRISPRs.

References:

Abe, G., Ide, H., & Tamura, K. (2007). Function of FGF signaling in the developmental process of the median fin fold in zebrafish. *Developmental Biology*, *304*(1), 355-366.

G.Melcher M., Schmid M., Aagaard L., Selenko P., Laible G., & Jenuwein T. (2000). Structure-Function analysis of SUV39H1 reveals a dominant role in heterochromatin organization, chromosome segregation, and mitotic progression. *Molecular and Cell Biology* 20(10), 3728-41.

Key Words: CRISPR/Cas9 system, knockout model, Zebrafish, fgf24 and suv39h1

PP 55

"Localization and Effects of Estrogen-Related Receptors in the Mouse Brain"

Briana Watkins and Dr. Rita Cowell

UAB Department of Psychology

Parvalbumin-containing interneurons are highly important in generating and maintaining cortical synchrony. Dysfunction of these interneurons has been implicated in multiple neurodegenerative and psychiatric disorders. Peroxisome proliferator-activated coactivator 1-PGC-1) is a factor concentrated in parvalbumin interneurons. Animals missing PGC-1, show signs of neurodegeneration and deficits in metabolic processes. A set of transcription factors known to interact with PGC- is the family of estrogen related receptors (ERRs). This study was conducted in order to characterize ERR cell specific localization in the mouse brain to determine whether they have the potential to be PGC-1-interacting factors in parvalbumin-positive interneurons. It was discovered ERR is localized in parvalbumin containing interneurons and that deficits in ERR produce early signs of neurodegeneration. The results of this study revealed that ERR's are likely to interact with PGC-1 in parvalbumin-containing interneurons and that ERR, particularly, may be a good target for enhancement of parvalbumin-positive interneuron function in disease.

Keywords: Parvalbumin, interneuron, PGC-1, Estrogen-related receptors, neurodegeneration

PP 56

Abstract Title: Generating Luminescence with Nanoluc Luciferase Based Read-Through and NMD Reporter Systems

Author(s): Whittney Wiley

Affiliation/Institution(s): UAB Department of Microbiology

Abstract Body

A nonsense mutation is the change of a single nucleotide in a DNA strand resulting in a premature stop codon and an incomplete protein. Diseases such as Cystic Fibrosis, Duchene muscular dystrophy and more are linked to nonsense mutations making this area of research a topic of interest to the general public. Suppression therapy is an approach that uses pharmaceutical agents to attempt to suppress the translation termination that occurs at the site of the nonsense mutation. Another way to describe this process is to say that the pharmaceutical agents are inducing a "read-through". An additional challenge with treating nonsense mutations is nonsense-mediated mRNA decay (NMD). NMD is basically a result of the cell's maintenance system and its goal to dispose of anything that could cause a potential error in gene expression; this includes genes expressing premature stop codons. So for suppression therapy to be an effective method of treatment not only must read-through be induced, NMD must also be remedied. A read-through construct and a NMD construct were created with the purpose of introducing a stop codon into the original Nanoluc sequence, which luminesces when the protein is properly expressed. The read-through and NMD constructs were then transfected into HEK293 cells and validated by Nanoluc Luciferase activity after treatment with well-known read-through drugs and NMD inhibitors. After treatment, Nanoluc Luciferase activity increased because the drugs were effectively inducing read-through or inhibiting NMD allowing full protein expression. In the future, these constructs will be used to further screen new drugs.

Keywords
read-through, NMD, stop codon, Nanoluc

PP 57

Type of Presentation: Poster
Research Category: Natural Sciences & Mathematics
Title of Presentation: Isolation and Characterization of Novel Phage Infecting *Acinetobacter*
Presenter(s) name(s): 2015 UAB Phage Explorations Team
Research Faculty Mentor: Denise Monti, PhD, MPH
Institution: University of Alabama at Birmingham.

Abstract:

Bacteriophages are viruses that infect bacteria. They are found in virtually every environment worldwide and are one of most abundant entities on earth. Phages bind to the surface of a bacterium and inject phage DNA into the genome of the host cell. Horizontal and vertical gene transfer events result in significant genetic diversity even among phages infecting the same host. In spring 2015, we isolated and characterize 7 new bacteriophage infecting the bacteria host, *Acinetobacter*, from sewage samples. Samples were obtained from area Jefferson Country Sewage treatment plants and enriched for bacteriophage infecting *Acinetobacter calcoaceticus*. To isolate a clonal population of a single isolate, a series of serial phage titer assays were performed. These assays revealed a variety of plaque morphologies. Full-length genomic DNA also was isolated for each new mycobacteriophage and restriction endonuclease digestion and electron microscopy was performed to characterize each phage. Together, this is now the largest collection of phage infecting *Acinetobacter calcoaceticus*.

PP 58

UAB Undergraduate Research Expo

Type of Presentation: Poster

Research Category: Natural Sciences & Mathematics

Title of Presentation: Genomic Characterization of 3 Novel Phage Infecting *Acinetobacter*

Presenter(s) name(s): 2015 UAB Phage Explorations Team

Research Faculty Mentor: Denise Monti, PhD, MPH

Institution: University of Alabama at Birmingham.

Abstract:

A rise in antimicrobial resistance is a number of bacterial species has led to a resurgence of research to design new therapeutic agents and develop novel strategies for combatting antimicrobial resistant pathogens. The Centers for Disease Control and Prevention has identified 6 ESKAPE pathogens of particular concern: *Enterococcus, Staphylococcus, Klebsiella, Acinetobacter, Pseudomonas*, and *Enterobacter* species. Barton, JeffCo, and Effie are novel phage infecting the bacteria host, *Acinetobacter* that were isolated from filtered sewage influent. Following purification of phage genomic DNA, we sequenced and analyzed each phage full-length genome. Freely available bioinformatics software (DNAMaster, Glimmer, GeneMark, Aragorn) and NCBI Blast were used to assist in the identification of putative genes. Our findings show that Barton and JeffCo share a significant number of genes and contain a similar tRNA gene. In contrast, Effie has little gene homology with either Barton or JeffCo. A significant number of novel genes were identified in Barton, JeffCo and Effie. This work represents the first set of *Acinetobacter* phage analyzed by the UAB Phage Genomics team and expands the pool of available phage infecting *Acinetobacter* for comparative genomics studies.

PP 59

Investigating phase transitions in chalcogenide semiconductors with ultrafast pump—probe terahertz time---domain spectroscopy.

Aidan L. O'Beirne
Dr. Takahisa Tokumoto
Dr. David J. Hilton

Chalcogenides are a new class of monolayer semiconductors that are currently of interest in the field of condensed matter physics, and include MoS2, MoSe2, WS2, and WSe2. The objective of our experiment is to study these materials using terahertz time---domain spectroscopy, using photoconductive emission to generate a modulated terahertz beam that will probe these materials at temperatures as low as 4 K. In doing so, we can collect data regarding the changes in conductivity of these materials with respect to change in temperature. In addition, we will investigate these materials under magnetic field up to 10 T. Using the THz beam, we will excite electrons from the ground state to a superposition state between adjacent Landau levels. These results in an array of degenerate electrons in phase with one another. By adjusting the strength of the magnetic field and the temperature, we hope to understand the microscopic processes that govern electron transport in these materials.

PP 60

Abstract Title: Perception of Personalized Genomic Medicine from College Students

Author(s): Nicholas Burt

Affiliation/Institution(s): University of Alabama at Birmingham, Collat School of Business & Department of Genetics

Abstract Body:

The current state of personalized genomic medicine is in a limbo where researchers are developing the industry through technology and experience while the knowledge within the general public is quite restricted. This survey of college honors students allows for a capture of the current perception among the generation of soon to be emerging professionals. By surveying this group and determining their generalized opinion, future research and development of the field can use this information to help improve the current views and outlooks of the industry. This will also help with the distribution of publicity as the targets and targeted information can be determined by the statistical results. The aspects of the industry that need to be developed further will also be identified, of which will help show where genomic medicine professionals need to put their efforts to ensure greater public acceptance.

Keywords

"personalized" "genomic" "medicine" "influence" "development"

PP 61

Analysis of Temperature-dependent Sex Determination in Gulf Turtles

Sanjay Desai
UAB Department of Biology

Abstract:

Temperature-dependent sex determination, a form of environmental sex determination, occurs in most species of turtles. This phenomenon proves to be of particular interest for conservationists working to preserve the population and habitat of the Kemp's Ridley Sea Turtle, *Lepidochelys kempii*. This marine turtle abides in a range of Gulf and coastal Atlantic waters; however, the animal's sole nesting ground is Padre Island National Seashore, a particularly limited habitat range for reproduction. This experiment focuses on the use of histological methods to determine the sex of hatchlings based on tissues that have been collected from deceased specimen in nests. The histological data is then compared to the mean nest temperatures from the hatchlings incubation period. Information collected from this experiment provides useful knowledge to conservations who can incorporate the findings to aid in better determining the ideal temperatures of controlled hatcheries.

Keywords:
Temperature-dependent sex determination
Kemp's Ridley
Lepidochelys kempii
Marine turtles

Category 3: Social, Behavioral and Health Sciences

PP 62

A closer look behind the rally to save UAB football; has there been a significant change among the UAB community?

Hunter Alvis

University of Alabama at Birmingham

Abstract

The purpose of this study is to take an in-depth look at the effects of the decision made by the University of Alabama at Birmingham (UAB) Executive board to cut UAB's Division I football team; and specifically, the short term effects on the thoughts and feelings of the student body, faculty and local community. The decision was officially announced on December 3, 2014 and the explanation behind the decision was financial issues. The methods of this study involve random sampling of students, faculty and community members and then using regression models for data analysis. Comparisons are then made between desired variables in order to see the similarities and differences of the thoughts and feelings of the population towards UAB's decision. The results from these comparisons are then used to show whether the absence of the UAB football team has had have a significant impact on the UAB community and also whether the decision will have a significant impact on the thoughts and views of UAB students, faculty and community.

Keywords:

Rally, UAB, Save, Football, Change

PP 63

Teaching Bacterial Colony Screening by Applying Edgar Dale's Pyramid of Learning Principles

Ben Boros, JaVarus Humphries, Seth Courtad, Mason Rummel
UAB

Colony screening is the process of identifying the correct bacteria that have been transformed through uptake of an exogenous DNA molecule that contains a gene or genes of interest and genes that confer resistance to a number of antibiotics. Screening involves a number of steps including plating on an agar plate containing proper antibiotic, isolation of supercoiled DNA and electrophoresing against supercoiled size marker. In addition, PCR amplification of gene of interest and restriction enzyme digest can be used to confirm both size and orientation of gene(s) of interest.The objective of this work was to generate a teaching tool that would communicate colony screening in a way that students can easily understand and can effectively utilize in a laboratory setting, while retaining the majority of what they have learned. According to Edgar Dale's Pyramid of Learning, this must involve a combination of lecture, reading, audiovisual, demonstration and application in order for the students to retain over 75% of the material learned. Therefore, we generated a protocol on bacterial colony screening that involves not only a written protocol with the scientific principles and all of the necessary steps involved, but also a video of how each of the steps is performed and pictures of what the student can expect to see after performing each step. This video along with many other videos of various labs performed will be compiled into a viewable lab notebook, and will be a new part of the curriculum for the SciTech Biotechnology lab. All in all, these steps should more effectively engage the students in both learning the theory and performing the procedure.

PP 64

The Use of Hands-on Techniques to Teach Protein Isolation and Polyacrylamide Gel Electrophoresis

Caleb Brasher, Sara Stoner, Christina Cooley, and Charlie Keith

University of Alabama at Birmingham, Science and Technology Honors Program

The advent of recombinant DNA techniques has enabled us to express exogenous proteins in bacterial systems with great efficiency. Genes of interest can be cloned into expression vectors, transformed into competent host bacteria, and expressed at relatively high levels. After proper screening to confirm the correct bacteria containing the correct gene of interest, proteins are isolated from the bacteria and the protein of interest is identified using a number of techniques, the most common of which is Western blot analysis. The entire process involves isolation of the recombinant protein, denaturation using the detergent sodium dodecyl sulfate (SDS), separation of proteins by SDS-polyacrylamide gel electrophoresis (SDS-PAGE), transfer of proteins to nitrocellulose, and hybridization with the proper antibody that is specific to the recombinant protein. The objective of this was to generate a teaching tool that would teach the student 1) protein isolation and SDS-PAGE, 2) Western blot assay, and 3) the scientific principle involved in each of these techniques. To ensure proficiency in the techniques involved and comprehension and retention of the scientific principles involved, this tool involves not only the written protocol but also the use of hands-on application that has been videotaped. Prior to the lab, each student can read the protocol and view the video which demonstrates how each technique is to be performed with the goal that the student would come to the lab knowing what constitutes each protocol, how to carry out each protocol, the principle involved and the anticipated outcome.

PP 65

An Innovative Way of Teaching Bacterial Transformation

Mugdha Mokashi, Ryan Murphy, Payal Patel, & Sahil Patel
Science and Technology Honors: Biotechnology, University of Alabama at Birmingham

Abstract Body

Introduction: Bacterial transformation is the process by which exogenous DNA is taken up by a bacterium, while the host bacterium is in a state of competence. The exogenous DNA is replicated in the host bacterium under the direction of the host bacterium's genetic system. This process is exploited in recombinant DNA technology in order to amplify genes and study their regulation. Competence can be achieved artificially by destabilizing the bacterial membrane in order to allow uptake of exogenous DNA.

Method: This process involves a number of critical steps which consist of mixing of exogenous DNA and competent bacteria on ice, heat shock at 42°C, cooling of transformation mix on ice for 2 min, addition of rich bacterial media and incubation at 37°C, and plating on agar plate containing the appropriate antibiotic to eliminate non-transformed bacteria.

Aim: The objective of this work was to generate a teaching tool that would teach students the basic principle involved in this process and the techniques that are necessary to carry out the process. To achieve this objective, this project combined reading, didactic lecture, audiovisual, and application techniques in order to promote learning and retention.

Keywords
transformation, bacteria, teaching, recombinant DNA, antibiotic, plasmid

PP 66

Teaching DNA Profiling At the Analysis and Application Levels

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Science and Technology Honors Program

The human genome consists of 3 billion base pairs and 20,000-25,000 genes. There is a 99.9% genetic similarity between two individuals while the difference is only 0.1%. However, this minute difference in the genome across individuals can be exploited a number of ways including in forensic science. Our genome contains 13 loci where individuals have different number of 3, 4, or 5 base repeat units called variable number of tandem repeats (VNTR). Using genomic DNA from individuals and the polymerase chain reaction (PCR), the donor of a crime scene sample can be identified by matching the number of VNTRs at the 13 loci. The scientific principles involved are those involved in genomic DNA isolation, PCR and agarose gel electrophoresis. The objectives of this project were to: 1) demonstrate that genomic DNA can be isolated using 'non-lab' reagents that are found in a normal household kitchen and 2) elevate the students' learning to a higher level above the knowledge and comprehension levels to at least the application and analysis levels. This involved teaching the techniques involved through reading, audiovisual, application, and discussion.

Keywords:

1. genomic DNA
2. variable number of tandem repeats (VNTR)
3. polymerase chain reaction (PCR)
4. DNA isolation
5. Agarose gel electrophoresis

PP 67

Micropipetting in the Lab

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Science and Technology Honors Program

Micropipetting in microbiology, biology, and biotechnology labs is very important as it is used in the majority of procedures used in these fields of study. Proper instruction into this technique is therefore vital in the acquisition of accurate data. In turn, we are creating a written procedure and informational video to provide proper guidance in this technique to help students in labs. Our goal from this experiment was to create a written procedure and an informational video in order to properly inform high school students and undergraduates interested in microbiology, biology, and biotechnology, of the proper techniques to using a micropipette. In the procedure and video, we will cover the different parts of various micropipettes, the uses for different micropipettes and when each micropipette is appropriate to be used, how to properly get the desired amount of liquid, and how to properly measure and eject the desired amount. After learning and practicing these important pieces of information about micropipettes, students will have a firm base to build their further lab techniques off of.

Keyword: Informational Materials for Proper Micropipetting

PP 68

Strength In Numbers – How Communication and Health Numeracy Affect Patient and Provider Interaction Within a Minority Population

Diana K. Cerice & Michael J. Stand-Gravois

UAB School of Nursing Honors Program

Introduction: People who are living with HIV keep track of their disease progression by referencing their laboratory numbers. These two important numbers in HIV treatment are their CD4 count (white blood cells) and viral load (copies of virus in their blood.) It is imperative that people living with HIV understand these numbers. Racial disparities in HIV knowledge and mortality currently exist for minority patients with HIV, particularly African Americans.

Aims: The purpose of this study was to explore what patients understand about their clinic visits. Furthermore, the study examined barriers of patient and provider communication, and factors that discourage patients from seeking health information.

Methods: In this qualitative research study, semi-structured interviews were used to collect data from 20 older African Americans with HIV recruited from the UAB 1917 HIV/AIDS Clinic. Interviews were transcribed verbatim and coded using NVivo™ qualitative research software.

Results: Four major themes emerged regarding laboratory numbers: 1) laboratory numbers are important for survival; 2) the numbers themselves (i.e., CD4 count and viral load) can be confusing; 3) mutual communication between provider and patient is essential for true understanding; and 4) when communicating about laboratory numbers, it is best to be succinct.

Conclusions: Patients with HIV understand that the numbers reflecting their blood work are essential for survival, but discussions that become unnecessarily wordy tend to confuse and ultimately disengage the patient. Patients retain information and understand their laboratory numbers if mutual communication is used throughout the clinic consultation.

Keywords: Numeracy, HIV, communication, disparities, Viral Load

PP 69

Cultivating Cultural Competence: A Breast Health Program for Latinas

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Advisors: Jennifer Bail, BSN, RN; Timiya Nolan, MSN, ANP-BC, CRNP; Silvia Gisiger-Camata, MPH, RN; Karen Meneses, PhD, RN, FAAN

University of Alabama at Birmingham

Introduction: While there is a lower incidence rate of breast cancer within the Latina population, they are diagnosed at younger age, with advance disease and have a higher mortality rate than Caucasian women due to a lack of culturally sensitive education and access to healthcare. Cultural competence is a crucial aspect of health education. Culture includes beliefs, customs, food, and language shared within a specific population. Therefore tailoring presentations to include the target audience's culture increases the effectiveness.

Aims: The purpose of this study is to assess the receptiveness of Latina's to the use of cultural competence in the delivery of breast health education.

Methods: A pre-existing breast health education program was culturally adapted to better fit a convenience sample of Latinas enrolled in an ESL class from Shelby County, Alabama. The information was presented in Spanish at a sixth grade reading level with pictures reflecting the Latina community. Resources in Spanish were also provided to each participant including: self-breast exam instructions, general breast health information, and a voucher for a free mammogram.

Results: Twenty six Latinas, age 25 – 46, participated in the educational program. A survey was given at the end of the presentation to rate the overall quality of the program, as well as the preferred method of delivery. Latinas rated the overall quality of the program as 4.9 on a 5-point Likert scale (1=poor and 5=excellent), and 88.5% preferred the presentation method of delivery that we used.

Conclusions: The study concluded that Latinas were most receptive to a presentation style program that utilized resources from the Latina community with incentives to practice self-breast exams.

Keywords: Latina, Breast Health, Culture

PP 70

Tailoring and Improving Nursing Interventions: Using the Interaction Between Research Results and Clinical Practice

Claire Clark, Andrea Kayne, Kristen McDonald, Chelsea Pritchett, and Annalee Walker

University of Alabama at Birmingham

School of Nursing

Abstract

When nurses encounter clinical problems, they seek answers from research studies. One such problem involves care-resistant behavior exhibited by persons with dementia. Dr. Jablonski and her research team have tested strategies that address care-resistant behaviors exhibited by persons with dementia who reside in nursing homes within the context of oral hygiene. The goal of our research activity was to extend these strategies. First, we identified how specific strategies effective for reducing care-resistant behaviors during mouth care could be applied to other activities that persons with dementia may resist: bathing, dressing and eating. Some of our ideas came from Dr. Jablonski's clinical practice in the Memory Disorders Clinic, where she works with families struggling with care-resistant behaviors. The second activity involved tailoring the strategies to specific types of dementia, using a combination of physiologic and behavioral information derived from the literature and clinical practice. This was a challenge due to the different disease processes and the ability to correctly diagnose and pharmacologically treat dementias such as Alzheimer's type, Frontotemporal, Lewy Body and Vascular. Based on our work, we produced two educational products: one that describes the four major types of dementia and one that provides tailored interventions that can be used to prevent and reduce care-resistant behaviors. By developing and testing tailored behavioral management techniques that address activities of daily living and dementia-specific problems, we contribute to improving not only oral hygiene, but the overall health and quality of life for both persons with dementia and their caregivers.

PP 71

Title: Development of PEACE-M to Improve Knowledge of Pregnancy and Prenatal Care

Authors: Coley, A., Ference, A., Killian, K., Peggins, R., Northen, A., & Jukkala, A.
Affiliation: University of Alabama at Birmingham, School of Nursing

Abstract

Preterm birth is the leading cause of infant morbidity and mortality in Alabama. Significant and persistent health disparities are prevalent with African American women experiencing pregnancy outcomes similar to those living in developing nations. In chronic health conditions, active patients (those having the knowledge, skill and willingness to assume an active role in their healthcare) achieve better health outcomes than less active patients. Research has not been conducted to examine patient activation during pregnancy or the impact of activation on perinatal health outcomes. Further, very little is known about maternal knowledge of pregnancy and prenatal care, a requisite component of patient activation during pregnancy. The purpose of this study was to develop and pilot test a culturally appropriate educational intervention to be delivered smart phone app, the Pregnancy Education, Activation and Communication Enhancement - Maternal (PEACE-M). The PEACE-M contains perinatal educational content to increase maternal knowledge on topics such as routine prenatal care, self-care, and early warning signs. An iterative design process was used to develop the alpha version, followed by focus group testing. A focus groups of 8 pregnant African American women, ages 18 to 34, was convened to examine the cultural appropriateness and relevance of the PEACE-M. While participants did not identify any content as irrelevant or inappropriate, they did have recommendation for additional content and/or features and how content may be presented in a more meaningful manner. These findings will be used to improve the PEACE-M on maternal knowledge of pregnancy and prenatal care prior to pilot testing.

5 Key words: preterm birth, mortality, disparities, patient activation, knowledge

PP 72

The PINC Project: Power in Navigating Choices

Selenia Dunst, Chenoa Leopard, Taylor Middleton
UAB School of Nursing

Purpose: This study aims to examine the decision making processes that occur in African American (AA) adolescent females regarding oral sex and identifying prominent factors that influence those decision making processes.

Significance: AA women are increasingly more likely to develop HIV in young adulthood, a statistic that is positively correlated with previously acquired sexually transmitted infections (STIs). Evidence maintains that adolescents do not consider oral sex as risky as vaginal sex; therefore they are more at risk for contracting an STI or HIV. By identifying the boundaries AA girls associate with oral sex, dialogue can be initiated in the hopes of preventing unsafe vaginal sex.

Methods: The sampling being used to recruit is convenience sampling. The sample includes 40 AA girls from Jefferson County, Alabama. Recruitment is provided through libraries and community youth centers. Inclusion criteria include: (1) must be an AA female, (2) ages 14 to 18, (3) can read and speak English, (4) willing to participate in individual interviews or group discussions, (5) needs guardian consent, and (6) adolescent consent. The data is collected via individual and group interviews. The focus of the interviews will be on the decision-making process regarding the initiation of oral sex.

Nursing Relevance: Data gathered from this study, will identify goal oriented text messages to empower AA girls to establish boundaries about oral sex before they are faced with a situation involving decisions to have or not have oral sex.

Keywords: African American Adolescent Females, oral sex, HIV/STIs

PP 73

Empathy's Role in an Individual's Ability to Integrate into a New Culture

Sadie Foster

Collat School of Business Honors Program

There is a multitude of research investigating the relationship between integration and empathy in relation to individuals transitioning into new cultures. However, research that combines the effects of empathy on an individual's ability to successfully integrate into these new cultures when comparing the two variables is lacking. The purpose of this study is to see what effect, if any, someone's empathy component of emotional intelligence plays in their ability to integrate into a new culture while simultaneously controlling other variables. Research data was gathered by sending an electronic survey comprised of an empathy scale, an acculturation scale, and demographic questions to participants who immigrated to America. At the end of the survey, spaces were provided for additional comments that the respondents felt were unique circumstances that affected his/her transition. The survey was sent out indiscriminately to those who were living in the United States, but that were not born in the United States. The sample was created to try and reduce the interference of similar populations' results while simultaneously reaching as large of a population as realistically possible. Thus far, the study has indicated that empathy has a positive and significant impact on an individual's integration capabilities. The study controls for length of time spent in the new culture and the level of distance between respondents' home cultures and the American culture. The implications of this positive correlation may lead to an easier transition for those individuals adapting to new cultures.

PP 74

Title:Racial Differences in the Symptom Profiles Among Children Assessed for Autism Spectrum Disorder

Authors: Kim Krubinski, Sarah O'Kelley, Caroline Leonczyk, Olivio Clay, Kristi Guest
Affiliations: University of Alabama at Birmingham, Department of Psychology

Past research on racial differences in symptoms of autism spectrum disorders (ASD) has been inconsistent. This study looks to identify differences between African American and Caucasian not of Hispanic/Latino ethnicity children's symptoms presented during the Autism Diagnostic Observation Schedule (ADOS). Participants included 365 children referred to the UAB Civitan-Sparks Clinics due to a question of developmental delay who received a comprehensive autism evaluation using the ADOS. Results indicated that among minimally verbal children, African American children had poorer social interaction scores, less frequent directed vocalizations, and a greater incidence of tantrums during the ADOS. No differences were observed between African American and Caucasian children with phrase speech. Among verbally fluent children, African American children offered information about themselves less frequently during the ADOS. The knowledge of how autism symptoms present differently between races could aid in earlier identification in African American children, who currently have a delayed age of identification.

Keywords: Autism, Race, Symptoms

PP 75

Isolation of myofibers from the zebrafish; *Danio rerio*

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Abstract

Myogenic precursor cells (MPCs) are located on mature myofibers and act to augment muscle growth. These cells are activated in response to injury and help to maintain muscular integrity throughout life. As vertebrates age MPC recruitment is less efficient leading to skeletal muscle wasting. Critical to MPC functioning are the transcription factors Pax3 and Pax7, which act to regulate cells progression through the myogenic program from MPC to mature myofiber, along with other myogenic regulatory factors (MRFs). This project focuses on isolating myofibers in order to better study the expression of Pax3 and Pax7 in MPCs. In order to isolate muscle fibers, 30 zebrafish embryos (72 hours post fertilization) were transferred to a 1.5 ml centrifuge tube, treated with carbon dioxide independent media in addition to collagenase IV, centrifuged, and strained. Fibers were placed on poly-L-lysine coated coverslips and prepared for immunolabeling by fixing them using 4% paraformaldehyde, adding blocking solution, and adding both primary and secondary antibody. Immunolabeling will demonstrate *ex vivo* expression of Pax3 and Pax7 during the developmental stages of myogenesis that can be compared to aged myofibers. Previous work has demonstrated that muscle growth is marked by decreased Pax3 expression during aging. Decreased activation of MPCs as well as decreased abundance of MPCs is associated with a decline in muscle tone in late life, and this study will aid in the understanding of pax3 and pax7 expression in this context.

Keywords: Muscle, Zebrafish, Transcription factors, Immunolabeling

PP 76

Postpartum Care Among HIV-Infected Women

Amia Loubser and Hilary Parker
UAB School of Nursing

Abstract

Introduction: Mother to child transmission of HIV in the United States has drastically decreased due to the implementation of routine HIV testing during pregnancy. However, while HIV-infected women are more likely to adhere to prenatal care and anti-retroviral therapy (ART) during pregnancy, linkage to postpartum care is suboptimal. HIV care retention rates and ART adherence rates drop significantly in the postpartum period. This lack of care in the postpartum period for HIV-infected woman greatly decreases their quality of life and health status in many different aspects, yet little is known about this gap in the continuum of care of HIV-infected women.

Methods: We have conducted a systematic review of qualitative and quantitative studies done in the US to clearly identify the gap in the continuum of care for HIV-infected woman and factors contributing to the lack of care in the postpartum period.

Results: While retention and adherence during pregnancy is reported to be around 61%, retention and adherence rates during the postpartum period seem to be less optimal with studies indicating that up to 39% of postpartum mothers are lost to follow-up care. Factors contributing to the lack of adherence to ART therapy in the postpartum period include use of alcohol and tobacco and side-effects caused by the medication. Factors contributing to the lack of retention in care during the postpartum period include stigma from both healthcare institutions and the community, lack of support from partners and family, poor patient/ provider relationships, healthcare institutions not transferring health records appropriately and lack of access to transportation.

Conclusion: This multi-faceted gap in care can only be mended by an interdisciplinary approach involving the patient, healthcare providers, and community resources working together to encourage HIV-infected women through the postpartum period and in adding continuity to their healthcare. Women can be encouraged by providing emotional support, creating environments free of stigma and providing these woman with mentors to coach them through the first couple of months postpartum.

Keywords: HIV, postpartum, woman, ART adherence, retention

PP 77

Describing and evaluating current practices of specialist and generalist palliative care support for patients with a Mechanical Circulatory Support Device (MCSD)

University of Alabama at Birmingham School of Nursing

Dr. Marie Bakitas, Jordan Arguello, Tabitha Harper, Julia Marchant, and Marco Romero

ABSTRACT

BACKGROUND

Mechanical Circulatory Support Devices (MCSDs) have been developed to increase or replace failing myocardial performance. Palliative care consultation has been shown to improve symptom burden, depression, and quality of life (QOL) in HF patients. However, the evidence suggests that cardiovascular providers have generally not embraced the importance of palliative care roles in MCSD patients. The results of this study will have vital translational implications for future MCSD and palliative care research, practice and policy.

METHODS

Cardiovascular and palliative care clinicians (physician, nurse practitioner, physician assistant with at least 1 year of program experience) completed web-based MCSD/Palliative Care Clinician Surveys. The palliative care clinician survey identified clinicians' knowledge, attitudes and perceptions of the role of specialist palliative care consultation. The MCSD survey assessed cardiovascular providers' attitudes and perceptions regarding their personal comfort level with and capacity to provide generalist palliative care.

RESULTS

This project is still underway; therefore no results can be given at this time.

CONCLUSIONS

This project is still underway; therefore no conclusions can be given at this time.

PP 78

ACE: The Importance of Geriatric Care

Hannah Simon

University of Alabama Birmingham

Geriatric Care is a growing field in America. When an adult falls ill, they are expected to receive the best care by the best doctors in the hospital, however, the situation is different for elderly patients, as they do not experience and portray the same symptoms as other adults because their bodies change after they reach middle age. This is where the 4th floor main Acute Care for the Elderly of the Highlands Hospital comes into play. Because their symptoms appear differently, the elderly often need special care, given by multiple different specialists such as gerontologists, nurses, chaplains, pharmacists, occupational therapists, and social workers so that the elderly's care can be maximized. Environmental adaptations are also included on the ACE floor unit, such as clocks and calendars in every room, non-slip floors and reduced-glare lighting in the hallways. By talking to the patients, I am able to help them hands on and learn from them as much as I can. Talking with them also gives me the opportunity to practice and apply my public speaking skills in a real world situation. Units like ACE should be established in more hospitals across the nation because these adults are the ones who built our generation that we have today, and we should do all that we can to take care of them and to make sure that they are happy, their minds sharp, and their bodies able. I believe that ACE is one of the only and best ways that these elderly adults can receive the best care possible.

PP 79

The Importance of Early Eye Care for Immigrant Children

UAB EXPO for Undergraduate Scholarship 2015

Poster Presentation – Service Learning

Zachary Tenner

Department of Foreign Languages and Literatures

Faculty Advisor: Dr. Lourdes Sánchez-López

Health care disparities exist for racial and ethnic minorities due to a variety of reasons. The people suffering from these disparities generally have no fault in this. However, the damage is exacerbated when these groups of people do not take healthcare seriously. According to Frazier et al., Hispanic immigrant parents may view eye care for their children as unnecessary unless faced with an outward sign of defect or upon pediatric recommendation. This claim falls in line with Kemper et al.'s claim that Hispanic or nonwhite children have a greater chance of not receiving eye care in urban counties. Unfortunately, Hispanics are more prone to be impaired by a visual condition than other ethnic groups. For example, Hispanic children have the highest or second highest probability among ethnic groups to suffer from the conditions of astigmatism, myopia, and hyperopia. Moreover, visual impairment in childhood is most commonly caused by amblyopia and according to Stein et al. this affliction is disproportionately accompanied by a systematic disorder. Following Frazier et. al., high cost or a lack of information may be causing Hispanic immigrant parents to not realize the need to provide eye care for their children. Using the above research and his own experience in service learning as a Spanish translator at UAB Eye Care, the author will investigate the critical need to educate Hispanic immigrant parents about the importance of eye care for their children.

Key words: immigrants, healthcare, eye care, children

PP 80

The Relationship Between Culture and Nutrition and Their Effects

By: Kay Lynn Nguyen, Erin Arcuri, and John Strenkowski
In association with: UAB Division of Preventative Medicine: Minority Health and Health Disparities Research Center, UAB Department of English, UAB Honor's College

Abstract:
There are many ways that individuals address their health, and those ideas are as diverse as the people themselves. The main focus of this research is to determine how different ethnic groups view food relative to their culture and what that relationship looks like for determining an individual's overall health. Culture carries with it a dynamic that is contributed to by everyone who has come before to offer experience or knowledge that shapes the group over time. Traditions in activities, health-promoting behavior, social interaction, and diet selection are all fluid and will change as members of a culture group have experiences and value some aspects over others. If there is an understanding of how individuals think about food and what role it plays in their lives, they can be properly equipped to make the best health and lifestyle decisions for themselves. In this project, interviews are conducted amongst college students to obtain data that alludes to differences in diet composition and food choices that are more specific to one ethnic group than another, and what peoples perspectives of their own health is. This data is then used in conjunction with research done on the topic to produce a comprehensive overview of how people can be more prudent about their food choices in a way that relates to the more specifically than simply instructing people on how to eat. When people can be related to, it is hypothesized that making such changes will be less intimidating.

Keywords:
Nutrition, Culture, Behavior, Tradition, Progress

PP 81

Differences in Racism Abstract

Brian Acton, Renay Byrd, Colin Silva, and John Michael Brasher

Freshmen at the University of Alabama at Birmingham

The four of us are currently in an English 102 class, and we all chose to study police brutality and/or racism. Renay and Brian focused more on the happenings of the 1960's with the Civil Rights movement and its leaders. Colin and John Michael focused more on modern instances of police brutality and the results of those cases.

Our goal is to show that although racism and police brutality may be different from how it was several decades ago, it is still an issue that current generations need to work on. We have all spent a few months doing in depth research pertaining to our specific topics, and we are bringing all of that research together to give a better understanding of what is going on in today's world. One of the difficult parts of our research was digging through all of the bias to create an intelligent argument. As for results, we all agreed that this issue is still a relevant problem compared to previous times in our country.

In conclusion, we just want to spread our findings to help others understand exactly what is going on. Given the events of the past few months, we wanted to sort through some of the controversy and just create a comparison that is easily understood. With all of the research we will compile, we fill that some light will be shed as to the state of our society.

Keywords:

Police Brutality, Racism, Research

PP 82

The Different Aspects of the LGBT Community

Joey Johnson, Emily Fredrick, India McCants

No matter how you put it, the LGBT community has brought up many controversial topics. There are several different interpretations of the Bible and opinions that have been proposed by Christians when it comes to the acceptance of homosexuality and gay marriage. The most current controversial question is should it be allowed in the Church of Jesus Christ? No matter what a Christian's opinion may be, the Bible is the sacred text that instructs Christians on how to live and what is the acceptable in the eyes of God. Should gay marriage be legal? This short question can often incite heated debates among peers, co-workers, friends, and even family. As the Supreme Court decision on gay marriage looms ahead in June, many citizens wonder and hope for different rulings. By analyzing the reasons for and against the legality of gay marriage, I plan to show how national legalization of same-sex marriage is the best course of action for the United States. When it comes to specific people, the transgender community has become a controversial topic due to the victimization and discrimination by the conformist community. When it comes to the discrimination, recent laws have been enforced by several states that have come to realize the importance of equality. Laws have passed enabling transgender variant people to have documentations that more accurately reflect who they are, which is vital in their lives.

PP 83

The New Super-Account
The Expanded Role of the Accountant as a Strategic Leader, IT Professional, and Global Expert

Matthew T. Sloan and Arline Savage
Collat School of Business

Abstract: The common perception of accountants is flawed. My objective with this paper is to find support for this contention by providing insights into actual modern accounting. I surveyed non-accountants to determine the common perception of accountants' characteristics. The most common perceptions of accountants as described by non-accountants' are "intelligent, good at math, organized, and introverted". In addition, many respondents assumed "all accountants do taxes". This study shows that accountants exhibit much more than just these traits – and do significantly more than just taxes. I also surveyed CPAs, CFOs, and partners of accounting firms. The survey results reveal the importance of skills such as face-to-face communication, writing, and critical thinking in being a successful accountant. Accountants do not fit their stereotype of simply being "boring, unsociable, and introverted". Furthermore, I reveal how accountants must have leadership skills, IT proficiency, and global knowledge in order to become what I call super-accountants – financial professionals who are proficient in skills utilized by all areas of the business environment.

Sections: Section I is the introduction, Section II is my literature review, Section III describes the research methods, Section IV is the discussion of my research results, Section V concludes, and Section VI provides references.

Category 4: Business, Finance and International Studies

PP 84

Title: The Inmate is (a) Good: A Comprehensive Assessment of the Effect of Incarceration on the U.S. Economy

Author: Muna Al-Safarjalani

Affiliation: University of Alabama at Birmingham

Mentor: Joshua Robinson

America has the highest incarceration rate in the world. The American judicial and prison systems are riddled with harsh drug possession laws, private prison lobbying groups, racial and socioeconomic disparities among the prison population, and poor inmate living conditions. In fact, in the market that is the American prison system, inmates are treated more like goods than human beings. The purpose of this assessment of incarceration and labor statistics and survey results is to understand the effect of the increasing incarceration rate on U.S. GDP. The results of this analysis showed that the cyclic nature of the prison system has a fourfold negative effect on the economy. First, more funds from taxpayers are required. Second, while inmates are incarcerated, they do not contribute to the economy through investments, consumption, or taxes, thereby directly diminishing economic growth. Third, the standard of living is inversely related to incarceration rate, which is especially reflected in minority groups. Finally, the national unemployment rate is kept artificially low because the prison population is not considered part of the labor supply, meaning our expectations about the future of the U.S. economy may be inaccurate. Identifying the problems that plague the prison system is crucial to correcting them. In this case, the solution to the inefficiency of the labor market might include training and rehabilitation of inmates, relaxing sentences for non-violent crimes to better reflect their severity, and advocating welfare and education reform among socioeconomic groups of lower financial status.

PP 85

Gendered Language in *darija* and French:

Exploring Sexual Violence and Gender Attitudes in Morocco

Katherine G. Bowman

Department of Anthropology

This thesis focuses on the differences and commonalities between the use of gendered language in French and in *darija*, the colloquial Arabic dialect spoken in Morocco. Concentrating on euphemisms as well as gender-specific pronouns, adjectives and nouns, my research proposes that the gendered language found in *darija* is also present in the French language. Dominant Western discourse surrounding the position of women in Islamic nations tends to consider Islamic culture to be inherently repressive towards women, while viewing the women of their own culture as liberated. I will argue that both *darija* and French contain gendered language that perpetuates repressive gender attitudes and normalizes sexual violence. My research consisted largely of exploring relevant literature, Moroccan social media sites, blogs and websites, supplemented via Skype interviews and drawing upon my own personal past observations during my ten-month sojourn in Morocco during the 2012-2013 academic year.

Kaywords: language, gender, sexual violence

PP 86

Education: The United States vs. Spain

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Faculty Advisor: Lourdes Sánchez-López

This study will be a comparison between the education systems in the United States and Spain. This topic is relevant and of interest to the authors because it relates to the field of education. One of the authors wants to teach English in Spain and the others wants to teach Spanish in the United States. The authors will compare and contrast the structure of schools in each country, legalities and legal reforms regarding the education system and literacy rates, and will conclude with the question of which system more effectively educates the students. Aspects to be explored within the structure include: student schedule, curriculum, cost of attendance, stages of school offered and required by law, teacher student interactions, as well as explanations of cultural attributes that contribute to these structures. Evidence will consist of interviews from teachers that have participated in both of these systems, legal reforms such as No Child Left Behind, the conflicting cultural notions of equality versus individuality for students in these countries, and statistics involving the literacy rates, the pursuit of higher education, dropout rate, cost of education, the student debt to income ratio, and the percentages of unemployed degree holders. The audience will learn the key differences between these two education systems and how it affects the two cultures.

Keywords: Education, Curriculum, Spain, United States

PP 87

The Great Recession of 2008 in the United States and the 2008 Crisis of Spain: a Comparative Analysis

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UAB Department of Foreign Languages and Literatures

Faculty Advisor: Dr. Lourdes Sánchez-López

The United States' Great Recession of 2008 began due to a combination of the burst of the housing bubble in mid-2007, the fall of Lehman Brothers in 2008, and the stock market plummet and subsequent failure of Credit Default Swaps (CDS). The results were costly. That year alone, 5.5 million citizens lost their jobs, the country lost $648 billion, and taxpayers spent $73 billion in an attempt to mitigate the crisis. This economic fallout continues to affect many Americans today. However, the ramifications of this collapse were not confined to the borders of the United States. For instance, the Spanish economy experienced tremendous growth during the 1990s and early 2000s. Unfortunately, this rapid growth was not sustainable. Growth slowdown was apparent by 2007, and by 2008 the Spanish economy also found itself to be in recession. High credit availability led to a housing market that eventually burst after the international economic crisis reached the country's borders. A major consequence of this recession was the loss of more than two million Spanish jobs between 2008 and 2010, giving Europe's fifth largest economy an unemployment rate of well over 20%. It is the academic intent of this group to explore the economic circumstances of both the United States and Spain that ultimately led to what is now referred to as the Domino Effect, a phenomenon which spread economic collapse throughout not only these specific countries, but across the globe by way of a complex system of free trade agreements as a continual consequence of globalization.

Keywords: Recession; Housing Bubble; Domino Effect; Globalization

PP 88

Good Vibes: How the Leader's Mood can Influence the Group

Rami Elsharif
School of Business Honors Program,
University of Alabama at Birmingham

Abstract Body

Sections Include: Introduction, Method, Results, Conclusion, References
The present research study examined the influence that a leader's mood has on a) mood of individuals in a group b) affective group tone and c) group processes. My research and previous findings differentiated the reactions that a leader in a positive and negative mood elicits from his/her group members respectively. My findings suggest that there are benefits and risks to groups that are exposed to positive and negative moods, and that the most effective leaders know when and how to project their moods in order to get the most out of their subordinates.

Keywords
Leadership, Mood, Affective tone, teamwork

PP 89

The Deficit in Usage of Collat Career Services

Joseph Evans
Collat School of Business

According to a recent survey of 43, 864 college students from 696 different institutions conducted by the national association of colleges and employees, only 46.8 percent of college students made multiple visits to a career center. Along with the low percentage of career center usage, college students face many perceptions that hinder their expectations and outcomes, which could lead to a decreased motivation in seeking out career center services. The Collat Career in the school business also faces low participation of its services. Through the participation to the past career fairs and the use of a survey detailing demographics, current knowledge, and perceptions of barriers, this research will be exploring how much a business student uses career services or related services and why a business student is not visiting the Collat Career Services. Multiple correlation methods were applied to assess how each variable affected college students' motivation and participation in seeking out career services. It is most likely a combination of lack of knowledge, feeling like the services provided are not important, a degree of perceptions of barriers, and demographic characteristics that explain the low involvement of the services provided by Collat Career Services. Concluding, career centers could focus more on marketing through more innovative outlets, target a large majority of students that need the services provided, and intervene early in on a college students' career development.

Keywords
Career Services, UAB, career development, perception of barriers

PP 90

Abstract Title: The Importance of Pay in the Workplace: What Motivates and Satisfies Employees?

Author: Jenna Floore
Institution: University of Alabama at Birmingham

Abstract Body

There has been much research done on the topic of pay and how it relates to motivation and satisfaction in the workplace. Many of the findings have been somewhat contradictory to one another. Many researchers have found that pay does motivate and satisfy to an extent, but that extent it still quite unknown. This research project was conducted to look at what motivates people in the workplace and what makes people satisfied with their job. Specifically, this research focused on the effectiveness of pay in motivating and satisfying. A survey was sent out to individuals that questioned them about pay in relation to motivation and satisfaction. The survey also asked questions related to what exactly motivates people and makes them satisfied with their job. The data was then analyzed to determine the results. Pay was found to not be the leading motivator to perform among employees in the workplace, although it did motivate to some extent in instances. Pay was found to not be the most important factor in job satisfaction. The results of this study show that pay can be a motivator for employees, but it is not the most important factor for employees to be motivated to perform. In regards to job satisfaction, pay plays a role in making employees satisfied on the job, but once again it is not the most important.

Keywords
Pay, Motivation, Satisfaction, Extrinsic, Intrinsic

PP 91

Jonathan Hennessy

What It Takes To Work In Sports

The purpose of this paper is to understand the characteristics of people in the sports industry. In regards to this paper, the sports industry refers to any form of sports management or related field. The paper will express the importance of entrepreneurial theories in business, and how if applied correctly in the sports industry, can present opportunities for employment. Paired with entrepreneurship is the concept of expert knowledge. The proper balance of entrepreneurship and expert knowledge can promote innovation that can give an organization the upper hand when opportunities arise. The importance of social networking to success in sports management is discussed as well since networking allows professional to meet other working professionals that can assist in generating ideas. Networking is considered by some as the backbone of entrepreneurship and knowledge systems. My hypothesis'for this study is that people who are successful in the sports industry utilize networking events. Also, extraverts are more likely to succeed in the sports industry. Last, graduate school is not necessary to move up within the industry. These hypotheses will be tested by researching related articles and conducting a nationwide survey that aims to uncover demographical, educational, and characteristic information about working professionals within the sports industry.

PP 92

Numbers vs. Words: Accounting Majors and Their Unbelief in Their Need For Writing Skills as Accountants

Jaimie Holt

The University of Alabama at Birmingham

ABSTRACT: Many accounting majors do not believe that writing skills are essential for their future careers and will not be used after their basic composition, literature, and business communication courses. Accounting majors are also not being taught the adequate level of writing skills they will need in the accounting field by their accounting professors. Despite what accounting majors believe, writing skills obtained from their undergraduate and graduate education will be resourceful and necessary in their future careers as accountants.

The purpose of this project is to address the fact that it is a common misconception among many accounting majors that having adequate writing skills is not relevant to their major and what they will be doing in their future careers as accountants. Students need to be better informed of the importance of having writing skills by being told how they will specifically use the skills they learn from their university courses in their careers, by receiving additional teaching of better skills in their accounting curriculum, and by practicing using those skills through writing assignments in their courses.

Accounting majors from the UAB Collat School of Business were surveyed to demonstrate how accounting students believed or did not believe that writing skills are a necessity. Faculty from the accounting department and a business communications professor from the UAB Collat School of Business were interviewed to demonstrate why writing skills are necessary from an academic and professional standpoint, how writing skills can be incorporated into the accounting curriculum beyond the basic composition, literature, and business communication courses, and to demonstrate how the integration of writing skills can be improved.

Keywords: Accountants, Writing

PP 93

"Public Perception: The Effects of Culture on Women Leadership Roles in Afghanistan vs. America"

Abeda Iqbal
UAB – Collat School of Business

Abstract
According to Geert Hofstede, widely recognized researcher of culture, culture is defined as "the collective programming of the mind that distinguishes the members of one group or category of people from others". This paper will distinguish the effects of culture on women as leaders in both the United States of America and Afghanistan. This will be achieved by looking at current research on discrimination against women in the work place, education opportunities, and religious forces. Twenty-five males and females in five age groups (13-19, 20-29, 30-39, 40-49, and 50-59) will be also interviewed and asked about their opinions on women in leadership positions in both America and Afghanistan. It is expected that if a country is male dominated, where women lack access to education, and is culturally sensitive, then there will be fewer women in leadership positions in that particular culture. It should be noted that the definition of the term "leader" varies across cultures, so it is difficult to obtain exact statistics on women in leadership positions. For the purpose of this paper, the term "leadership" will be described as the process of influencing individuals and the organization or community to reach a common goal.

Keywords
Women Leadership, Afghanistan, America, Culture

PP 94

Discovering the Hard Wiring of those in Information Technology

Candra Long
UAB Collat School of Business

Abstract Body

The purpose of this study is to determine whether there are key personality traits that correlate to one having the problem-solving and analytical skills necessary for a successful career in IT. Research on the Big Five provided a better understanding on how to accurately access and understand the various dimensions of a the personality. As a result, this study aims to determine this correlation by analyzing and applying the Big Five Personality traits to those in the field. Data was gathered from focus groups, along with scholarly journals referring to scholarly journals relating to the topic. Once understanding the various aspects of the personality, it was important to understand a career in Information Technology. Much of the research reveals that it is a fast- paced industry that is always changing. As a result, this career path is a better fit for some people based off of their personality. My research supports the idea that IT Professionals tend to show high levels of agreeableness and tough mindedness compared to other occupations. After finding the correlation in traits, the last part of the research deals with clarifying success in a career. Lastly, I aim to explain that career satisfaction is the determining factor when truly analyzing the success of an individual in a particular career.

Keywords
IT Professionals, Big Five, Career Satisfaction

PP 95

Risk Tolerance, A New Perspective: Behavioral Finance in the Human Genome Era

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Introduction: Prospect Theory integrated the behavioral aspects of cognitive psychology into investment decision-making choices, for the first time. This concept was later expanded to include "Behavioral Finance," which lead to studies relating behavioral traits with ideal investor behavior. Today, studies are using human "Behavior Genetics" to identity gene polymorphisms that are critical to the human decision-making process. This literature is linking neurotransmitter gene variations to investors' inherent levels of risk temperament. **Aim:** To test the correlation between levels of risk tolerance and the presence of neurotransmitter gene variants in 5-HTTLPR and DRD4. We hypothesize that specific variations in 5-HTTLPR and DRD4 will be correlated with low versus high risk tolerance. **Methods:** A risk tolerance assessment and Saliva DNA Kit (Norgen-Bioteck) will be distributed and collected from thirty financial advisors with informed consent. DNA, isolated using a Qiagen DNeasy kit protocol, will be used for polymerase chain reaction amplification of gene polymorphisms using specific primer sets and scored by gel-electrophoresis and DNA sequencing. The risk assessment will be scored on a scale from 1 (low risk tolerance) to 33 (high risk tolerance). Results from the assessment and gene polymorphisms will be evaluated using regression analysis to determine the degree of correlation. **Expected Results:** The 5-HTTLPR short-variant (S/S) will be associated with low-risk tolerance while the DRD4 7 repeat variant will be associated with higher risk. **Conclusions:** Polymorphisms in 5-HTTLPR and DRD4 can been associated with risk tolerance, providing an indication that behavioral genetics can be applied to the field of finance.

Keywords:
Behavioral Finance, Risk Tolerance, Gene Polymorphisms, 5-HTTLPR, DRD4

PP 96

The Civil Wars in Spain (1936-1939) and in the United States (1861-1965):

A Comparative Study

Kailla Myers, Sylvia Peral, Brandon Schoening

UAB Department of Foreign Languages and Literatures

Faculty Advisor: Lourdes Sánchez-López

Abstract

This comparative research study involves the Civil Wars in Spain and the United States of America, and examines their similarities and differences. One major area of research is how each country was divided politically, philosophically and socially prior to the war. Political division in the United States consisted of the Union in the north and the Confederates in the south. In Spain, the political division was between *Republicanos* and *Nacionales,* without geographical separation. The Union wanted to free the slaves and give people a voice whereas the *Republicanos* wanted separation of church and state, limit the power of the monarchy and a democratic republic for working classes. Both Confederates and *Nacionales* wanted to maintain strong traditions, military power and separation of classes. Another area of examination is the setting of each war, as the technology and population were completely different due to time, culture, location, and government. The research also shows how the consequences of each war greatly vary, but still vastly altered the lives of whole societies and the progress of their countries. Approximately three million soldiers fought in the American Civil War in comparison to the one million soldiers who fought in the Spanish Civil War, many of whom were foreigners. The main goal of this research is to analyze and compare the causes, the means and consequences of two devastating civil wars that occurred over 70 years apart in two different continents, and how these affected the economies, infrastructures, moral, demographics and societies in these two countries.

Keywords

Civil War, Spain, United States, comparative study

PP 97

Recovering from a Housing Bubble Disaster: How Spain and the United States Are Repairing Their Economies

Kelly Porter, Christian Spain and Jessica Sperry

UAB Department of Foreign Languages and Literatures

Faculty Advisor: Dr. Lourdes Sánchez-López

Abstract

In 2008, as part of a world economic crisis, Spain and the United States suffered a tremendous economic recession lead primarily by a housing bubble collapse. Both countries are still attempting to recover from the soaring effects, Spain recovering at a much slower pace than the United States. This investigation analyzes and compares the path to recovery of each country. Data analyzed for this study include governmental measures, societal attitudes and official predictions for the future of each economy. Furthermore, the relationships each country has with one another are also studied as part of the recovery efforts. Spain currently has one of the highest unemployment rates in the world with over 25% general unemployment and 50% for under 30 year-olds. There is also uncertainty within the European Union as to whether or not Spain can recover without outside intervention. The United States has also had an unsteady unemployment rate since 2008, ranging from 7% in 2008 to 9 % in 2010 to 5.5 % in 2015. The main goals of this study are to attain basic understanding of housing bubbles, their principal effects in a globalized world and the different elements and measures that contribute to recovery. The audience will understand this timely concept as part of global economics.

Key words: Global economic crisis, housing bubble, recovery, Spain, United States

PP 98

MBTI & Hunter Farmer Sale Roles

Kasey Robinette

University of Alabama at Birmingham Collat School of Business

Definitions

Extroverts find themselves, "energized from the world outside the self," spending time socializing is more gratifying than spending time alone; extroverted people are characterized by enthusiasm, assertiveness, and similar out-going traits (Carney, S., Parawan, J., Wang, C.).

Introverts are the opposite of extroverts; they are characterized by reserved and quite; they are not inherently shy or reluctant to socialize; they, simply, deriver energy form independent reflection (Carney, S., Parawan, J., Wang, C.).

Ambiverts are neither extroverted nor introverted but rather in the middle (Pink, D. 2012).

Hunter Farmer Theory describes two different sales roles; a hunter is a sales representative that enjoys prospecting new clients and a farmer continuously builds the relationships (DeCarlo, T., & Lam, S. 2015).

Abstract

This research was inspired by the hunter farmer theory in the sale's role, and a new phenomenon discovered by Adam Grant, "ambiverts". This research aims to determine Birmingham's sales force Myers Briggs Type Indicator results and their likelihood of being ambiverted. In addition, this research will determine their preference of being either a hunter and/or a farmer. The methods for this research were conducted with an online survey sent to undergraduate and graduate students who work in sales in Birmingham. The survey tests for levels of extroversion and introversion with MBTI and a series of questions to determine hunter/farmer preferences. Prior research has labeled successful salespeople as extroverted hunters, and less successful salespeople as introverted farmers. New research has shown that being extremely extroverted or introverted is not as effective as being in the middle,- ambiverted. This research tests Birmingham salespeople's tendencies of being ambiverted and playing the role of hunters in sales.

Keywords

Sales, Ambivert, Hunter, Farmer, MBTI

PP 99

“Participation Recognition: A Motivator or Hindrance?”

,Austin Waid

UAB Collat School of Business

Abstract Body

Participation trophies are a common prize given out to athletes, students, etc. regardless of if they win a competition or not. Participants are recognized for merely being apart of an activity. This begs the question – are these trophies, which are used as a motivational tool, actually working? A survey given out to 115 people ranging from 18-50 years old was distributed to determine on different variables that contribute to motivation, including if participation trophies are a motivator. In 8 different categories across all ages it was shown that payment, personal satisfaction, and a strong leader or supervisor were key in terms of how hard a person worked, and recognition was least motivational out of those categories. Also, 72% of these young adults or adults believed that participation trophies should only be given to winner and not every participant. The younger adults in the survey are more open to participation trophies, although the majority still shows they believe only winners should receive them. The older group of adults does not believe it is a motivator and heavily believe only winners should receive this recognition. These statistics are alarming with the heavy increase in young adults and kids receiving participation trophies.

Keywords

Motivation, Recognition, Participation, Trophies

PP 100

"The Effect of Leadership Development on College Student's Perceptions of Leadership"

Halli Williamson

Business Honors Program Independent Research Project

Over recent years, leadership development has become a popular topic, and a common tool used in many different arenas, including faculty development, workforce development, and student development. The focus of my research this semester is to determine the effects, if any, that leadership development has on students' perceptions of leadership. I decided to focus on this topic because I believe that students benefit from learning about leadership and from practicing leadership, and I would like to contribute research to this belief. My hypothesis emphasizes four groups, students with: (1) little to no leadership training or experience, (2) leadership training but no experience, (3) leadership experience but no training, and (4) both leadership training and experience. I will be using a survey to examine perceptions of three different styles of leadership, transactional, transformational, and servant leadership. My hypothesis is that students with little to no leadership training or experience will likely not distinguish between these three leadership styles, and may indicate transactional leadership as being preferred. On the other hand, students with prior leadership training or experience will distinguish between the different styles, and may indicate a higher preference for transformational or servant leadership. The results from my survey will determine whether my hypothesis can be confirmed or not. My references include scholarly articles from a variety of sources, as well as the results from my survey.

Keywords: leadership, development, student, college

PP 101

Assessing Birmingham Nursing Home Readiness for the QAPI Program

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University of Alabama at Birmingham[1], University of Alabama[2]

Background: The Centers for Medicaid and Medicare Services (CMS) have implemented a new program, Quality Assurance Performance Improvement (QAPI), which requires nursing homes to proactively use data to "… address gaps in systems or processes; develop and implement an improvement or corrective plan; and continuously monitor effectiveness of interventions." Inefficient use of funding or improper setting for good motivated workers has caused a need for an accountability system to help health care organizations thrive and continue to do so by improving performance. Governmental assessments of each nursing home are made on three criteria: health inspections, staffing and quality measures, which allow for an overall rating of a maximum of 5 stars. This complies together to form the Medicare Nursing Home Compare.

Aim: This project is a primary research for a larger scale project for a quantitative of Alabama nursing homes. The aim of the present study is to determine how the leadership and IT capability, in relation to technology and knowledge, in Alabama (primarily Birmingham) nursing homes relates to the Medicare Compare ratings.

Method: Primary data for this project will be collected from Birmingham nursing homes via interview surveys. The goal is to survey 5 overall highly ranked nursing homes and 5 overall poorly ranked nursing homes, 10 total. These surveys will focus on leadership of the Nursing Home Administrators as well as IT capability within the constructs of technology and knowledge. The open-ended responses from this survey will be coded and set up for a T test.

Keywords: Quality Improvement, Alabama, Nursing Home, Health Administration

Category 5: Service Learning

PP 102

Disaster Preparedness for the Latino Community

Kathryn Anzueto, Taylor Rice, and Erin Tinker

UAB School of Nursing/LEAPS program at Valley Elementary School

The Latino community is an ever growing community in the Pelham, AL area. Knowledge of different resources, information, and procedures for disaster preparedness are not known throughout the community. The aim of this service project is to get information about disaster preparedness to the Latino community in Pelham through an instructional session at Valley Elementary school and through partnering with the Pelham YMCA to participate in Y-Move. The methods used to implement this project included presenting information about floods and tornadoes using posters and hands-on activities. Moms at Valley Elementary School were engaged in discussion about preparedness issues such as having the proper insurance and developing a family plan in case of an emergency. Information that was written in Spanish was passed out at the end of the discussion. At the Y-Move event, the same information was presented to the children. Hands-on activities such as, making a tornado in a bottle and picking out items to put in a disaster kit were used to keep the children engaged. The results were increased knowledge of tornadoes and floods, awareness of safety areas, and increased preparedness through use of different educational materials. Challenges included cancellation of original health fair date. This led to redesigning the project to fit into the newly scheduled Y-Move. The project left us with a sense of accomplishment that we made a difference. In reflection, important information was retained by the children at the YMCA and the mothers at LEAPS—indicating that the teaching had been effective.

Keywords

Disaster Preparedness, Tornados, Floods, Disaster Preparedness Kits

PP 103

Enhancing Fitness in Individuals with Special Needs Through Dance

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University of Alabama at Birmingham

Abstract
Children's Dance Foundation (CDF) is a not-for-profit dance education organization that teaches dance to students of all ages and abilities. Our goal was to impact the community by enhancing the fitness of individuals with special needs. We served as CDF assistant teachers in the community outreach program and the studio class for children with special needs. We also performed a literature review on the benefits of physical activity and developed an informational pamphlet to encourage healthy lifestyle choices in the special needs population. Additionally, we researched organizations with outreach programs comparable to those at CDF and constructed a document of program descriptions to aid CDF with program development and grant writing. Academic learning was gained through teacher training at CDF and designing a lesson plan to teach a special needs dance class. We also learned about the timeline of motor development by conducting an assessment to measure how dance advances the motor skills of special needs children. We faced challenges with maintaining the interest of students in loud, chaotic environments and with determining how developmental motor goals translate for children with special needs. We were encouraged by the relationships we formed with children and staff at CDF and excited about the experience we gained in motor rehabilitation that we can apply as future physical therapists. We learned, hands-on, about the infinite benefits of dance on motor development and about the importance of seeing the potential in every child.

Keywords
Special Needs, Dance, Fitness, Motor Development

PP 104

Halt Hypertension: Lifestyle Modifications for the Older Adult

Barham, J. T., Wojciechowski, A.

University of Alabama at Birmingham School of Nursing

Abstract:

The population served at Shepherd Center East has difficulty with hypertension management related to poor health practices. The aim of this community project was to improve hypertension management in this population through education and empowering the consumers to make positive lifestyle modifications. We provided two educational sessions based on (a) lifestyle modifications to facilitate blood pressure control, and (b) ways to maintain a healthy diet without overspending at the grocery store. We developed two different educational brochures to go along with our teaching sessions, and provided our site with a digital copy of each. This will allow the directors of Shepherd Center to continue reproducing and distributing our brochures in the future. There were several barriers to education that we had to work through in order to provide effective interventions. The consumers were initially hesitant to welcome us to the site, but after a couple days of interacting and building rapport they opened up a great deal and were very receptive to our interventions. We held monthly blood pressure checks to help us gauge the effectiveness of our interventions, and it provided feedback to our consumers. We were able to utilize information learned in class to effectively diagnose the needs of our population, and provide successful interventions. It was very rewarding to see the improvement in blood pressure as our consumers incorporated our teachings in to their daily activities, and our hope is that they will continue to employ improved lifestyle habits in the future.

PP 105

Improving the Life skills of Adults with Cognitive Disabilities

Jamie Bell, Shelby Nesbitt, Courtney Talley, and Lindsey Abts

Eagles' Wings

Eagle's Wings is an adult day habilitation center located in Coker, Alabama for cognitively, intellectually, and physically disabled adults. Our project's aim is to assist them in accomplishing their mission statement, which is to create an environment that increases the individuals' potential for independence, productivity, and community involvement. We did this by enriching the program at Eagle's Wings through the augmentation of a minimally restrictive environment, a structured education, and adequate communication. We were able to help them achieve their mission statement by creating a manual of ideas that improved the system that was in place. The manual of ideas includes step-by-step instructions accompanied by detailed pictures in order to assist the individuals in learning life skills such as using the computer, vacuuming, proper hand hygiene, and other household chores in an age appropriate manner. Also, we have created a video for the Eagle's Wings website to enlighten the community of the services that Eagle's Wings has to offer. The video portrays a day in the life of an individual at Eagle's Wings, as well as provides important information regarding the facility. The main challenge we faced was trying to adhere to state regulations while also catering to the needs of the population in a manner that was intellectually appropriate. Despite the challenges, we succeeded in providing them with resources that not only met state regulations but also met the individuals' needs and heightened their involvement in the community. The reward was providing the individuals with means to become more independent, which in turn may allow them to become more integrated in society.

Keywords:

- **Cognitively disabled**
- **Adults**
- **Education**

PP 106

Abstract Title: Little Stars Reaching for Healthy Foods

Authors: Sarah Bennett and Kaitlin Moon

Affiliation/Institution: UAB School of Nursing and New Rising Star Community Support Corporation

Our Community Project is to teach the kids of the after school program at New Rising Star how to make healthy food choices. Our goal is to expand their knowledge on the vast number of options of healthy foods that are available to them. Before we implemented our teaching, we did a pre-test to assess what they already knew. After analyzing their responses, we were able to use handouts as a visual aid for their learning, as well as handouts for the kids to take home to their parents. We realized that many of the kids knew about healthy foods but were uncertain as to which group the particular food item went into. We were able to address this in our teaching, as well as increase their collective overall numbers of listed healthy foods. This is information that these kids can take with them and apply for the rest of their lives. We were able to apply what we learned in class about levels of prevention in our community knowing that our healthy foods teachings would classify as a primary level of prevention against obesity. In reflection, this was a challenging project in that we were teaching a wide variety of age groups and it was difficult to come up with an assessment and teaching that could apply to all groups. However, we were rewarded in being able to see that the kids were excited for our teachings. They loved to participate and showed enthusiasm for every teaching we completed.

PP 107

Rewards with Ramsay

Mary Bianca, Rachel Guthrie, Aaron Salisbury

UAB English 102 SL

Our poster advocates that teachers deserve better compensation because of their underappreciated dedication. Our volunteering experiences at Ramsay High School with both Alabama Possible's Blueprints and tutoring in the Ramsay writing lab revealed the degree of involvement of the teachers in their students' success and furthered our argument that teachers go underappreciated. Further research showed that due to tenure, new teachers are not rewarded as they deserve and are often fired first regardless of student success. The pictures presented are from our experiences which gave us insight to a teacher's work and the resulting success of their students. The statistics displayed give a view of how teachers are not adequately compensated for their dedication to their students and future teachers may be discouraged from entering this profession.

PP 108

Desert Island Supply Co.

Charlotte Boles, Kenneth Carver, Tyler Heatherly, Siobhan Russell, Jeni Weber

Communication Studies – University of Alabama at Birmingham

Abstract Body

Desert Island Supply Company (DISCO) is a nonprofit organization located in the Woodlawn area of Birmingham, Alabama. Its mission is to provide children ages 7-18 in Birmingham with more opportunities to creatively write.

DISCO heavily relies on volunteers to help guide the children through the creative workshops. The volunteers help the children come up with ideas, teach them about different subjects, and assist in facilitating the workshops.

DISCO has a large impact on the community. The program travels to local Woodlawn schools and also allows the Woodlawn high school's newspaper staff to meet at DISCO on a weekly basis. Aside from supporting local schools, DISCO also gives students support and provides them with a chance to meet a diverse group of other children with different socioeconomic backgrounds.

Desert Island Supply Company is an important program and safe environment for Birmingham children. It fosters their creativity, character, and confidence. Its great impact on Birmingham and its children is shaping the future of the city.

Keywords

volunteerism, creativity, children, writing, nonprofit

PP 109

What is Rural Health?

Andrea Burt, Valerie Seay, Taylor Vines

UAB SON NUR 428 Concepts of Community and Public Health Nursing, Spring 2015

As a community clinical group providing health education to a rural community, we demonstrated health topics through interactive games and presentations. The target population for our project was the Day Program at Project Horseshoe Farms and the rural community of Greensboro, Alabama. Community members are at risk for poor nutrition, diabetes, hypertension, and poor emergency preparedness skills due to the lack of education on these topics. For nutrition, we brought fruit and vegetable trays in hopes that they would try foods they have not tried before. While they sampled new fruits and vegetables we provided interesting facts and ways to incorporate nutritious foods into meals. After we presented nutritional educations, we played hangman with the clients and used the information that we presented on as clues throughout the game. For the remaining topics, we played a game of jeopardy and gave rationales for each question's answer. We also brought in an example of an emergency preparedness kit to demonstrate what should be included in their personal kits. As a result, the community members are more educated on nutrition, diabetes, hypertension, and emergency preparedness. Throughout the experience, we found that presenting material in a way that would be effective to the community was a challenge. However, through the use of interactive education, we found that members were more receptive to the materials being presented to them. We feel that we reached the goal of our project, which was to assess the needs of the community and to provide education regarding health wellness.

PP 110

Exploring Healthy Eating, Hygiene, and Habits

Meredith Byram and Jasmine Williams
UAB School of Nursing

The goal of our Community Impact Project at Cornerstone School is to help the students explore the central idea of how healthy eating, hygiene, and habits build strong bodies. Our target population includes the first grade students at Cornerstone, many of which come from lower socioeconomic areas across the Birmingham area. By helping children explore these topics early in childhood, we hope to help build a bridge over the many health disparities that can affect vulnerable populations throughout the lifespan. The project consisted of four main lessons with topics covering healthy lifestyle habits, hand hygiene, healthy foods, and bones/muscles. To execute our lessons, we used a variety of props and strategies to convey our main idea and keep the children engaged. For example, to teach healthy foods, we brought a variety of play foods for the students to make their own version of a healthy plate based on the MyPlate template from the USDA website. Also, to teach hand hygiene, we brought a neon-colored simulated germ liquid and a blacklight to show the children the effects of improper handwashing. Over 50 students benefited from this project and each lesson fit into the Alabama State Science Standards for 1st grade. The main challenge with the project was keeping the students on task and creating a lesson plan appropriate for the student's age. The project allowed us to gain experience working with the pediatric community, and it was very rewarding seeing the students so enthusiastic about healthy eating, hygiene, and habits.

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Keywords
healthy eating; pediatrics; health disparity; low socioeconomic status

PP 111

Success Depends on YOU – Fostering the Minds of Tomorrow

JaQuise Caldwell and Rachel Wisniewski

UAB College of Arts and Sciences
UAB School of Health Professions
Faculty Advisor: Dr. Cassandra Ellis
(2015)

Our research this semester in our English 102 Service Learning Class focused on problems in highs school education. Our volunteering experiences through Blueprints Alabama—a college mentoring program— and the Ramsay High School Writing Lab, revealed how dissatisfied students are with their curriculum. Our experience an research revealed that parents, teachers, and students alike are unhappy with many aspects of high school education, especially in regards to the common core and mathematics.

Our research revealed that often high school students lack the motivation needed to excel in the classroom because of the unappealing nature in which the curriculum is taught. One way to improve upon this issue is through the implementation of student evaluations.

We are proposing that student evaluations are needed in order to give high school students a voice through which they can help sculpt their learning which would promote a greater sense of control of their studies, and their lives, leaving them more highly motivated to achieve greatness both in school and their daily lives.

Keywords
Mentoring, Common Core, Student Evaluations, Success

PP 112

Our Mission is Nutrition

Katherine Cassidy and Ashley Jeter
UAB School of Nursing/ Community Health BSN Program

The aim of our project was to provide heath education for elementary school children ages 6-11. Topics included nutrition, basic hygiene, and the importance of physical activity. The project was presented during snack time at PEER, Inc afterschool program in East Lake over the course of six weeks. The main focus of the project was breaking the nutrition label down and teaching new element each week. A six question pre and post intervention test was given to a small sample of students to assess the baseline knowledge of the children we would be working with and to evaluate the effectiveness of our educational program. The project was successful in empowering children to make healthier choices using nutrition labels. They reported using their newly acquired nutrition label knowledge when purchasing snacks for themselves and when shopping with their families. The winter weather really limited taking the children outside to further the physical activity element of our program. The children in the community are receptive to learning and applying health concepts that they are newly introduced to. Many of the children never knew some of the health concepts being taught and have learned other habits from home. Children made significant improvements demonstrating their knowledge of basic nutrition and all the children demonstrated a improvement in their nutrition label reading skill and nutrition vocabulary. Through this experience we learned about assessing and interacting with populations with high health risks and health disparities.

Keywords: Nutrition, Afterschool**,** Education**,** Children**,** Labels

PP 113

Language Partners and the Benefits of Cross-Cultural Communication

Grace Chitwood, Dorcas Digha, Alicia Guevara, Kylie Herring, Alexis Lincoln,

Mika Oya, Katlyn Reynolds, Alexander Stern, Jordan Thompson,

Dr. Erika Hille Rinker

University of Alabama at Birmingham

Department of Foreign Languages and Literatures

Students enrolled in FLL 120 SL Spring 2015 regularly met with students from the Intensive English Program (IEP) of UAB's English Language Institute as a part of the Language Partners program. FLL 120 SL students enabled the IEP students to practice conversational English and offered them specific feedback. In turn, IEP students provided the FLL 120 SL students with a platform for cross-cultural communication and the ability to engage with course material first-hand. Handouts provided strategies in empathetic listening and thoughtful speaking with low-level, non-native English speakers. Students were given a list of suggested questions to facilitate discussions about aspects of each other's country of origin and home life. Discussions varied depending on the current level of English proficiency of the individual IEP students, as well as feedback to the topics. After each Language Partners meeting, FLL 120 SL students completed reflection questions that integrated required readings with the provided questions and resulting conversations. The partnership program allowed all students to expand their cultural literacy and engage with course materials in a practical way, complementing what was seemingly vague in the textbook assigned for the Foreign Cultures class. The Language Partners program allowed both student groups to achieve educational goals in a non-traditional and enjoyable way. The program has not only enabled its participants better to meet the academic standards of their courses, but has also promoted a platform that allows students to become part of the global community at UAB.

Keywords

Language Partners, cross-cultural communication, global community, Service Learning

PP 114

Metamorphoses

Ashley Clark, Nicole Lloyd, and Mary Wilson
University of Alabama at Birmingham School of Nursing

Workshops, Inc. was founded in the 1900s to serve the people of the community with disabilities by offering them job training so that they can be better prepared for the workforce. The purpose of our community impact project for Workshops, Inc. is to promote primary and tertiary prevention of numerous disease processes and to educate about healthy living to all staff members who dedicate their time to the livelihood and growth of the organization as they get so heavily invested in their job that they lose sight of their health. In order to meet these objectives, we had "health fairs" by checking blood pressure and blood sugar and interpreting these readings with each participant so they can understand what it means for their health and their lifestyle. We also had teaching days where we focus on popular topics—nutrition, healthy eating, medication, smoking cessation, and clinical questions. As weeks went by, they showed much more concern for and interest in their health and the health of their fellow coworkers. They began to ask questions that confirmed that the clinical aspects of our project were making an impact on their thought processes. We want to create awareness for the workers about their health so that they understand that in order to have good work ethic, they need to be healthy. In the beginning, we needed to gain their trust as health care providers, but once we built rapport, we were able to have a genuine relationship that inspired change.

PP 115

Alabama Academy of Science Mentorship Program
Maggie Collier, Heather Forester, Isabell Moon
University of Alabama at Birmingham

Through SciTech's affiliation with the Alabama Academy of Science (AAS), a group of SciTech students (the Alabama Undergraduate Research Committee) has been tasked with creating a business plan for a mentorship program and initiating its inception at UAB. The mentorship program will pair undergraduate researchers with disadvantaged Alabama high schools. These researchers will mentor interested students in their research endeavors. The major purposes of the program are to enrich Alabama students' educational experiences, address the problems that students from Title I and Title VI schools experience, and increase the variety and number of students participating in Alabama Junior Academy of Science. The current progress that the team has made in bringing about this program includes the following accomplishments: drafting a thorough statement of purpose that includes detailed objectives of the program, establishing contact with at least one of the five target schools the team wishes to partner with for the first year of the program's inception, and completing the first draft of the business model. Challenges the team experienced and surmounted primarily dealt with miscommunication with the AAS executive board. In the future, the team hopes to finalize the business model, plan out the specific requirements that mentors must meet, and start satellite mentorship programs at neighboring universities.

PP 116

SaveFirst: Helping Communities One Person At A Time

Seth Courtad and Edie Godwin

CMST-C1 Honors Public Speaking- Rebecca Reamey

Abstract Body

SaveFirst is one of four organizations under Impact America. SaveFirst is an organization specifically dedicated to providing low-income families with a free, accurate tax service to relieve them of some of the burden of paying taxes: high fees charged by commercial tax sites. This free service allows families to use money to help support themselves instead of spending it on commercial preparation fees. In volunteering with SaveFirst, we hoped to learn more about taxes and how this organization helps whole communities by simply doing tax returns. To get involved, we became certified Volunteer Income Tax Preparers (VITA) and learned how to best help others learn and understand the federal and state tax systems. We went into our Birmingham community and dedicated our time and efforts to preparing tax returns for low-income families. We saw the difference it made in people's lives almost immediately. We found that people came in burdened and left joyful for either owing less money than in previous years, or for getting more money back than in previous years; because the return was correct and there were no commercial fees. Some taxpayers shared with us the joy that the increased cash had brought to them, how thankful they were for the service, and how they planned to give back to the community in return for our service to them. When you help an individual, you help strengthen the building blocks of a community and that is how SaveFirst helps communities one person at a time.

Keywords

SaveFirst, Taxes, Volunteering, VITA, Impact America

PP 117

Health and Wellness of Homeless Men at The Firehouse Shelter

Ashley Davenport, Kaitlin Mullins, Alexandra Jackson

UAB School of Nursing BSN/The Firehouse Shelter

Abstract Body

We were at The Firehouse Shelter, which is a men's homeless shelter. We assessed the need of this population and found that education was a need for this population. We aimed to create a seven-week education program using evidence-based research. We then recreated it into a format so anyone could teach and learn the material. We include interactive activities to further help the men understand how certain things (washing hands, eating certain food) can prevent them from developing certain health problems that they are at risk for developing. In the end we created an educational lesson plan that reviewed how the immune system works, how to maintain a healthy immune system, how to prevent spreading of germs, information about influenza (flu), hepatitis, tuberculosis, and HIV/AIDs. We also include activities that go along with each section. Some activities were hand-washing exercises, making a healthy snack, and different exercise the men can perform. We gave our project to the director of The Firehouse Shelter who will then allow future students or volunteers to teach theses materials and perform the activities with the men. The challenges we faced were having the resources we needed to research evidence based articles while on site. We enjoyed interacting with the men while serving meals. We now have a much better understanding of the needs of the homeless. This clinical helped us feel more prepared to give future nursing care to this population. We have a bigger appreciation for The Firehouse Shelter and other organizations like them.

PP 118

Health Promotion for the UAB Primary Care Clinic at the Foundry

JaLynda Edwards, Kami Glass, Nick Schilling

UAB SON NUR 428 Concepts of Community and Public Health Nursing, Spring 2015

Our community clinical group focused on promoting and advertising the UAB Primary Care Clinic at the Foundry for the community of Bessemer, Alabama. In the beginning, we found out that most citizens in the community believed the clinic was only for Foundry residents and not open to the public. To combat this misconception, we wanted to conduct a free health screening and fair for the community at their local grocery store, Frank's 4th Avenue Supermarket. We had multiple stations beginning with BMI, nutrition education with real healthy food examples, blood pressure screening, self-breast/testicular exam, and a blood glucose reading as well. Each participant was supplied with a data form which was carbon copied so we could collect demographics later, and they could take their form home with education materials to learn about the numbers they were given. For each station, there were a variety of pamphlets, brochures, and personal health cards for participants to take away from the health fair. As a result of having Dr. Melanie Baucom, the nurse practitioner and Sonya, the secretary, from the health clinic present, we were able to get several participants referrals to the clinic. By asking participants about a primary health provider, we were able to let them know about the low cost care provided at the Foundry Health clinic. During this process, we were able to form a lasting relationship with a local business, inform the community about the Foundry Health Clinic, and educate the citizens of Bessemer about health conditions present in their community.

PP 119

Safety First: Contraceptives

Tikia Ellison and Katie McCullers

The University of Alabama at Birmingham

The knowledge about contraceptives within the high school age community is lacking and increasing that knowledge could lead to decreased numbers of teenage pregnancies and sexually transmitted infections. Our aim was to educate high school students in the Greensboro, Alabama community about their contraceptive options. We tried to achieve this by educating the classes using a power point presentation detailing the different forms of contraceptives and asking questions about what they already know. We then played a game where they were given scenarios and they had to decide which contraceptive option would be best for that client. This caused them to apply the information they had just been given. We also gave them a pretest and a post test that contained the same four questions to see if our teaching had any impact on their knowledge base. After grading these tests, we saw a 30% increase in the number of questions answered correctly, which implies our teaching was successful. In conclusion, it was challenging to know what to teach and what not to. The topic of contraceptives is a touchy one and we didn't want to step on any toes. The students were constantly engaged and had plenty of questions. This was rewarding to us in that it showed us that they were interested in learning more about the topic. Based on the results, it seems that more teaching needs to be done about contraceptives in high schools and that students are interested in learning about the options they have.

PP 120

The Benefits of Reducing Class Sizes

Beza Eyob, Darya Heidary, Matt Wideman
EH 102- SL Honors
UAB College of Arts and Sciences
Faculty Advisor: Dr. Cassandra Ellis, English

Our Prezi introduces the educational reform topic of smaller class sizes and shows the benefits small class sizes can have on students' education. Reducing class sizes can be beneficial to students and can increase their academic achievements. With smaller class sizes, teachers can devote more time to each student; students are able to receive more one-on-one time with their teacher and can more easily receive the extra assistance they need. With less students in each classroom, teachers do not spend as much time disciplining their students and can instead focus on educating their students to the fullest. In a smaller class, teachers are less overwhelmed with the amount of students that they are responsible for. Experiences we integrate into our argument are tutoring with Project Horseshoe Farms and being a Blueprints mentor for students at Wenonah High School. Through our research and volunteer experiences, we found that both one-on-one sessions and small group discussions provide a better atmosphere for discussion, questions, and ultimately, learning.

PP 121

Title: Y Move

Authors: John Fancher, Kat Parris, Niki Taylor

Affiliation: University of Alabama at Birmingham School of Nursing

The aim of Y Move was to educate the pediatric population of the Pelham YMCA's after-school care program about the importance of living a healthy lifestyle. The after-school care program looks after children ranging from kindergarten to eighth grade. To accommodate for the large age range, we divided the children into groups of similar age and tailored our teaching method to the education level of the group. What we hoped to accomplish with Y Move was improved knowledge about health wellness and encouragement to make these lifestyle changes. To implement this goal, we organized a health fair that comprised of various stations with different health education topics being discussed and hands-on activities to aid in learning. We focused on many topics including food label interpretation, hand washing, healthy eating, how to check a heart rate, oral care, and what to expect during a visit with a health care provider. Y Move was successful in that the children expressed to their parents how much fun they had and what all they learned from the health fair. Not only did the children speak highly of the event, but even the parents and YMCA staff did as well. Both the staff and children who attended the health fair stated they want the event to become an annual occurrence. We did not encounter any challenges during the implementation of Y Move; however, we had to develop rapport prior to the health fair in order for the children to feel comfortable learning and asking questions.

PP 122

On a Mission: Every Step Requires Guidance

Shelby Ferris, Madison Taylor, Skyler Hendrix
EH 102-SL Honors
UAB College of Arts and Sciences
Faculty Advisor: Dr. Cassandra Ellis

In our class, we had the opportunity to participate in various service learning environments where we were challenged to identify issues that occur in secondary education institutions. We observed that the advisory programs implemented in the high schools directly influence student success in future careers and educational pursuits. In our poster, we argue that in order for high school advisory programs to be effective, the program must be attuned to the individual school's needs. Schools must also modify their mission statements in order to coincide with the direction of the advisory programs. Through our service learning at Holy Family Cristo Rey High School, we were able to apply the research to a real-world environment.

Keywords: High school education, guidance counseling, service learning, college, student success

PP 123

Transformational Qualities and Service Learning: Does Participation in Service Learning Create Transformational Leaders?

Alicja Foksinska

The Collat School of Business at the University of Alabama at Birmingham

The University of Alabama at Birmingham (UAB) provides Service Learning opportunities with the goal of joining UAB students, faculty, and community nonprofit partners together to enhance classroom learning, promote civic engagement, and support local and global communities. UAB offers over 65 Service Learning courses for students to choose across multiple disciplines that pertain to their area of study. Over 9% of undergraduates at UAB have participated in a Service Learning course. The Office of Service Learning makes it simple to get involved through their volunteer match system, which allows the student to participate in a volunteering opportunity that relates to their studies and interests.

The purpose of this research was to survey students who have participated in Service Learning courses offered at UAB to see if they demonstrate transformational leadership qualities when compared to students who have not taken those courses. The results will offer insight into the importance of service learning courses based on leadership qualities exhibited.

Transformational Leadership qualities are ones that are possessed by the most successful world and business leaders. Qualities of transformational leaders include: ability to identify a need for change, creation of a vision to guide the change, and execution of the change. Transformational leaders also motivate, boost morale, and increase job performance of the people around them due to building a sense of identity and challenging the followers to take ownership for their work.

Keywords: *Transformational Leadership, Service Learning, Business*

PP 124

Title: Learning First Aid First-Hand

Authors: Jamie Furman, MS, BS, Taylor Hopkins, Zach Thomas

Affiliation: University of Alabama at Birmingham School of Nursing

Abstract:

The aim of our project targeted two problems we observed in the rural community: a lack of healthcare education and inadequate access to healthcare. Our group decided hands-on, interactive learning was the best teaching approach for middle school students. We developed a teaching plan that offered practical first aid information that covered choking, cuts, bleeding, burns, sprains, and strains. We focused on two topics per week over a two week period. An interactive station was designed for each topic that provided applicable information and an opportunity for the students to handle basic first aid equipment. Each station began with questions to gauge the students' knowledge on the topic, followed by a short lecture period, and ending with a game or real-life scenario that allowed the students to apply what they learned. Our group members asked questions after each station to reassess the students' knowledge of the first aid topics and to evaluate whether or not the teaching objectives had been completed. The students were engaged and excited to participate in the stations. We found that the students were able to retain quite a bit of information and successfully apply their new knowledge in a way that was fun for them. The stations covered a lot of information in a short amount of time. However, we believe that the students took away valuable information that could be applied if the students found themselves in a situation where they were the first responders.

Keywords: First aid, pediatrics, rural, community, first responders

PP 125

Taking Education Above and Beyond: A Look into Vocational and Trade Schools

Maegan Gates, Ashley Hester, Olivia Krantz

UAB Service Learning, Blueprints, Ramsay Writing Lab

After a semester of volunteering at local Birmingham high schools through Blueprints at Wenonah and the Ramsay Writing Lab, we reviewed how effective traditional college preparatory high schools are in aiding students for the future. Few high schools advocate vocational or trade schools to prepare students for entering the work force instead of going to college after graduation. In addition to evidence discovered through much research, our service learning helped us find that not all of the students at the Birmingham high schools have enough resources and motivation to attend college. Our poster shows evidence of how ineffective traditional high school college tracks can be for some students. Vocational courses offered could be incorporated into high schools to provide better and more options for students.

Keywords

Service Learning, Vocational, Education

PP 126

Diabetes Self-Care Adherence Incentive Program

Zachery Gentry, Joel Kiser, Jill Ramon

University of Alabama at Birmingham School of Nursing

The purpose of this project is to design and implement an interactive, user friendly diabetes self-care adherence tool. This tool is convenient for patients and staff at the M-Power Ministries Medical Clinic. A large portion of the Jefferson County, Alabama population who benefits from this free clinic is affected by diabetes. Their success in remaining complication free begins with educational training in glucose control and self-care techniques. This program utilizes an award system approach to motivate patients in their prescribed regimen adherence. A daily self-care log was created in the form of a monthly calendar which prompts regimen compliance. Most importantly, it reminds patients that a gift bag prize is awaiting them if they present to follow-up appointments with their glucose meter and results. Eye appealing signage in the clinic advertises the prize program which is awarded on site by the on-staff dietician; this provides additional educational opportunities. Gift bags are assembled by volunteers while community based businesses donate gift bag products. Collaborative input is necessary to formulate details to suit the scope of the incentive program parameters. M-Power Ministries' nutrition and medical departments provide disease education along with diagnostic care. UAB nursing students provide assistance in facilitating the adherence program. Patients cooperate in self-care regimens to reduce complication risks. Staff members praise the incentive program as they describe its effectiveness. Patients are getting the message: become proactive in diabetes self-care, win a prize, remain complication free! The success of this incentive program has proven the importance of interdisciplinary collaboration.

PP 127

Autism Awareness for Parents and Teachers

Danielle Gilbert and Kevin Artist
University of Alabama at Birmingham School of Nursing

The goal of our Community Impact Project at Calloway Head Start is to provide information about Autism Spectrum Disorder (ASD) to the parents and staff. Through our community impact project we hope to provide education to the parents and staff members of Calloway Head Start that will allow them to have a basic understanding of Autism Spectrum Disorder, recognize early signs and symptoms that they should be aware of, know what to do when they see signs and symptoms, and have material with additional resources as it is needed. We met our objectives by presenting information and resources at a parent and staff meeting at Calloway Head Start and distributed brochures and pamphlets with information about ASD. The parents and staff were engaged and receptive to learning about early recognition and interventions for ASD, asked relevant questions, and voiced appreciation of the presentation. Challenges to meeting our goals included parents' difficulty attending the meeting due to work obligations to provide for their families and the distraction of caring for their children who are too young to attend Head Start and were brought to the meeting. It was a very rewarding experience to provide these resources to the community and to a population that may not have adequate access otherwise. A few parents expressed that they knew families with children with ASD and were glad to have resources to take home to help monitor their child's growth and development.

Keywords*:* Autism Spectrum Disorder (ASD), education, children, early interventions, resources

PP 128

How Cahaba Valley Health Care Addresses the Disparities in Health Care Access

Seth Graves and Keonte Graves

UAB Department of Foreign Languages and Literatures

Faculty Advisor: Dr. Lourdes Sánchez-López

Poster Presentation – Service Learning Category

UAB EXPO for Undergraduate Scholarship, Spring 2015

In the United States, it is estimated that about a quarter of the people without health insurance are of Hispanic origin, and that approximately one out of every three Hispanics lacks health insurance (Smith and Medalia, 2014). Flores et al. (1998) found that 26% of the 203 Hispanic parents surveyed in their study said that language barriers were the biggest problem to getting health care for themselves and for their children. Cahaba Valley Health Care (CVHC) is a non-profit organization based in Birmingham that seeks to address the barriers to health care. The organization does this by providing free dental and vision screenings and treatments. While not all of their clients are Hispanic, a large majority that come to the screenings do not speak English as a first language. Our work with CVHC is to provide interpreting services for Spanish-speaking clients. By involving interpreters, CVHC breaks down a major barrier to health care access for Hispanic clients. As we endeavor to work with the Latino population, this experience has been invaluable for learning how to meet the needs of the public by addressing their specific barriers to health care access. The main goal of our poster presentation is to show how our service learning experience taught us firsthand about health disparities and about how CVHC works to bridge the gaps in access to health care. The presentation will introduce the reader to an organization that works in Birmingham that seeks to provide some health services to low-income individuals.

Keywords

Cahaba Valley Health Care, Hispanic, access, health, disparities

PP 129

Abstract Title: UAB HealthSmart: Strategies for Enrollment

Author(s) S. Gray, J. King, A. Reid, C. Steward
Affiliation/Institution(s) UAB HealthSmart/UAB School of Nursing

The goal for the Community Impact Project was to increase the number of clients being served at the HealthSmart agency and to promote awareness of the agency among local populations. UAB HealthSmart's services benefit all populations from the homeless to individuals working in local businesses. We helped organize, promote, and implement 'Red Couch Day.' Red Couch Day, sponsored by the American Heart Association (AHA), increased awareness of heart disease and other risk factors associated with heart conditions such as hypertension, a sedentary lifestyle, and increased sodium intake. During Red Couch Day, we increased numbers in clientele by providing short verbal presentations of HealthSmart services to individuals passing by the agency. Through our efforts, we managed to enroll several individuals into the HealthSmart database by scheduling appointments. We also gathered several signatures on an AHA Sodium Pledge. Other promotional strategies included designing flyers and posters for various HealthSmart events and distributing cards and informational flyers to local businesses and homeless organizations. Many barriers are faced by newly formed public health/community outreach organizations. Inadequate funding, in particular, is a significant barrier that can hinder progress and success for many of these organizations. Limited funding for advertising reduces exposure of HealthSmart to their target populations. Despite facing many challenges, we were able to increase enrollment by 15%. The most rewarding aspect of this experience was the fact that we were able to gain direct insight into the challenges and benefits of public health nursing. Overall, working at the HealthSmart agency was a positive and enlightening experience.

PP 130

Abstract Title: Nutrition to Fruition: Healthy Eating Without Taking a Beating

Author(s): Shannon Herring, Leslie King, Lindsay Shipman
Affiliation/Institution(s): The Foundry/ The University of Alabama at Birmingham School of Nursing

Abstract Body:

Providing information about nutrition to people of low-income areas can help decrease the rate of prevalent comorbidities while promoting health within the population. Creating a method of sustainability, especially in a low income area, is equally as important as providing community education materials. By working under the primary level of prevention, a proposal for a community garden was developed in hopes of promoting increased self and community awareness along with healthier lifestyle choices through planting and harvesting homegrown fruits and vegetables. Under the tertiary level of prevention, budget and health information cards were formulated in order to help educate community members on what types of foods to eat/avoid related to their comorbidities, as economically as possible. We were able to accomplish this by defining the health needs of our target population through community input and involvement. Our purpose is to raise awareness about healthy eating and to educate the community on the negative effects that certain foods can have on their bodies. Challenges included low health literacy levels, low income, lack of community resources and lack of knowledge related to nutrition. Rewards included providing information related to nutrition, providing information related to budgeting, promoting sustainability and helping to reduce the prevalence of comorbidities within the Bessemer community. Through this project we learned that knowledge is power, but with the lack of available resources, knowledge can only go so far. Our hope is that our input and interventions will continue to help add value to the community for years to come.

Keywords: nutrition, garden, comorbidities, budget, health

PP 131

SaveFirst, Tax Later

Kimberly Huerta, Mishka Naiker, Linaa Rohman, Neeha Sagani
Communication Studies 101, SaveFirst

Abstract Body:

IMPACT Alabama's SaveFirst Program provides a free tax preparation for families who are under the poverty line. SaveFirst aims to push Alabama families over the poverty line by offering a free tax preparation service that will help them benefit financially. SaveFirst's methods include recruiting college students and tax enthusiasts to work hand in hand with AmeriCorps Volunteers to prepare taxes for underprivileged families. The result of SaveFirst affects both volunteers, and service users. For volunteers the end result of the program establishes a new sense of awareness for the work ethic of low- income families. For the service users, the program makes a tremendous difference in helping hard-working families secures health insurance, pay down debts, and even put food on the table.

Conclusion:

SaveFirst volunteers impact the community by giving underprivileged families the service of free tax preparation. This, in turn, gives the taxpayers extra pocket money to help secure health insurance, pay down debts, and even put food on the table. All together the UAB SaveFirst group prepared taxes for approximately 36 families. During our time working with the families, we prepared their taxes by filling out all of the necessary forms and e-filing them on behalf of the families. A few weeks later, the families received their tax returns directly in their bank accounts, allowing them to use the money for their needs. Volunteers gained a new sense of awareness of local poverty through providing this service.

Key Words:

SaveFirst, Taxes, Poverty, Impact Alabama

PP 132

Knowledge Outreach for Moms using Medicaid

Hannah Huggart, Heather Shaw, Nikki Vallor, Donna Williams

Concepts of Community and Public Health Nursing

School of Nursing

University of Alabama at Birmingham

The Greater Alabama Health Network (GAHN) is designed to serve mothers who are covered by Medicaid. These women are required by Medicaid to make at least one visit to GAHN in order to begin the process of receiving prenatal care. The GAHN provides services such as: prenatal and post-delivery education, helpful resources in the community, and follow up visits to check on mother and baby after delivery. The aim of this project is to provide these mothers with one resource where they can find all of the information and services provided by GAHN. A website was created in order to meet these needs. Wordpress is a free website generator and was used in order to make this website. All resources and education are Medicaid approved and provided by the GAHN. All materials are kept at a fifth grade reading level so that all populations can understand and use the information. In order to assess the effectiveness of the website, a five question survey was distributed to the staff of GAHN. Due to time constraints, only six surveys were completed. The data we compiled showed, that as a whole, the staff thought the website will be very useful and helpful to patients and staff in the future. The most difficult challenge met during this project was finding a free website generator and creating the website. It is hoped that through this website, more women will utilize the resources available to them in order to have a healthier pregnancy and learn more about what GAHN can do to help them.

Keywords: Medicaid, GAHN, education, website, survey

PP 133

Know Your Status: Be Positive, Get Tested

Nita Karki and Ashley "Nikki" Copeland
AIDS Alabama/ University of Alabama at Birmingham

AIDS Alabama devotes its energy and resources statewide to helping people with HIV/AIDS live healthy, independent lives and works to prevent the spread of HIV. AIDS Alabama focuses on: housing, supportive services, policy & advocacy, HIV Prevention and Education, & free and confidential HIV Testing. HIV is rising in Jefferson County, especially in Birmingham and among homeless, Latino, and African Americans. Despite the interventions implemented, there is still lack of knowledge of resources. Our goal was to provide the community with resources that AIDS Alabama offers. We created a detailed brochure of services AIDS Alabama offers with location information. This allows clients, with limited access to technology, to utilize services and have resources. We designed a brochure with information of services to provide a tool for those who have limited access. Our goal of the semester included finishing the brochure, gathering resources offered by sponsored locations, and targeting to educate those at risk. Jefferson County has a high number of homeless, Latinos, and African Americans, placing emphasis on those at risk. Upon assessment, we found lack of knowledge of resources offered by the community was an issue. The community seemed unaware that testing was confidential and free. Preparing for the brochure was easy. In preparing the brochure, we kept in mind that the target populations were those that may or may not have internet access. Creating a brochure with information regarding testing and resources was a way to educate the community. As future nurses, we realize not everyone has access to technology. Clear, written direction of services can increase education, prevention, and screening within the community.

PP 134

Abstract Title
Research Forum:
Increasing the Transparency of Information in the Lab Selection Process
Author(s)
Zach Koenig, David Bentley, Vishal Shroff, Raymond Moosavi
Affiliation/Institution(s)
UAB, STHP

Abstract Body

As students involved in research, we have experienced the difficulties that undergraduates face when selecting a lab. We have found that the lack of transparency of information is the primary factor behind this struggle. We aim to increase transparency of information through the creation of an anonymous research testimonial environment. Here, students currently in research can safely give honest information about their lab, so as to provide prospective undergraduates with the information they need to make an informed decision.

Keywords
Research, Transparency, Testimonial,

PP 135

Public Relations Strategy – Alabama Academy of Science

Adria Kokinos, Neha Udayakumar, and Varshini Venkatesan

Honors College – Science and Technology Honors Program

The public relations team of the Alabama Undergraduate Research Committee works toward promoting awareness and involvement in scientific research. Our main population of interest is inner city high school students of the Birmingham area. Specifically, the team strives to establish contact with inner city Birmingham schools, utilize media and social networking to convey information about the mentorship program, and maintain student interest and involvement in research. We hope to achieve our goal by examining results from a survey, which asks students about the best media outlet that the AURC can use to keep them informed about upcoming science competitions. Based on the results, most students prefer receiving information through email, twitter, or Instagram. Thus, the public relations committee will create accounts in all these outlets and maintain connection with our target population.

PP 136

Interpersonal Treatment of NonEnglish Speakers in Medical Environments

Rebekah Kummer
University of Alabama at Birmingham
Department of Foreign Languages and Literatures
Faculty Advisor: Dr. Lourdes SánchezLópez
Service Learning Category

Introduction∫†Hispanics/Latinos comprise 17% of the population in the United States according to the 2014 U.S. Census. Many do not speak English or do not speak it well enough to communicate effectively with their healthcare providers. Stigma associated with non-English speakers can sometimes affect interpersonal behavior and treatment in appointments. Interpreters who lack in proper interpretation knowledge (per the Code of Ethics of the International Medical Interpreters Association) and skills add to the negative sentiments of patients. During my own service learning experience working at a local hospital in the Birmingham area during the spring semester 2015, I have observed the critical role of adequate interpretation services.

Aim∫†Determine the level of importance of proper language interpretation procedures and interpersonal treatment of non-English speakers to improve patient personnel comfort and treatment in the medical field.

Methods∫†The author observed appointments with Spanish speaking patients using interpreters throughout the semester. Results∫†Following adequate interpretation protocol facilitates communication between patient and healthcare provider, whereas inadequate interpretation protocol can lead to patient personal discomfort.

Conclusion∫†From my observations, understanding the importance of proper interpretation technique is vital to treatment and care of non-English speaking patients. Simply being bilingual is not adequate; proper training and adherence to the Code of Ethics is imperative.

Keywords:
Interpretation, Medical, Spanish, Treatment, Service Learning

PP 137

Be Cool, Go To School

Matt Lovorn and Emily A. Wheeler

University of Alabama at Birmingham

Among other services, Smithfield Community Center provides an after school program for local students. Our aim was to meet with the high school students and provide information to equip them to better their future after high school. We expected needs for information on the cost of further education, information on available financial aid resources, earning potential in relation to different education levels, and to include information on the cost of living as an adult. We provided the information over the course of two brief meetings. On the first day we introduced ourselves, met the students, and asked questions to assess their information needs so we could better meet them in the second part of our presentation. In this first meeting we had 6 students present, and learned from them that they also wanted information on entering the military and possible attending college after, and some of them desired trade skill certifications rather than a college degree. We added this requested information to what we had planned to provide ahead of time and had this ready. At the second meeting we had 5 people present, with who we provided this information to, and left our collected research with the staff at the facility for the students to use later if desired. Though the students present were somewhat receptive to the information, the long-term results of this project cannot be determined at this time.

Keywords: education, military, college, trade skill

PP 138

Interactive Education in the Waiting Room

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Abstract
This project introduces interactive teaching to the waiting room. A waiting room of an office or clinic is often associated with uneventful and sometimes long waiting periods. To pass time, some offices may have a television playing and/or a variety of reading materials available to those in the waiting area. With this in mind, we aimed to make the waiting room an eventful and educational setting. Knowing that patients are there to be seen and family members may be present with them, it was useful to take advantage of that time and gear it towards interactive teaching. Interactive, trivial posters, and demonstrations were used to carry out teachings on diabetes, hypertension, and first aid interventions. As an incentive for participating, sugar-free candy was given to participants. The results showed that patients became more knowledgeable in the disease(s) and common first aid ailments that may affect them or their loved ones. Patients gained knowledge through the process of reinforcement of information and hearing what other patients had to share regarding their personal experiences with what was being taught. As a result, the participants were better equipped mentally to know how their illnesses or common ailments affect them or their loved ones, what actions to take when certain symptoms arise, and how to recognize and react in an emergency situation. Some challenges that were faced included a language barrier with some participants and a small number of patients who participated. However, the patients who participated voiced enjoyment in participating and being able to ask questions.

Key words
waiting rooms, diabetes, hypertension, first aid

PP 139

Building a Bridge to Healthcare: Identifying Barriers to Healthcare faced by the Homeless Population

Dixie McCormick, Alexis Clay, and Katey Hale
University of Alabama at Birmingham School of Nursing
One Roof

The goal of our community project is to identify and raise awareness regarding the barriers to health care services at Cooper Green Hospital encountered by the homeless population in Jefferson County. The primary location where the homeless population receives care is from Cooper Green and this is where our research was conducted. Our initial objective was to examine the target population's experience regarding the process for accessing health care services and to identify the barriers to this process at Cooper Green Hospital. To further enhance our understanding we compared the process for accessing health care at Cooper Green to similarly funded health care providers around the United States. In order to accomplish our goals and objectives we utilized several methods including interviewing personnel at Cooper Green Hospital who are responsible for patient enrollment into the Health First Program. This program provides financial assistance to those who qualify and are seeking health care services. In order to qualify for this program an individual must meet several requirements and provide certain documentation. For an individual experiencing homelessness the process they must go through to receive health care can be a substantial challenge because of the required proof of residency, identity, income and lack of insurance. In addition, we also conducted research into similarly funded programs in several different areas of the United States for comparison. Unfortunately our research did not produce any significant data. Overall this project allowed our group to observe first-hand the challenges this population must face. The process can be upsetting at times because there is a lack of consistency among workers who distribute the required paperwork. We hope this research will help aid in working to diminish the barriers and make healthcare more readily available to the homeless population.

PP 140

South Highland Outreach

Amber McCurdy, Allison Adams, Kate Armstrong, Austin Parker
University of Alabama at Birmingham School of Nursing

South Highland Presbyterian Church Mental Outreach Project was founded in the summer of 1986 with original name "The Sunday Club". Its purpose is to serve as a ministry to people living with mental illness in the community. Volunteers provide meals, a support network, job training, and socialization. Our project aims to assess the population, continue to further consumer education, and to restructure and organize the program. We have accomplished assessing the population by observation, open-ended questions, intake survey's (provided by the site), blood pressure checks, and diabetic foot checks. Each student led a discussion on the topics of medication compliance, diabetes management, personal boundaries, self-esteem perspectives, and anger management. A month to month calendar was developed for the program. It provides creative teaching strategies on various subjects including, but not limited to; nutrition, medication adherence, diabetes, and hypertension management. The main barrier to the project was finding creative interactive learning techniques. At the conclusion of the project the consumers were able to recite information about the topics discussed. They also shared the most important lessons learned. The program's leadership was given a structured calendar with informational activities on different health topics to be used by the program in the future. It provided those diagnosed with mental illness valuable information that encourages healthy lifestyle choices in order to become productive members of society. As a group, each student was able to apply the nursing process for the community site's problem.

PP 141

SPOONS- Feeding the Soul

Remy Meir, Ben Gibbons, Sheau Lam, Solomon Gibson

Communication Studies 101, University of Alabama at Birmingham

A service learning project was performed by Honors Public Speaking students with SPOONS, a mealtime volunteer program targeted towards elderly patients. The program is run through Highlands Hospital and is sponsored by the UAB Medical Volunteer Systems. SPOONS primary purpose is to provide feeding assistance to its patients. This can be accomplished through physical assistance such as reading menus, opening packages, and physically feeding the patient. A second important aspect of SPOONS is the provision of a social environment for its patients. This impacts the community by relieving nurses of stress and time pressure and allows them to focus on their other duties. Having volunteers take over the mealtime routine and social interaction gives nurses that much more time to properly administer medicine and attend to other patients under their care. The volunteer experience is enhanced by overcoming challenges such as difficultly communicating and cooperating with staff and patients. However, overcoming these challenges and knowing that a difference is being made in patients' lives is such a reward. Another valuable takeaway from this experience is augmenting class knowledge to real world application. This experience allowed for stronger development of public speaking skills than can be achieved just through classroom experience.

PP 142

Blueprints: Adding Value to High Schools

Ally Middleton and Tristan Samios
EH 102- SL Honors
UAB College of Arts and Sciences
Faculty Advisor: Dr. Cassandra Ellis, English

Our poster targets the idea of secondary education reform, specifically the importance of incorporating real life skills, such as personal finance and career development, into the curriculum. The poster includes our academic research conducted throughout our English 102 Composition class on this subject, as well as our service learning experience through the Alabama Possible Blueprints College Access Initiative Program. We volunteered at two different high schools in Birmingham and were able to compare and contrast our experiences with the different students. The focus of Blueprints is to equip high school students with the proper tools for navigating the college admissions process, and some of the skills we taught during our service learning overlap with the skills that we researched. For example, we did activities on financial aid attainment, budgeting skills, writing résumés, and career choices. The positive effects of teaching these skills in small groups confirmed our findings.

PP 143

Developing the Connections and Relationships Between High Schools and Universities

Kuheli Mitra, Chris Egan Morriss, Henry Paiste, Meredith Schertzinger
EH 102- SL Honors
UAB College of Arts and Sciences
Faculty Advisor: Dr. Cassandra Ellis, English

Our poster demonstrates the necessity for the creation of more accessible, inclusive programs that guide high school students through the difficult transition to college. Our poster highlights the benefits of including mentorships in these programs, especially for high school students from low economic backgrounds, who may lack such mentors in their lives. In our English Service Learning class we volunteered at Ramsay High School in a writing lab and at Wenonah High School,as part of the Blueprints program through Alabama Possible. Through our volunteering experiences at these schools, we have observed how beneficial our assistance has been to the students. Even in short periods of time working, we were able to vastly increase their writing pieces, and help them understand the necessary steps to reach college. Coupled with the extensive research we have made whilst writing research papers on the effects of poverty in public education, we have come to the conclusion that struggling students perform far better with such help. Evidence has clearly shown that with quality leadership and guidance, students from low income backgrounds can achieve more than they ever they ever thought they could.

PP 144

Pump, Pump, Pump It Up!

Beth Montgomery and Karleena Unlap

Nurse-Family Partnership, Easter Seals West Alabama

Nurse Family Partnership (NFP) exists to serve low-income first time mothers in the Tuscaloosa County area. NFP is a program based on a voluntary two-year agreement by the client that is housed within the Easter Seals West Alabama non-profit organization. The goals of NFP are to improve pregnancy outcomes, improve child health and development, and improve economic self-sufficiency. Two obstacles that prevent this agency from working to its fullest extent are retention of the clients and continuation of breastfeeding throughout infancy. Our project is to improve the breastfeeding retention rates for the incoming mothers. In 2014, NFP initiated breastfeeding in 76.7% of their clients entering the program, but that number drops to 13.5% at six months and 6.1% at twelve months of infancy. A major goal of the clients improving economic self-sufficiency is to maintain a job. This creates a problem with the women maintaining breastfeeding because of a lack of appropriate supplies. In our research, we find that this area lacks the resources to supply breast pumps to all of the women that qualify for WIC services. We received corporate and private donations to create breastfeeding initiative bags. These bags included a single electric breast pump, extra bottles, breast pads, lanolin and a cooler bag. Our goal was to supply NFP with twenty-five bags for the incoming women; we successfully obtained enough funding to complete ten bags. Asking people for help is extremely difficult especially when the answer is no, but we are encouraged to be apart of a great organization that helps women make small changes to improve their life and the life of their child.

Keywords: Nurse-Family Partnership, breastfeeding, breast pumps, low-income pregnant women, pregnancy

PP 145

SpeakFirst: Not Just a Platform, Not Just Debate

Myah Morton, Sidni Smith

CMST 101-1C Public Speaking/University of Alabama at Birmingham

Abstract Body

Though much accountability is placed upon school systems to provide a thorough education for students, there is a great necessity for organizations and clubs, such as debate provided through SpeakFirst, to supplement where there is deficiency in academic rigor. SpeakFirst is one of the many subsidiaries of Impact Alabama, which seeks to positively change the makeup of this generation by providing debate as a platform for students in the city of Birmingham. Debate, as a platform, encourages students to matriculate on a path of success in preparation for college and their futures based on the skills acquired through this organization. Volunteering with SpeakFirst was an effort to understand the significance of debate and other academic activities on the furthering of education, as well as to personally engage in the six "C"s of communication: Critical thinking, Communication, Collaboration, Creativity, Civic awareness, and Cognition. The ability to be an influence on local high school students is great and beneficial to both the students and the volunteers. Our main contribution to SpeakFirst students was providing assistance in curriculum/coursework review and homework aside from their topic research, analyses, and speech compilations. Many of the concepts learned in the Public Speaking course are reflected through debate, so volunteering in such a setting was significantly applicable from understanding an audience to tailoring a speech based on the topic. Based on the success of SpeakFirst, there should be greater implementation of specific, skill-focused extracurricular clubs/organizations for the betterment of students and their success in and out of the classroom.

Keywords

Debate, Education, Extracurricular

PP 146

Increasing Awareness of the Effects of Poverty through Poverty Simulation

Matthew Norris and Jason Pierce

UAB School of Nursing

In our Community Impact Project, we aimed to identify the effects of poverty on the various aspects of daily life and determine how to increase awareness of poverty. We attended two Community Action Poverty Simulation sessions which chronicled four 15 minute blocks, each representing a week in which participants with various incomes and family situations must navigate the community in an attempt to provide basic food, shelter, and child care in addition to other obligations. In the first simulation, we volunteered as community service providers and were able to observe how those experiencing poverty manage stress and allocate resources to survive. In the second simulation, we observed the participants while paying special attention to their priorities how they interacted with the community service providers. We found that many times, those experiencing poverty endured high amounts of stress to provide the most basic necessities. We also found that because of time and financial constraints, many participants were unable to attend work and the vast majority of participants were unable to seek out healthcare and other vital resources. In conclusion, our study of poverty and poverty education was rewarding because we were able to observe the issues that those experiencing poverty face in everyday life in a simulated, but realistic environment. One challenge we faced was we were not able to participate as an individual experiencing poverty in the simulation while fulfilling our other roles, but we believe this would allow us to see what those experiencing poverty face from another viewpoint.

PP 147

Ashley North
Ashley Canada

Public Health at Its Core: The Clinical Process

The goal of our community impact project was to evaluate the clinical process at the Shelby County Health Department (SCHD) and identify weaknesses that hinder the efficiency of the clinic. We were tasked with helping to improve the work flow process and maximize available resources.

Our direct target population was the staff at the SCHD. Through our project, their job should run more smoothly and efficiently, producing the same, quality results with less work. Our indirect target population was the community that the SCHD serves. Through the improved efficiency of the work flow, more clients should be served in the clinic.

We hoped to accomplish three basic goals through our community project. We simplified these as identify, evaluate, and assist. First, we sought to identify inefficiencies through direct observation, surveys, and interviews with staff. Second, we evaluated the data that we gathered and compiled our results into charts and organized tables. Finally, we assisted the staff in progress through feedback and constructive criticism of the clinical work flow.

In order to meet our objectives, we spent several days in direct observation of clinical activities and made notes. We also used surveys and interviews to gain perspective and feedback from clinical staff. Then we compiled our information into flow charts and organized it to present to health department staff.

We concluded that through small changes, the staff at the health department can decrease time and cost and improve clinical work flow.

PP 148

Turning Waiting Time into Learning Time

Elizabeth A. Ogletree, Harrison A. Chambliss, Keith R. Pilkington

The University of Alabama at Birmingham School of Nursing

Abstract

This project was designed for the UAB clinic at The Foundry to promote client education among the Foundry's residents and the surrounding community. The aim was to educate about the health disparities affecting everyday lives; such as hypertension, diabetes, improper nutrition, managing stress, tobacco use, and reducing antibiotic resistance. Methods utilized included replacing pop culture magazines with health education handouts in the waiting room. Easily accessible and low cost printed resources available from the American Heart Association, American Diabetes Association, and Centers for Disease Control and Prevention were utilized as teaching literature. Coursework, which emphasized qualitative data gathering techniques, supported the data gathering process. The use of key informant interviews and participant observation yielded insights into knowledge deficiencies, as well as client learning goals, which would have otherwise gone unnoticed. Challenges involved replicating the literature in sufficient quantities to allow clients to keep a copy for later use. Partnering with clients and staff at the UAB clinic at The Foundry was a rewarding experience because it allowed the group to address community health concerns at the individual level.

Keywords: health disparities, health education, antibiotic resistance

PP 149

Screening and Prevention for Homeless Hypertension

Brittany Peeples, Jessica Bethel, Sheinika Lewis

University of Alabama at Birmingham School of Nursing School

Some of the greatest challenges in the West End community are access to health care and chronic disease (J. Bowman, personal communication, January 2015). Our goal at Urban Ministry was to serve the homeless population through blood pressure screenings and hypertension education. We met our goal by checking blood pressure, heart rate and respiratory rate, and collecting information on housing status during Crisis Intervention and at the soup kitchen. Each client had a folder that his/her information was kept in to track changes in vital signs each time he/she visited Urban Ministry. During the screening, we provided education on hypertension as well as medical referrals to those who had a blood pressure of 140/90mmHg or higher. The results showed that fifty percent of the clients we saw in a three month period had a blood pressure of 140/90 mmHg or higher, and thirty four percent were monitored for elevated blood pressure because they had pre-hypertensive blood pressures. The female to male ratio was approximately 50/50, and the majority of clients with hypertension were fifty to sixty-five years of age. Sixteen percent of screened clients had a blood pressure less than 120/80mmHg. In conclusion, our project was a successful and eye-opening learning experience. It was very rewarding to be able to help those in need and watch them progress to a healthier life style. The main challenge we faced was communication barriers and not recording who was on blood pressure medication already. We will forever be grateful for this life-changing experience.

Keywords: homelessness, hypertension, blood pressure

PP 150

Children's of Alabama: Reducing the Psychosocial Effects of Long-Term Illness

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Communication Studies

The University of Alabama at Birmingham

Long-term hospitalization in children and adolescents affects not only physical development, but also academic achievement and healthy psychosocial development. To counteract these potential developmental delays, Children's of Alabama uses a more holistic approach to patient health and overall well-being. To this end, it has established a variety of programs and community partnerships. Many of these depend on volunteers, most often students, to achieve the goals of the programs. One particular program, Patient Pals, utilizes volunteers to engage in stimulating activities with patients and to provide emotional support for the parents who often experience high levels of stress and anxiety. By providing social interaction for the patients and their families, volunteers attempt to help alleviate any negative psychosocial influences that may be present. YoUAB Learning, a student-led organization, partners with Children's of Alabama to offer free tutoring services to help overcome academic delays due to illness. Some of the services offered include standard classroom tutoring, in addition to standardized test preparation. Over the course of eight weeks, approximately fifty children benefited from one-on-one student interaction. This service-learning project aided in developing student communication skills and provided invaluable experience in relating to individuals from diverse backgrounds.

Keywords:

Pediatrics, oncology, service, psychosocial, development

PP 151

Our Experience With The Humane Society

Reid Prestwood, Ryan Leaman, Tyler Lynch

National Humane Society, Shelby Humane Society

My group members and I are very happy to be involved in the positive efforts being put into the community at our respective organizations. The organizations and the volunteer work we put in during our tenure with these organizations are aimed at making the world a more livable place for both humans and animals alike. We aim to take abandoned and mistreated animals off the streets and redistribute them into homes that will provide a nurturing and pleasant environment for them to live in. We do this by caring for the animals, and then when an individual wants to adopt an animal, we do our best to make sure we get the animal into a safe household by helping the individual select an animal. So far, the condition and morale of the animals has risen from our efforts, and Ryan has seen multiple animals leave the shelter and go to live in deserving households. In conclusion, the efforts and services that we provide and continue to provide while volunteering at our respective organizations are truly making a lasting impact in the lives of these animals. Each domestic pet that leaves the shelter to go to a new home is another goal accomplished in both our eyes and the eyes of the shelter itself. This experience has proved not to be so much of a job, but more of a beneficial experience to my group members. Our references are the tasks and results we have experienced during our service.

Keywords

Humane, Animals, Volunteer, Shelter, Service

PP 152

Bringing Missions Home

Bianca Prinsloo

Paige Williams

University of Alabama at Birmingham School of Nursing

Our Community Impact Project was a free health clinic and fair for the Inglenook community. The goal of our Community Impact Project was to serve the needs of the community and to provide access to healthcare and proper health education on several topics including exercise, nutrition, hygiene, and sexual health. We focused on providing basic health care including vital signs and assessment, in efforts to raise awareness of the community's personal health status. We had seven tables including registration, assessment and vitals, sexual health, nutrition, exercise, hygiene, and spiritual counseling for a holistic approach. The majority of our population was African American adults in the lower socioeconomic status. We were able to identify common health disparities among the population related to lack of access to healthcare and education. This included high blood pressure, medication compliance, and obesity. Overall, the health fair and clinic was very successful; we served about sixty clients and eleven of those made a profession of faith. We were able to detect multiple high blood pressures and then educate the clients on healthier lifestyle choices in efforts to improve their health. We thoroughly enjoyed this experience and were able to visualize the need for better health care and education in the community.

Keywords: Missions, education, hypertension, health clinic

PP 153

Substance Abuse Effects on Kidneys and Livers and Lungs, OH MY!

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University of Alabama at Birmingham - School of Nursing

The Aletheia House is a non-profit organization that provides substance abuse treatment. The therapists at the Aletheia House focus on the psychological effects of drug use; therefore, our goal was to focus on the physiological effects of drug use and ways to avert boredom.

We prepared to teach one class for the women's residential facility and another for the men's residential facility. At both facilities, we discussed the harmful effects on the body from a medical perspective of illicit and prescription drugs. Specifically, at the women's residential facility, we included how these drugs would affect their unborn children. We then facilitated an interactive discussion about how boredom plays a role as a trigger.

We conducted a pre-test and a post-test in order to tabulate the results. At the women's residential facility, 21 clients took the pre-test with an average of 80% and 18 clients took the post-test with an average of 94%. At the men's residential facility, 21 clients took the pre-test with an average of 79% and 11 clients took the post-test with an average of 88%.

Since the acute effects of drugs are appealing to many clients, it was a challenge to convey the negative implications of substance abuse. It was rewarding to provide the clients with something helpful during their recovery process. In their reflection, one resident wrote, "I enjoyed learning about the effects drugs have... I especially liked how the student nurses took the time to look up specific things we asked."

Keywords: Drugs**,** Boredom**,** Aletheia House**,** Physiological

PP 154

Soft Drinks vs Water: Healthy Habits Matter

Kaylee Reynolds, Amanda Kelly, Markeona King
First Light Women's Shelter

The goal of this project is to encourage the women at First Light to consider the health benefits/risks when choosing between soda and water. Many of the women are experiencing health issues such as obesity and diabetes. We hope that by teaching these women to make healthier choices, we can help their overall health and reverse their disease processes. To reach our goals, we provided the women with a teaching on the benefits of water and harms of soda. During our pre-survey, 7 out of 10 women thought that soft drinks were bad for them but 8 out of 10 believed that it was okay to drink 1-2 soft drinks per day. Half of the participants admitted to drinking 1-2 soft drinks and 1-2 cups of sugary fruit juices per day. All of the participants felt they should drink more water. After the education session, all of the contestants felt soft drinks were bad for them and half of the contestants felt they should not drink any soft drinks. All of the women stated they were going to try to drink more water and less soft drinks. Upon conclusion of our project, we feel we were able to give these women the knowledge needed to make better drink choices and change unhealthy habits.

PP 155

High School Homework

Sarah Sladick
EH 102-SL Honors
UAB College of Arts and Sciences
Faculty Advisor: Dr. Cassandra Ellis, English

I conducted research this semester on high school homework, particularly the advantages, disadvantages, and how homework could be more effectively used. Because of my personal experiences in high school and my own doubts about the effectiveness of homework, I conducted this research in order to discover if homework truly advances academic achievement. My research came from reading a medley of educational sources and papers. Some of my main academic sources are from *The Journal of Experimental Education* and *Education Week*. The consensus of my findings is that the advantages of homework only outweigh the disadvantages when homework is purposeful and distributed in moderate quantities. I believe that school administrators must educate teachers on how to assign more meaningful, relative homework, and that they should put quantity restrictions on how much homework teachers can assign. My poster also features my work as a tutor with Project Horseshoe Farm this semester, through which I helped a middle school student with her homework.

PP 156

Title: Hosting the 2015 Science Olympiad Regional Tournament at UAB

Authors: Marina K. Triplett, James T. Ansell, Brenna G. Nye, Dilani K. Patel, Tyler R. Orem, and Millena T. Oliveira

Affiliation/Institution(s): Science and Technology Honors Program

Abstract Body

Science Olympiad[1] is a national organization dedicated to improving science education, increasing interest in science, creating a technologically literate workforce, and providing recognition for outstanding achievement by both students and teachers. Science Olympiad tournaments include teams of high school or middle school students competing in events in different fields of science, technology, engineering, and mathematics (STEM).

The UAB Science and Technology (SciTech) Honors Program[2] was founded in 2005 in order to foster the development of future leaders in STEM. SciTech Honors students are required to participate in a leadership course sequence in which they design and implement a community project. For our project, we were tasked with hosting the fifth annual UAB Regional Science Olympiad Tournament for central Alabama schools. The UAB Science Olympiad tournament is the only completely student-run competition in the country.

Since its establishment in 2010, the Regional Science Olympiad tournament at UAB has included the high school division, Division C. This year, we expanded the tradition of the UAB tournament by hosting both the established Division C competition and by incorporating a new Division B competition for middle school students. The 2015 UAB Science Olympiad tournament was a great success and had a participation of over 430 students, teachers, and parents from 26 central Alabama schools. By including both divisions in the 2015 and future tournaments, we hope to promote an interest in science, technology, engineering, and mathematics fields and careers to a wider range of age groups in the Birmingham area.

Keywords
STEM, Education, Community, Leadership, Honors

PP 157

Beads for Better Bodies

Audrey Vickers, Deandra Ransaw, Meghan Pattison, Steven Ingram

UAB School of Nursing

At the Better Basics 21st Century Hope Learning Community Center, after school care is provided Monday through Friday in an effort to make a positive difference in the lives of children and their families by advancing literacy through enrichment and intervention programs. In the time our service learning group spent at this program, fourth through sixth grade students were identified as having deficient knowledge relating to basic healthcare. The aim was to educate students in applicable and relevant ways that would improve their lifestyle long term. Our objectives were to increase knowledge on fitness, hand hygiene, oral health, nutrition, fire safety, bullying and the body's anatomy. This was executed by teaching an interactive lesson with a creative memory tool each week. Students were given a necklace that they could add a bead to after each lesson to represent what they learned. In conclusion, students were able to recall the new information and discuss how to apply the lessons to their life. The challenge was working with the cultural and socio-economic backgrounds of the students to orchestrate sustainable change, but the reward of new and beneficial knowledge for the students made the experience successful.

Keywords: After-school program, Elementary children, Health education, Urban school

PP 158

Spanglish: Is it an Actual Language? Considerations from the Service Learning Trenches

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Department of Foreign Languages and Literatures

Faculty Advisor: Dr. Lourdes Sanchez-Lopez

EXPO for Undergraduate Scholarship 2015

Poster Presentation – Service Learning

"Spanglish" is a word that refers to the vocal and written combination of the Spanish and English languages. The use of Spanglish is so prominent throughout the world that The Real Academia Española officially added the term "Espanglish" to their 2014 edition of the dictionary. My service learning experience this semester has revealed the importance of Spanglish (from the viewpoint of interpreters) in the medical setting as well as the social setting. Those who have immigrated to the United States from a Spanish speaking country, and are adjusting to the culture, are the main speakers. Merriam-Webster states that a language is "the words, their pronunciation, and the methods of combining them used and understood by a community." However, there is a dilemma over defining Spanglish as an official language. One of the issues with Spanglish is that is not regulated; the users tend to create the words as they are speaking or writing. The speakers understand each other through the language that they are using, but it is constantly evolving. Current languages developed over thousands of years before they became prominent through; no language simply appeared with grammar rules and words for every object. Spanglish has a very large potential of becoming a new, regulated language. If this occurs, there will be a new niche in the interpreting field (including all sectors). The goal is to measure the prevalence of Spanglish through research and service learning experience, and its potential of becoming its own language in years to come.

Keywords:, Culture**,** Language**,** Interpreters**,** Service Learning

PP 159

Title: **Global Citizenship: From UAB to You**

Names: **Helen Bae, Joann Fong, Yoonhee Ryder, Garrett Stephens, and Andrew Viegas**

Advisors: **Ms. Cortney Johnson and Mr. Raphael Richard**

Department: **Student Multicultural and Diversity Programs**

Abstract:
Global Citizenship is a concept not addressed soon enough in the schooling system. We will discuss the challenges and strategies in the education of inner city students. The University of Alabama at Birmingham's Multicultural Council, or UAB MC, is a leadership, advocacy, and programming board made up of a diverse group of students who strive to promote multicultural awareness and inclusion. In order to fulfill our mission of promoting cultural diversity and educating not only the UAB but also the Birmingham community, the board is reaching out to a local high school in order to educate young students on the importance of being a Global Citizen. Over the course of the program, students will learn about different global issues ranging from local and state concerns, like prison overcrowding and gun control, to problems that stretch across multiple countries, such as global water shortages and famine. We will discuss how various viewpoints of issues intersect--for example, how a politician looks at the problem of gas emissions versus how an environmental activist looks at the same issue. This will give students an interdisciplinary outlook and understanding on how issues are handled successfully and why governments fail to solve major global problems. This program will be a great benefit for participating students and a critical first step into international and cultural understanding of complex issues. It will make a lasting impact that will continue to help them grow and be receptive to new ideas. This will be beneficial for not only their academic careers, but also as they go through their daily lives.

PP 160

Say Bye to Blood Pressure that's High

Claire Wheeler, Abby Vinson, Rebecca Aaron

Jefferson County Housing Authority: Spring Gardens

According to the Centers for Disease Control and Prevention, "about 70 million American adults have high blood pressure-that's 1 of every 3 adults. Only about half of people with high blood pressure have their condition under control" (CDC, 2015). One of the most at risk populations for acquiring a disease, like hypertension, is the elderly population. The Spring Gardens community is in need of education focused on hypertension as this population consists predominately of adults over 65 with comorbidities. The purpose of this service project is to educate the geriatric population of the importance of managing hypertension through exercise, medication management, and a healthy diet. In order to better understand the population health risks, we wanted to be hands on and provide a monthly check for blood pressure, blood sugar, heart rate, and oxygen saturation. Of these parameters, we identified a greater need for education about blood pressure evidenced by the many cases of hypertension. We saw an increase in the number of consumers that showed an interest in education about blood pressure management. We identified within this community, more than half of the consumers needed constant reinforcement regarding controlling their blood pressure. Frequent educational classes and blood pressure checks would benefit their current health problems and decrease disease progression.

Keywords: Hypertension, Geriatric Hypertension, Blood Pressure Management, Exercise and Blood Pressure, Heart Healthy Diet

PP 161

Stress Less: The Importance of Recognizing Stress and Minimizing it's Effects

Caitlyn White and Regina Binder
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Abstract Body

Stress is the body's main way of responding to any kind of demand, and the influence of stress on the human body and mind can lead to many health complications such as depression, anxiety, and other physical and mental issues. The Stress Less community impact project was designed to help educate the Fairmont Head Start parents about the different causes of stress and to introduce ways to effectively and efficiently reduce these stress levels. Studies have shown that stress levels are significantly higher within low-income families as well as families with a single parent. Because these are commonalities in the Fairmont Head Start community, we focused on stress reduction techniques that are easy to use and of low cost to the user. To complete this project we organized a presentation for the FHS parents and put together a user-friendly information card to serve as a quick reference for the parents. We presented our Stress Less project at the February FHS parent's meeting, where we incorporated an open-forum style presentation. This allowed for personal reflection and self-assessment by the parents, while giving them an opportunity to seek personalized information about stress management. This project allowed us to contribute to the Fairmont community, and gave us an opportunity to help the parents with an issue many of them are struggling with. We received a lot of positive feedback from our project presentation, and we feel confident that it had a positive result on the FHS community.

PP 162

DISCo and the Impact of Creative Writing

Madelyn Wong

CMST 101-1C Public Speaking - Honors

Abstract

Effective communication skills are integral in any career path. Therefore, fostering these skills early in a student's education lays the groundwork for success later on in life. Volunteers at the Desert Island Supply Co. (DISCo) seek to give young people in Birmingham more opportunities to write and think creatively. These workshops allow students to improve their communication skills through both the exercises of writing and sharing with their peers. Programs like DISCo are a positive influence for intercity students to build communication skills that are essential to future success.

Keywords

DISCo, Creative Writing, Education, Communication

PP 163

Microfinance Service Learning Survey

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I plan to survey students of various majors and concentrations as well as faculty who would endorse the micro business service-learning model in their courses. I will propose a structured template of the organizational structure and clearly detail all that will be required to start up. If the plan is received well, I will turn over the idea to faculty and administration interested in carrying it out in the future because I believe in its potential for UAB, the Collat school of Business and the community. Students could possibly not express an interest in micro-finance or in investing time in volunteering for a non-profit business organization. Faculty could see no educational value or lack available resources to start up a micro-finance institute. In response to these possible obstacles, I will pitch the conception of a micro-finance institute as a branch of the new center for Entrepreneurship. My hope is that the Collat School of Business would seek to encourage small business owners in the community and students to work alongside them in a mutually beneficial capacity.

Keywords

Microfinance, Service Learning, Entrepreneurship