Keynote: Dr. Suzanne Ferriss, Division of Humanities – "The Culture of Scholarship and the Scholarship of Culture."

Undergraduate Student Symposium 2009: Research Abstracts

A Gluten-Free, Casein-Free Diet as an Alternative Therapy for Autism and Autism Spectrum Disorders: A Literature Review

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Faculty Advisor: **Dr. Emily Schmitt**

Abstract

Autism is a disorder of social interaction and communication. It is a collection of behavioral symptoms causing the person to be easily disturbed by a lack of routine and organization of daily activities. The disorder becomes apparent within the first three years of life. Though the cause of the disorder is unknown, there has been feverish research to determine the cause and develop a treatment. Several clinical studies have found that children with autism have a range of gastrointestinal symptoms including inflammation, decreased digestive enzyme activity and permeability of the intestines to pathologies. Children with autism also have abnormal levels of peptides in their urine. These peptides are derived from gluten, gliadin and casein and can have an opioid effect. For example, casein is metabolized by the body into casomorphin, which can then travel up to the brain and react with opiate receptors and produce an effect similar to that of endorphins. Children that were placed on a gluten-free, casein-free diet had improved development in one study. In another study, the result for children on the gluten-free, casein-free diet was not statistically significant, but parents reported a noticeable difference in their child's behavior.

A Study of Lifespan in the United States

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Faculty Advisor: **Dr. Bashar Zogheib**

In this project, a regression analysis study is conducted to see if the average lifespan (LIFE) in the United States is related to the following six characteristics: MALE, the ratio of male to female in percentage, BIRTH, the birth rate per 1000 population, DIVORCE, the divorce rate per 1000 population, BEDS, the hospital beds per 100,000 population, EDUCATION, the percentage of population 25 years or older having completed 16 years of school, and INCOME, the per capita income. In this study, the outliers and the influential observations will be identified by looking at various statistics, such as RESIDUAL, STUDENTIZED RESIDUALS, COVRATIO, and DFFITS. Analysis about what is unusual about these states is also given.

A Study of New Porous Molecular Frameworks and Their Adsorption and Desorption Properties

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Faculty Advisor: **Dr. Donald Baird**

Abstract

Metal-organic Frameworks (MOF's) are porous materials comprised of organic building blocks bound to metal atoms. These compounds are finding applications in various fields of study including gas absorption, catalysis of specific reactions, and in drug delivery among others. Our emphasis has been placed on synthesizing and characterizing new frameworks with the use of bisl(arylimino)isoindolines (BAII's) as building blocks. One of these, NBAII(CuOAc), produced by reaction of NBAII with copper acetate, was analyzed for small molecular absorption and desorption. This particular framework was successful in the absorption of carbon tetrachloride and chloroform but failed to absorb pentane and toluene, while other organic solvents are still under investigation. The frameworks that have been developed will be discussed regarding how the molecules fit together, how they can be arranged, and how they can be manipulated to create more useful frameworks with larger pores for absorption.

Acid Rain: Adversity on Atmospheric Carbon

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Farquhar College of Arts and Sciences

Faculty Sponsor: **Dr. Dimitrios Giarikos**

Abstract

"Acid Rain" is the deposition of wet and dry acidic pollutants that have been shown to cause damage to the environment. Dissolved atmospheric carbon dioxide in clouds and rain undergoes a chemical reaction with water to form carbonic acid, thereby changing the pH of unpolluted rain water from 7.0 to 5.7. When unpolluted rain acquires additional acidity through the reactions of air pollutants with water, stronger acids are formed. Deposits from acid rain on the earth's surface have adverse effects on oceans, forests, soils, organisms, buildings and mankind. Acid rain clearly has an adverse affect on the carbon cycle of the atmosphere.

An Examination of The Specific Functions of Three Cancer Drugs (Methotrexate, Fluorouracil, And Taxol) and Their Expected Effects on Gene Expression

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Abstract

Cancer is a term used to define many diseases in which a group of cells exhibit uncontrolled growth, invasion, and sometimes metastasis. In this literature review project, the mechanisms of action for three drugs used to treat cancer by inhibiting cell division: Ledertrexate (methotrexate), Fluorouracil (adrucil), and Paclitaxel (taxol) are examined. Methotrexate inhibits an enzyme called dihydrofolate reductase (DHFR) that catalyses the conversion of dihydrofolate to folic acid, needed for the synthesis of the nucleoside thymidine, and also purines which are required for DNA synthesis. Fluorouracil functions as a thymidylate synthase inhibitor by stopping the synthesis of the pyrimidine, thymidine, a nucleotide needed for DNA replication. Fluorouracil competes with pyrimidines by entering the cell, forcing the cell cycle to stop and initiating apoptosis by inhibiting the cell's ability to synthesize DNA. Taxol interferes with the normal function of microtubule breakdown by binding to the β (beta) subunit of tubulin. When taxol binds to microtubules, they become locked in place, inhibiting their ability to disassemble. This affects cell function because the shortening and lengthening of microtubules is required for the transportation of cellular components and movement of chromosomes during mitosis. Taxol also induces apoptosis in cancer cells by binding to an apoptosis stopping protein, Bcl-2. This literature review is designed to provide the background for a potential honors research thesis proposal to examine changes in gene expression of yeast cells (as a model eukaryotic organism) exposed to these three drugs.

Avulsion Fracture of the Medial Epicondyle of the Humerus and Ulnar Nerve Neurolysis in a Male Soccer Player—A Case Study

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Faculty Sponsor: **Dr. Pradeep Vanguri**

Abstract

Objective: The purpose of this case study is to educate the sports medicine community about serious orthopedic injuries that occur to non-dominant areas of the body that are not required for the athlete to compete in that sport. The knowledge and preparedness to handle a wide variety of injuries allows the sports medicine professional to provide a higher standard of care.
Background: A 15 year old male soccer player jumps up for a ball, collides with a fellow player, and falls down catching himself on his left elbow. He has been playing soccer for 5 years on club teams and just this year for his high school. He has no prior history of orthopedic injury.
Treatment: The athlete was referred to an orthopedic surgeon and surgical repair was suggested. The surgery consisted of an open reduction internal fixation (ORIF) of the medical epicondyle of the humerus and the soft tissue and replacement of the ulnar nerve to the groove. Currently his rehabilitation program consists of active and passive range of motion, but no resistive as of yet. There is no set protocol for rehabilitation—it is modified as the athlete heals by the surgeon.
Uniqueness: Upper extremity injuries are very rare in soccer and the combination of these severe injuries is remarkable. There is a limited amount of research on each of these injuries and how they affect athletes.
Conclusion: The sports medicine professional should not rule out any possibility of injury no matter what the sport.

Bending Under Pressure: "In-Vision" it's Plain to See

Megan Oswald
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Farquhar College of Arts and Sciences

Faculty Sponsor: **Dr. Evan Haskell**

Abstract

"It is not what you look at that matters, it is what you see." –Henry David Thoreau

Vision is key to the human experience. It is often the first sensation received for environmental navigation. While to the average eye images may be clear, ocular disorders can distort their production, making the study on ocular disorders essential. Glaucoma is characterized by damage to the optic nerve due to excessively high intraocular pressure (IOP). It is assumed that IOP is uniform throughout the eye. Therefore we can link glaucoma to the deformations of the cornea, which is the ocular disorder of astigmatism inhibiting the eye's ability to properly focus an image. Deformation is measured as a variation in central corneal curvature (CCC), a degree of spherical shape. To create an ocular model we build upon the Imbert-Fick law, which determines the force balance along the surface of a spherical body. The variables are now explicitly specified to describe surface tension and bending force as functions of the deformation of the CCC and pressure as a function of intraocular volume. This model depicts the effects of changes in IOP on CCC and then the inverse function where CCC in turn affects IOP. With this model we hope to determine a positive correlation between the two ocular disorders which will lead to a better understanding of their relationship in terms of early detection and prevention in clinical settings.

Blockage of VEGF-Induced Angiogenesis with a Novel Anti-angiogenic (JFD) Drug

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Abstract

Vascular Endothelial Growth Factor (VEGF) is frequently expressed in several pathological tissues and is known to promote angiogenesis and vasculogenesis in highly metastatic cancers. The purpose of this experiment was to re-evaluate the efficiency of JFD drug, in varying concentrations, on the capillary formation by HUVEC cells. To accomplish the intended purpose an *In-Vitro* Angiogenesis assay kit was utilized to examine capillary formation by HUVEC cells. Approximately 5 x 10^3 HUVEC cells were seeded into matrigel, which simulates an endothelial cell matrix, on a Petri- dish. To these plates different concentrations (0.1µM, 0.25 µM, 0.5 µM, 2.5 µM, and 5.0 µM) of JFD were utilized to determine its efficacy for preventing capillary formation. For validation of our findings, at least three wells per concentration were tested and similarly three control wells were used for comparison. The effect of the drug was assessed at intervals of four hours. Upon microscopy analysis of the capillary network formation, scoring values ranging from 0 -5 were assigned depending on the extent of inhibition. The scoring depended on whether there was alignment of HUVEC cells, capillary tube formation or closed polygon formation, etc. As expected 5.0 µM concentration of JFD gave the maximum inhibition however, the inhibitory effect was seen even at 0.1 µM concentration. Our experiments reaffirmed the anti-angiogenic effects of JFD which has great potential to become an anti-cancer agent. (The study was supported by the generous funding from the Royal Dames for Cancer Research Inc, Ft. Lauderdale, Florida).

Bohemian Classicism: An Analysis and Performance of Jiri Georg Benda's Piano Sonatina in A Minor

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Faculty Sponsor: **Dr. Jennifer Donelson**

Abstract

The piano sonatinas of Bohemian composer Jiri Georg Benda occupy an important place in Benda's compositional output. This poster will explore the essential parts of sonatina form and include an analysis that shows the unique way in which Benda's sonatina in A minor exemplifies the form. This presentation will include a recording of the author's performance of the piece as informed by her theoretical analysis.

Comparisons of Nearshore Artificial and Natural Reef Fish Assemblages in Southeast Florida Using Three Visual Census Methods With Snorkel Gear

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Faculty Sponsor: **Dr. Paul Arena**

Abstract

The nearshore environment of Broward and Palm Beach counties are characterized by the presence of both natural and artificial reefs. The natural reef area surveyed in this experiment is located in northern Broward County just south of Commercial Blvd. The natural reef is a composed of a mix of hardbottom and sabellarid worm rock habitats. The artificial reef surveyed in this experiment is located in southern Palm Beach County, immediately south of Boca Raton Inlet. This reef consists of large, concrete boulders scattered over an area of a tenth of a mile. The two goals of this study were to compare the fish assemblages between nearshore artificial and natural reefs, as well as compare three visual census techniques using snorkel gear. The census methodologies used were a point count, transect and rover count. Three sample sites were chosen at each study area (artificial and natural). All three visual survey methodologies were conducted at each site. Dr. Paul Arena trained each student researcher in fish identification and methodology procedures before survey data were collected.

Coral Cover of *Diaseris distorta* and *Porites sverdrupi* at Isla Catalana, Gulf of California

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Faculty Sponsor: **Dr. Joshua Feingold**

Abstract

Diaseris distorta is a free-living, solitary fungiid coral that mostly inhabits sand or mud habitats surrounding coral reefs. It is distributed throughout the tropical waters of the Red Sea, Indian Ocean, and Pacific Ocean. Data on this species' population density and surface area was collected at its northern-most limit of distribution in the Eastern Pacific off the coast of Isla Catalana in the Gulf of California. Thirty randomly located $0.25m^2$ photo quadrats ($7.5m^2$ total area) were analyzed using CPCe software. The mean surface area of *Diaseris distorta* was $1.6cm^2 \pm 0.4$ s.d. per individual, and the mean number of individuals per quadrat ($0.25m^2$) was 15.2 ± 5.7 s.d. Live coral cover ranged from 0.003-0.020%, much less than those measured elsewhere (e.g. 100% cover in Galapagos and other sites in the Gulf of California). A possible explanation for low cover is that this population occurs at the northern-most limit of its known distribution in the Eastern Pacific where environmental conditions may be marginal for growth. Three colonies of the rare, endemic, branching coral *Porites sverdrupi* were also observed during the survey with a mean surface area of $3.8cm^2$ per colony and a mean diameter of 1.2cm. This is much smaller than colonies reported from other locations further south (2.5 to 9.3cm), again suggesting marginal growth conditions. Additional research on these two species of coral will allow comparisons with future surveys of these populations and those in other regions, providing valuable information to sanctuary managers.

Correlating Heme Potentials to the Physico-Chemical Properties of Their Binding Sites and Their Structural Distortion in Cytochromes by Clustering

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Faculty Advisors: **Dr. Reza Razeghifard and Dr. Ahmed Albatineh**

Abstract

In this paper, a clustering method was used to find out why the heme cofactor exhibits different potentials in cytochromes with a known 3-D structure. We have tried to find a relationship between heme potential in these proteins and the physico-chemical properties of amino acids in contact with their heme. We have also considered heme distortion which is a measure of out-of-plane distortion as another factor that can be induced by the protein structure. Heme proteins, particularly cytochrome b and cytochrome c, have been analyzed. Their ligand interaction sequences i.e. amino acids in contact with heme, were first determined by a protein software. We then defined the physico-chemical properties for the heme binding site by taking volume, hydrophilicity, area, polarity, hydrogen bonds, charge, shape, and buriability for each amino acid and summing them up. Heme distortion was also calculated by a computer program developed by John A. Shelnutt, which is available on-line. A literature survey was performed to find heme potentials. The cluster dendograms were created mathematically to identify the unique characteristics in each cytochrome from physico-chemical properties of their heme amino acid ligand sequences. Our findings will be applied to more complex proteins that have proven to be difficult to understand such as Cytochrome b6f. The idea is to understand how nature has utilized the same heme cofactor for various functions in cytochromes.

Cultural Diversity

Erica Falk
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Faculty Sponsor: **Jennifer Reem**

Abstract

A collaboration of a myriad of short poetry on the beautiful surroundings of cultural diversity will be discussed and further articulated. The style will be written in couplet format and have an appropriate ab rhyme scheme. It will also introduce the wonderful work of artists both painters and writers who utilized cultural diversity in the theme of their work. Cultural diversity is a prominent issue in the twenty-first century and has become a critical issue of our nation. The luxury and great appreciation of diverse multitudes of race, religion, and ethnicity help to paint a world full of vibrant colors. Thus through my original work these critical issues can be further addressed and properly highlighted for surmounting a melting pot of learning in which we can all engage in. Hence as a prominent culture and free enterprise individuals have the luxury of participating and engaging in assorted topics. The human being can infinitely grow and enrich their minds with collaboration, yet the direct uniqueness and distinction needs never to be forgotten in each of us. Therefore, the moral of any successful business, community, or school appreciates the rainbow flavoring of the multitudes of ice-cream and not just one particular bland vanilla.

Data Networking Lab Implementation Using Virtualization

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Faculty Sponsor: **Dr. Saeed Rajput**

Abstract

Conventional computer laboratory is expensive and it requires expensive cabling and routers to set up. It also requires careful hardware planning and implementation that can take weeks to implement. We are demonstrating an implementation of a computer-networking laboratory on a single machine that each student can implement on his or her own machine using virtualization. The laboratory is tested with sample networking experiments. The laboratory will be delivered as a software appliance that can be made available to all students in taking computer-networking courses. The implementation is done using completely free or open source software packages.

Determining the Presence and Localization of NCKX5 in Retinal Pigment Epithelium

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Faculty Sponsor: **Dr. Deanne Roopnarine**

Abstract

SLC24A5 is a gene that has been recently discovered and is linked to differences in skin color. This gene encodes for a potassium-dependent sodium, calcium exchanger (Na:Ca:K isofrom 5) known as NCKX5. This protein has been found to play a major role in melanin production. Since NCKX5 (slc24a5) has been linked to play a significant role in melanin production and skin color, the goal of this project was to determine its impact and correlation on the susceptibility of age related macular degeneration. Age-related macular degeneration (AMD) is the leading cause of blindness in people who are fifty years or older in the United States. AMD is more prevalent in Caucasians rather than those of African descent. To execute this study the main goal was to demonstrate the presence and localization of NCKX5 in retinal pigment epithelial (RPE) cells. By studying this aspect more can be learnt about NCKX5's role in melanin production in RPE cells. It was hypothesized that NCKX5 will be expressed in retinal pigment epithelial cells and will be partially localized in melanosomes. By conducting immunoblotting and immunochemistry experiments it was found that NCKX5 was expressed in RPE and is partially co-localized with melanosomes and pre-melanosomes.

Dizzying Duplicity: Women's Dance of Discord

Amanda Allen Thompson
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Farquhar College of Arts and Sciences

Faculty Advisor: **Dr. Kate Waites**

Abstract

An examination of Dorothy Parker's "The Waltz" and Tillie Olsen's "Tell Me a Riddle" reveals a telling commonality: the cyclical redundancy that characterizes women's lives in early to mid-period twentieth century America.. Dorothy Parker's piece is an amusing allegorical short story in which the protagonist finds herself dancing with a partner with whom she secretly would prefer not to dance. However, such an option is unavailable to women in polite society. Parker's narrator/protagonist is internally impudent but externally compliant as her rebellion eventually dissipates and she dances her life and her autonomy away. Olson's "Tell Me a Riddle" tells of a dying woman who, through the experience of losing her health and her mental acuity, re-acquaints herself with and reclaims the strong woman she once was. Olsen's use of repetitive phrasing for her protagonist, Eva, echoes the rhythms of the conventional waltz in Parker's story, illustrating how the boundaries of women's lives are blurred between self and social expectations, and marked by a deadening repetitiveness. Torn between allegiance to self and obligation to others, these women find themselves trapped by the social dance of femininity.

DNA Fingerprinting and Whole Genome Replication for the Identification of Bacteria

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Faculty Advisor: **Dr. Jose V. Lopez**

Abstract

Prokaryotes are typically clonal in nature due to their rapid reproduction by binary fission, but some molecular genetics methods exist to differentiate various bacterial species. In this experiment, common bacteria were grown in nutrient broth before their DNA was extracted. Repetitive DNA sequences that are universal to a variety of bacteria were then targeted in the polymerase chain reaction (REP-PCR) using ERIC primers. The bacterial DNA was then quantified using gel electrophoresis to form a "fingerprint" of distinct bands for each bacterial species. The Repli-g procedure was then performed to amplify the amount of DNA going into the REP-PCR replication, while testing for significant errors in whole genome replication.

Effects of Periodic Acceleration (pGz) on Cardiovascular Health

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Faculty Advisor: **Dr. Emily Schmitt**

Abstract

Heart disease is among the leading killers of both men and women in the United States. Periodic acceleration (pGz) is a promising non-invasive treatment that induces the expression of multiple cardioprotective mediators that function in myocardial preservation, ischemia and reperfusion, and post-ischemic injuries. In this literature review the expression of nitric oxide synthase in endomyocardium and the implications of periodic acceleration on overall cardiovascular health were examined. Periodic acceleration increases pulsatile sheer stress on the vascular endothelium leading to the release of certain mediators into the circulation. This treatment utilizes a motion platform that moves the supine body sinusoidally in a continuous head-ward to toe-ward manner. It was discovered that periodic acceleration increases the expression of the multiple isoforms of nitric oxide synthase as well as prostaglandins, tissue plasminogen activator and other cardioprotective mediators. Additionally, as part of an original lab-based internship at Mount Sinai Medical Center in Miami Beach, FL, post-ischemic tissue damage was quantified in rat hearts that were exposed to periodic acceleration and compared to those that served as time controls and received no such treatments. It was found that pGz-treated hearts had a greater percentage of living tissue following induced ischemic injury.

Establishing a Control of Gene Expression in Yeast Exposed to a Standard Environment as a Comparison to Yeast Exposed to Flu Vaccine With and Without Thimerosal

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Faculty Advisor: **Emily Schmitt**

Abstract

Gene expression in *Saccharomyces cerevisiae* (Baker's yeast) was assessed using microarray technology. After growing the yeast in standard conditions (YEPD media), the total RNA was extracted using the Ambion RiboPure Yeast Kit. The quality and quantity of the RNA was assessed using gel electrophoresis and UV spectrophotometry. Next, mRNA (approximately 1% of the total RNA) was isolated using reverse transcription reactions. cDNA was made from the mRNA by amplifying a gene that should always be expressed (TDHI) using Reverse Transcriptase Polymerase Chain Reaction (RT-PCR). Several key genes that are hypothesized to be affected by thimerosal in vaccines were also tested for in the sample of cDNA: SSA2, ECM4, RAS1 and SUA7. SSA2 is a chaperone that assists in folding proteins. ECM4 is involved in cell wall organization. RAS1 has an unknown function, but it is believed to contribute to cancer risk in humans. Finally, SUA7 is involved in transcription of DNA to RNA. The cDNA that was created from the mRNA was tagged with a fluorescent dye and hybridized to a microarray which was subsequently assessed using a program called MAGICTool. The resulting microarray image contained features (spots) that were clear and distinct from the background. After analyzing the microarray data, expression ratio values of the genes of interest were as expected and similar to the results obtained from RT-PCR reactions. Future applications of this procedure include exposing the yeast culture to vaccine with and without the preservative thimerosal and comparing gene expression between all three environments.

Examination Stress can Enhance Long Term Memory Performance

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Faculty Advisor: **Dr. Jaime L. Tartar**

Abstract

The literature is currently unclear regarding the hypothalamic-pituitary-adrenal (HPA) axis activation during examination periods. In addition, it is uncertain if a potential increase in cortisol influences memory processes during an academic examination. Here, we seek to better understand the complex relationship between examination stress and memory by testing both short-term and long-term memory 3 weeks prior to an examination period and then 15 minutes prior to an examination. We also assessed subjective measures of stress through self- report assessment of stress and physiological measures of stress through salivary cortisol levels during both periods. We found that participants reported to be significantly less stressed during the examination compared to the non-examination testing. In addition, there was a negative correlation between subjective (self-report) stress and salivary cortisol levels during the examination, indicating that students' perception of their stress level was not a good indicator of their physiological stress response. Interestingly, long term memory was significantly enhanced during the examination, while short-term memory performance was not enhanced. Together, these findings help to elucidate the impact of self report vs. physiological stress as it relates to specific types on memory tasks.

Examining Adhesion of Lysozyme and Transferrin to Omafilcon A Contact Lenses

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Farquhar College of Arts and Sciences

Faculty Sponsors: **Dr. Edward O. Keith and Dr. Andrea Janoff**

Abstract

Contact lenses induce the formation of human tears, which contain approximately 60 different proteins, when worn on the naked eye. We examined the adhesion of human transferrin to FDA Group II Omafilcon A contact lenses, fabricated from a biomimetic material whose interaction with tear proteins is not well understood. Furthermore, the consequences of protein accumulation are uncertain. Experimental procedure included incubation of Omafilcon A lenses in human transferrin for five days. Protein adhesion was determined by bicinchoninic acid colorimetry on a daily basis through spectrophotometry. As a result, transferrin adhered to the Omafilcon A lenses to a lesser extent (~10%) than it did to Alphafilcon A lenses, also considered as FDA Group II lenses. Our previous data indicate the same result is true for lysozyme adhesion with Omafilcon A lenses, adsorbing less lysozyme (~25%) than Alphafilcon A lenses. Levels of transferrin and lysozyme adhesion to Omafilcon A lenses are lower than their levels of adhesion to any other type of contact lenses in all four FDA groups, suggesting that Omafilcon A lenses are better able to resist protein adhesion than contact lenses fabricated from other materials.

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From Failed Unity to Long-Term Division: The Impact of Nineteenth-Century French Diplomacy on Haitian-Dominican Relations

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Farquhar College of Arts and Sciences

Faculty Sponsor: **Dr. David P. Kilroy**

Abstract

Haiti and the Dominican Republic are sometimes referred to as two wings of the same bird. However, to Dominicans the island is Quisqueya while Haitians refer to it as Hispaniola. This distinction offers a symbolic illustration of their opposing attitudes, which are usually explained as cultural differences. In this paper, I take into consideration the historical roots of these difficulties and in particular the role of France during the post-colonial era. French diplomats invested in and exploited the island's political instability, driving the two populations apart. The research presented in this paper addresses the negative impact of nineteenth-century French diplomacy on Haitian-Dominican relations. I argue that French diplomats manipulated both sides in their efforts to gain strategic and economic advantages, which heightened tensions between the increasingly belligerent neighbors. The French exacerbated a psychological climate of resentment and mistrust between Dominicans and Haitians that hindered prospects for reconciliation between the two people, undermining future political collaboration between the two young countries.

Gender Differences in the Perception of Homosexual and Heterosexual Men

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Farquhar College of Arts and Sciences

Faculty Advisor: **Dr. Valerie Starratt**

Abstract

Some homosexual men continue to face various challenges in their task to diminish prejudicial beliefs and attitudes (Berkman & Zingberg, 1997). In comparison to heterosexual women, the literature depicts heterosexual men as having more negative views of homosexual men (Herek, 1998). A total of 26 heterosexual participants (11 men, 15 women) viewed profiles of three target males who were described as being in either a heterosexual or homosexual relationship. Participants subsequently rated each target on a variety of social and personality characteristics, including willingness to work, likability, and confidence. Preliminary results suggest heterosexual men, in comparison to heterosexual women, perceived homosexual men to be less intelligent, less interesting, and overall less likable among other items. However, no gender differences were reported in regards to the rating of overall confidence, ability to sustain a long term friendship, and perceived ethical behavior. Surprisingly, heterosexual men were more willing to recommend the homosexual target, compared to the heterosexual target, to an employer. The results highlight a need to discuss the impact of implicit prejudices against sexual minorities in academic settings.

"Green Gasoline" – Biofuels From Sugar, A Sweet Idea

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Faculty Sponsor: **Dr. Dimitrios Giarikos**

Abstract

Biofuels are fuels made from agricultural sources offering a viable and earth-friendly alternative to fossil fuels, such as petroleum. The use of sugar and its products to produce "green gasoline" – biofuels to replace fossil fuels, is being investigated. Recent research has sought to advance the production of biofuels for use as gasoline, diesel and jet fuel. An explanation of the chemical and biological processes used to convert sugars into biofuels, and a review of the most current research seeking to advance the field, is presented.

Hand Hygiene

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Faculty Advisor: **Dr. Paul Arena**

Abstract

The purpose of this project was to determine if the NSU community on main campus displayed proper hand washing techniques. The observations were conducted in the University Center and Parker building restrooms at the main campus of Nova Southeastern University. Over 35 days a total of 149 individuals were observed. Surprisingly, a total of 29% of those observed did not wash their hands at all. Of those who did wash their hands only 73% used a disinfectant. There were also gender differences in hand washing techniques. Eighty-five percent of all males washed their hands and of those 80% used a disinfectant, whereas, 64% of all females washed their hands and of those only 63% used a disinfectant. According to the Center of Disease Control and Prevention, "It is best to wash your hands with soap and clean running water for 20 seconds." Another surprising finding was that of all those who washed their hands, with or without a disinfectant, not one individual washed their hands for the recommended time period. Overall, males spent an average of 7.5 seconds washing their hands and females averaged only 5.1 seconds washing their hands. The results indicate more public awareness of the consequences of poor hygiene is needed, as well as, a review of recommended hand washing procedures.

Health Care Delivery Systems: A Comparison of Today's Health Care Delivery Systems Between the U.S.A and Austria

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Farquhar College of Arts and Sciences

Faculty Advisor: Dr. Mark Jaffe

Abstract

According to the 2000 World Health Organization report on comparing the health care systems, Austria with a population of 8,316,487, is ranked 9th in overall health system performance [4] [6]. The United States of America, on the other hand, with a population of 305,012,000 is ranked 37th in overall health system performance [4] [5]. The main criteria upon which the member countries were ranked upon were good health, responsiveness and fairness in financing [2]. A country is first considered to have a good health care system, when its health care status is as positive as it can possible be for all ages, gender and ethnicity groups [2]. Responsiveness measures the population's satisfaction of one's own country pertaining to treatment and client orientation of its health care providers [2]. Another aspect is fairness in financing, which focuses upon insurance protection regardless of one's income [2].

Austria delivers, by law a universal social health care system, in which 98% of its entire population is insured [1]. One even has the choice to apply for additional private insurance coverage as well. The benefits include slightly better treatment and receiving a private patient room. The United States, on the other hand, provides a mixture of privatized and public health care systems in which an estimated 84.7% of its population receives some sort of insurance, whether it is private, governmental, out of one's pocket, or employer insurance. When comparing Austria to the United States health care delivery system, one identifies two completely distinct health care systems. The most important are quality of insurance, overall cost of insurance, and who receives access to insurance.

Identification of Natural Extracts That Function As Ultraviolet Light Blocking Agents

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Faculty Sponsor: **Dr. Joshua Loomis**

Abstract

Cosmetic products such as moisturizers, shampoos, make-up, colognes and many others became part of our daily grooming habits. The American Academy of Dermatology reports the average adults use at least seven different cosmetic products each day. As more people use cosmetics, chemical ingredients included in those products are causing more allergic reactions and side effects. Sun block is essential for everyone from infants to elders. It is applied directly onto skin in order to block the harmful effects of UV light; however, many of its ingredients are chemicals that can harm the environment and cause skin irritation in sensitive individuals. Therefore, it is important to identify more natural ingredients that can block UV light effectively and produce no ill-effects on the skin. From literature research, several compounds from herbs and plants have been identified as potential candidates for use in a natural sun block. With that knowledge, these natural compounds will be tested for their ability to function as a sun block in wild-type yeast strains as well as those possessing mutations in genes required for UV light damage repair.

Idiopathic Ankle Pain: A Case of Uncharacteristic Paresthesia

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Farquhar College of Arts and Sciences

Faculty Sponsor: **Dr. Elizabeth Swann**

Abstract

An anomalous disorder that is often misdiagnosed is Complex Regional Pain Syndrome (CPRS). CPRS has two classifications (Type I & II) and is generally characterized by a combination of sensory, autonomic, trophic, and motor signs and symptoms. The most common ones include: severe pain that is disproportionate to the cause, joint stiffness, abnormal skin appearance, swelling, muscle weakness, and changes in sweating. This condition is most typically seen in the shoulder and ankle. The literature review demonstrated that there is no definite testing that can be done to diagnose this condition. In 1994 the International Association for the Study of Pain (IASP) created a set of diagnostic criteria that is primarily used in determining this condition. This criterion is believed by current research to be invalid and the importance of ruling out other possible conditions that present similarly is stressed. There is also no proven treatment method to cure CPRS. Currently physical therapy, psychological therapy, and medicinal treatments are performed, although the efficacy of each is questioned. This medical case review will identify one patient with the possible development of CPRS after sustaining an ankle sprain.

Implementation of Open Source Web Service Environment Software Appliance

Carolina Usbeck
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Farquhar College of Arts and Sciences

Faculty Sponsor: **Dr. Saeed Rajput**

Abstract

Modern software installations are complex. They require many independent "web services" and applications that usually run on many different machines to work together and collaborate. In the past implementing such an environment was time consuming and took many weeks to implement and test such an application. In this project we showed that the implementation times could be reduced significantly to just a few hours, by using virtualization, by testing the installation on a single machine that has many virtual machines running. Once the installation has been tested, it can be deployed rapidly in the real environment on multiple machines.

Lament

Michael McGregor
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Farquhar College of Arts and Science

Faculty Advisors: **Dr. Chetachi Egwu and Dr. Weylin Sternglanz**

Abstract

"Lament" is a story of one brother's journey to grow and let go of a battle between him and his brother. After he discovers the passing of his brother, he begins to look back at their relationship. It's a story that shows that family is stronger than anything, and although his older brother is homosexual, it doesn't change the fact that they are brothers. The film is directed by Mike McGregor. Other crew members include Philip Ortiz and Adam Walters.

Making the NSU Film Symposium

Philip Ortiz
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Faculty Advisors: **Dr. Chetachi Egwu and Dr. Weylin Sternglanz**

Abstract

"Making the NSU Film Symposium" is a short documentary film about the students who participate in the production of short films. This documentary is directed by Philip Ortiz. Other crew members include Adam Walters, Michael McGregor, and Japheth Pizarro. This documentary will feature interviews with past and present student participants in the NSU Film Symposium. There will also be short clips from instructional workshop presentations.

Math and Politics: Analyzing Political Polling in 2008

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Faculty Advisor: **Dr. Jason Gershman**

Abstract

Political polling was a hot topic in 2008 with an extended presidential primary election season and a historical presidential election in November. This research examines the quality of political polling during the presidential primary election season in an effort to predict which political polls would be most accurate in the general presidential election. This analysis was done using thousands of political polls from across the United States that were released to the public from a variety of sources. The statewide primary election polls themselves differed in a variety of ways and the data was stratified by many factors including: which polling company conducted the poll; was the state a "blue" state or "red" state; whether a caucus or an election was performed; was the primary an "open" or "closed" primary; how far prior to the election did the poll take place; what month the primary election took place. The research examined if the poll was accurate in whether the correct winner was predicted and whether the actual electoral results were within the margin of error of the poll. The results of our analysis showed that polls were statistically inaccurate in most of the "deep south" in primary elections as candidate Obama's support was underestimated when compared with candidate Clinton. But, these polling companies corrected themselves in time for the general election. The data also showed that time was a major factor in these polls as polls conducted even three days before an election were obsolete in terms of prediction.

Mechanisms of Vancomycin Resistance in Mixed Species Biofilms

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Farquhar College of Arts and Sciences

Faculty Sponsor: **Dr. Joshua Loomis**

Abstract

The studies conducted are aimed at determining the interactions between *Candida albicans* and *Staphylococcus aureus* in a mixed biofilm. Microbes generally prefer to grow as part of a biofilm, as opposed to individual planktonic cells, in order to communicate, share nutrients, and gain protection from environmental stresses. The bacterium *Staphylococcus aureus* and the fungus *Candida albicans* are the most common microbes found to grow within biofilms in humans and are among the leading causes of infectious disease. Previous research in our lab has indicated that *S. aureus* is less susceptible to the antibiotic vancomycin when grown in a mixed biofilm. To determine if the reason for the increased resistance was a change in gene expression of antibiotic resistant genes, the total RNA of mixed biofilms and pure biofilms was isolated for comparison. Electrophoresis was used to determine the presence and total quantity of RNA. The RNA was converted to complimentary cDNA, and PCR was used to isolate the genes involved in increasing antibiotic resistance. The bands seen during gel electrophoresis indicated a change in the expression of one drug pump in the mixed species biofilm in comparison to the pure biofilm. However, this project is still underway and further tests are needed to show precision reproducibility of those initial results.

Melanoma Increase/Decrease among Floridians in Years 2000 and 2008

Lindsay Frady
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Farquhar College of Arts and Sciences

Faculty Advisor: **Dr. Bashar Zogheib**

Abstract

Melanoma is a cancer that affects over 32,000 new individuals per year. Melanoma is a cancer that is within the melanocytes, under the skin, that produce and move the pigment of melanin. Melanin is an especially important pigment because of the protection it provides the human skin. Of the skin cancers that are present within the population, Melanoma accounts for only about five percent, but it is responsible for seventy-five percent of all skin cancer fatalities. In this project, statistical techniques are used to study if there is any change in the number of skin cancer among different age groups of patients in Florida in years 2000 and 2008. Florida is chosen in this study because it receives more days of sunshine than that of any other state. A steady increase of Melanoma cases would indicate that an epidemic of skin cancer is on the rise.

Metagenomic Analysis to Determine Habitat and Abundance of *Helicosporidium*

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Farquhar College of Arts and Sciences

Faculty Advisor: **Dr. Aurelien Tartar**

Abstract

Helicosporidium are parasitic, non-photosynthetic green algae shown to have potential in providing biological control against mosquito larvae. By determining where *Helicosporidium* resides, this organism can be more abundantly studied to gain a better understanding of its life cycle, transmission, and potential effects as biological control agents. Therefore, the isolation and study of *Helicosporidium* shows promise in the fields of biology and environmental science. In this research project, environmental water samples were obtained and analyzed to determine if any *Helicosporidium* inhabited the sample. Using a metagenomics approach, DNA extraction of all the microorganisms residing in the water samples were conducted followed by Polymerase chain reactions. Primers that specifically target a nucleotide sequence unique to the *Helicosporidium* species were used to amplify the 18S rDNA gene from several metagenomic DNA preparations. Through these molecular techniques, the presence of *Helicosporidium* species in the water samples was determined.

Modeling Health Care Data Using Regression Analysis

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Farquhar College of Arts and Sciences

Faculty Advisor: **Dr. Ahmed Albatineh**

Abstract

In this presentation, we use a multiple regression analysis technique to build a regression model to predict body mass index (BMI) for a person given some predictors like age, height, weight, waist, gender, etc. Data from the U.S department of health and human services, national center for health statistics, third national health and nutrition examination survey will be used to build the regression model. We will use the method of least squares to fit the data and get estimates of the parameters. Predictors will be tested for significance, model assumptions will be checked, and model diagnostics will be used to check the appropriateness of the suggested model. The proposed model will be tested for multicollinearity and autocorrelation. The proposed model will be tested and results will be compared with existing techniques, e.g. charts.

Nothing More Powerful Than Love

Corynne Dignan
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Farquhar College of Arts and Sciences

Faculty Sponsor: **Suzanne Ferriss**

Abstract

The unquestionable power love has over all things is illuminated in early world literature. Emotional control is lost as characters misbehave under the domination of love. In the story of Ceres and Proserpina from Ovid's *Metamorphoses*, the cravings of love instilled by Cupid make individuals act selfishly and out of character to fulfill their passion, going to any lengths to accomplish their desires. Both maternal and romantic love instill a form of madness that causes characters to harm others. Still, stories such as those in *Metamorphoses* offer reassurance that powerful emotion endures, even in a contemporary world that privileges materialistic security over love.

Now Playing

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Faculty Advisors: **Dr. Chetachi Egwu & Dr. Weylin Sternglanz**

Abstract

"Now Playing" is a short film centered around one long music montage, the soundtrack to an isolated girl's life. This girl has built walls around her heart, and she has sunk deep into a life she never wanted. In an attempt to control every aspect of her life, with the help of her I-pod, she chooses what to listen to, what to let in and what to close out. The film is directed by Alyiece Moretto. Other crew members include Patrick Watkins, Jessica Nelson, Katie Keenan, and Nick Schanze. Patrick Watkins and Katie Keenan are the starring actors.

Powering Up a Detergent for the Modern Industrial Sector

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Farquhar College of Arts and Sciences

Faculty Advisor: **Dr. Dimitri Giarikos**

Abstract

The chemistry of soaps and detergents was examined to assess the extent of their applicability in the industrial sector. Soaps become less effective in hard water as the higher solute ions interfere with intermolecular forces between soap and water. Detergents, as an alternative to soaps, act as a surfactant to facilitate the cohesive hydrogen bonding of water molecules into an adhesive force on surface abrasions. Chemical analysis of soaps and detergents may yield a new type of compound that is highly effective in cleaning industrial residue. An ideal detergent for cleaning sludge off of industrial machines was devised.

Reading the Pattern in "The Yellow Wallpaper"

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Faculty Advisor: **Dr. Kathleen Waites**

Abstract

This paper is a literary analysis of Charlotte Perkins Gilman's short story, "The Yellow Wallpaper." In the story the unnamed protagonist is diagnosed with a "nervous disease" and confined to a nursery/bedroom in "ancestral halls" (253). Ironically, it is through this nursery that serves as a prison cell for the captive and ill woman that she finds her voice and her freedom. This paper examines the symbolic devices and imagery that reflect her struggle and provide an escape route for women confined to an oppressive child-like status. Her diary entries are the mechanism whereby she records her observations and examines the features and nature of her own imprisonment.

Seasonal Manatee Sightings in Port Everglades

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Farquhar College of Arts and Sciences

Faculty Sponsor: **Dr. Edward Keith**

Abstract

Due to a decrease in ambient water temperatures during the winter months in Florida, the Florida manatee (Trichechus manatus latirostris) will seek warm water refuge in power plants and natural springs throughout both north and south Florida. Port Everglades is an important haven for these animals in south Florida, providing warm water as well as a food supply. The goal of this research is to examine the correlation between the number of manatees spotted in Port Everglades versus the year, water temperature, and location in the port. Since 2006, data has been collected on the manatees in Port Everglades and data has been interpreted in a number of ways. It is clear that as the water temperature at different locations in the port decreases, there are an increased number of manatees seen. Although they start coming into port around the end of October, the majority of observations have been throughout January and early February when the temperatures are also the lowest. This project's focus will be on the month to month changes in the manatee population in the Port. The water temperature, measured from several different locations will also be compared to the number of manatees sighted. After analysis of previous research as well as data from this project, the anticipated results would be documentation of an increased number of manatees associated with colder temperatures, an increased number of sightings during January and February, and a possible overall increase in the number of manatees visiting the port each year.

Social Support and Psychosocial Health among HIV-Seropositive Individuals

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Faculty Advisor: **Dr. Mindy Ma**

Abstract

Existing literature has documented a positive correlation between social support and adjustment to illness among HIV/AIDS. However, there is limited research focusing exclusively on the influence of family support on psychosocial health in this population. This study sought to examine the influence of family support on psychosocial health among substance users with HIV/AIDS. Thirty-one African-American HIV-positive substance users ($M \pm SD$ age = 41 ± 8; 55% women) were recruited from clinics. Demographic, psychosocial, and behavioral data were collected via face-to-face interviews. The independent variable was family support. The dependent variables were HIV/AIDS knowledge, HIV attitude, HIV related physical symptoms, body image, depression, adjustment to illness, quality of life, perceived overall health, and medication adherence. Sixty-one percent of the participants reported receiving family support. T-tests revealed significant differences in HIV/AIDS knowledge ($t = -2.27$; $p < 0.03$), adjustment to HIV ($t = -3.92$; $p < 0.01$), perceived overall health ($t = 2.06$; $p < 0.05$) and a trend toward significance for HIV attitude ($t = -1.779$; $p = 0.09$). Participants who received family support scored better on HIV/AIDS knowledge (75% ± 15 vs. 63% ± 16), adjustment to illness (77.74 ± 11.05 vs. 58.75 ± 15.97), perceived overall health (3.05 ± .85 vs. 3.83 ± 1.27), and HIV attitude (32.63 ± 4.37 vs. 29.25 ± 6.22). Our current findings suggest family support is an important element in the psychological health of African-American substance users with HIV/AIDS. Psychosocial programs for this population may benefit from incorporating family support in interventions.

Solitude Rx

Alexandra Goldstein
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Farquhar College of Arts and Science

Faculty Advisors: **Dr. Chetachi Egwu and Dr. Weylin Sternglanz**

Abstract

"Solitude Rx" is a short film about a bereaved woman who is struggling to let go of the memory of her partner and the issues surrounding his death. In an effort to deal with her emotions, she resorts to moments of self-prescribed solitude, during which the truth about the past and her journey to forgiveness unfolds. The film is directed by Alexandra Goldstein. Other crew members include Flavia Peixoto, Jonathan Goldstein, Simone Rodriguez and Danny Angelone.

Surface Bacteria Distribution on Campus and the Potential Health Impacts of Exposure

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Farquhar College of Arts and Sciences

Faculty Advisor: **Dr. Paul Arena**

Abstract

Have you ever wondered what's in the air we breathe, on the tables we touch or on the things that help keep us clean? A previous pilot study conducted last year at NSU provided a glimpse into the presence of bacteria on campus. The goal of this study was to provide additional data on this important topic by increasing the number of sites sampled, the total number of replicates, as well as provide insight into the types of bacteria that are sampled. Gram staining procedures, as well as specific identification kits are planned on pure bacterial cultures to aid in identification. While the majority of bacteria are not harmful to our health, there are species which can be pathogenic. For instance, recent reports have indicated that MRSA, an antibiotic strain of *Staphylococcus*, has been spreading rapidly through several college campuses around the country. This pathogen, like many other bacterial species, can be spread between individuals via commonly used contaminated surfaces. The sample sites included in this study were found in restrooms, library computer labs, University Center gymnasium and food court, as well as campus classrooms. Preliminary results indicated most bacterial growth occurred in male and female restrooms.

Tax Havens: The Art of Avoidance

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Farquhar College of Arts and Sciences

Faculty Advisor: **Stephen Levitt**

Abstract

Tax Havens: The Art of Avoidance is a symposium based on the essay: "Evasive Maneuvers: Tax Havens, Tax Evasion, Tax Avoidance, and the Future of Tax Law in America." Rarely do intriguing or titillating issues of tax law present themselves and tax havens are no exception. This symposium looks to change this perception; tax havens are interesting! The symposium has two objectives (1) discuss and define what tax havens are and (2) illustrate the struggle the United States has in dealing with them.

The Attitudes and Roles of Indigenous people of Veracruz, Mexico towards Manatees

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Division of Math, Science and Technology
Farquhar College of Arts and Sciences

Faculty Advisor**: Dr. Eileen Smith Cavros**

Abstract

During a Nova Southeastern University sponsored investigation, principal investigators Dr. Edward Keith and Dr. Eileen M. Smith-Cavros will be conducting research entitled "CULTURAL AND HISTORICAL KNOWLEDGE OF MANATEES AT EL MANATí, VERACRUZ, MEXICO" with the assistance of undergraduate researchers (Sylvia Duluc-Silva and Christina Ledon). The fieldwork research will be conducted in order to obtain data regarding the history of the Veracruz manatees that appear to have played an important cultural role to the indigenous peoples of Veracruz. Once the basic interviews with the people are performed for the purposes of the primary research, the undergraduate researchers and the principal investigators will utilize the data, focusing on attitudes and roles of villagers toward manatees and whether these vary by sex of interviewee. The research will involve surveys, direct observation, and participant observation methods.

The Correlation of High Self-Esteem and Aggression in Adolescents

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Faculty Adviser: **Dr. Madhavi Menon**

Abstract

High self-esteem has frequently been regarded as a vital component in an adolescent's development, and has often been linked to positive adjustment outcomes such as academic achievement, positive peer relationships, lower internalizing and externalizing behaviors etc. Although paired with good aspects, recent research suggests that high self-esteem may also be linked to unfavorable outcomes such as aggression, avoidance of the mother, and other antisocial behaviors. This line of research suggests that people with high self-esteem are intolerant of threats to the self, and vigorously strive to maintain or restore their high sense of self-worth when it is threatened. Research has also suggested that perhaps this form of high self-esteem could be linked with narcissism. Narcissism is a personality disorder that involves grandiose view of self, an inflated sense of entitlement, and exploitative attitude towards others. Further, narcissism has often been associated with negative outcomes. We hypothesize that high self-esteem and narcissism might be associated with one another, and both might individually also be linked with antisocial behaviors (e.g., aggression), however, we hypothesize that the links between high self-esteem and aggression is moderated by narcissism.

The Effect of Diet-Induced Obesity and Metabolic Syndrome on the Structural Composition of Extraocular Muscle (EOM) in Ossabaw Pigs

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Faculty Sponsor: **Dr. Mark Jaffe**

Abstract

Ossabaw swine placed on a high fat/fructose (H) diet inclined toward developing obesity and metabolic syndrome, while the lean, active swine on the control (C) diet remained on the healthier end of the spectrum. There were a total of eight samples used: four from the H diet and four from the C diet. The purpose of this experiment was to test the hypothesis that diet-induced obesity and metabolic syndrome would cause an increase in intramyocellular lipid (IMCL) accumulation and change fiber type composition/fiber size in extraocular muscles (EOM) of Ossabaw swine. The rectus medius of the EOM was studied for each pig. Results indicated an increase in the CSA of the fast fibers and all the fibers combined, which was statistically significant and not due to chance. Although slow fibers did show a general increase in size in EOM of swine on H diet, it didn't reach the statistically significant level. This general increase in CSA of the fibers correlates with the presence of obesity and metabolic syndrome. Visual observation, which requires further quantitative measurements to be supported, showed that IMCL accumulation appeared to have decreased in the EOM of swine on the H diet. This is the opposite to previous findings in plantaris and soleus muscles of the same swine. This may be due to the distinctive nature of EOM in composition and function when compared with other types of skeletal muscle.

The Effect of Examination Stress on Tobacco Usage amongst Undergraduate Smokers

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Faculty Advisor: **Dr. Jaime L. Tartar**

Abstract

Previous studies have revealed that tobacco contains chemicals known to reduce stress and anxiety (Kenney, 2006). Indeed, smokers claim to use tobacco as a tool to enhance mood and improve task performance (Croghan, 2006). This is especially true of college students who have the highest amount of tobacco usage and whose tobacco use increases during academic examination periods (Oaten & Cheng, 2005). In this study, we will test the relationship between examination stress and levels of tobacco use. Sixty undergraduate smokers will be tested twice, one month prior to class examination (baseline) and then twenty minutes prior to the final examination (examination stress). They will be asked to complete three surveys: the Perceived Stress Scale, Gadzella's Student-life Stress Inventory (perceived stress), and a newly developed survey regarding their tobacco usage (dependent variable) within the last 3 days. We expect participants with an increased level of perceived stress to report higher levels of tobacco usage during the examination period. Findings from this study will provide an important first step in quantifying the levels of stress (as measured though self report) which lead to increased tobacco use in college students.

The Effects of Emotional Influences on Cognitive Processing

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Faculty Advisor: **Dr. Jaime L. Tartar**

Abstract

Although cognition and emotion are well researched topics, it is currently unclear how these two states influence each other. Here, we begin to untangle this complex relationship by assessing cognitive functioning while we simultaneously manipulate emotional state through the use of emotionally negative or neutral pictures. We hypothesize that the negative pictures will increase the demand on emotional resources, and as a consequence, limit cognitive processing. The electroencephalographic (EEG) event related brain potential (ERP) P3 component is used as the primary index of the influence of emotional processing on cognitive functioning. The results of this study will help to clarify the extent to which the level of cognitive performance is influenced by related emotional processing.

The Effects of Laughter on Attention

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Abstract

Laughter is a fundamental element of human behavior. Although numerous studies have demonstrated the benefits of laughter, the effect of laughter on attention is currently unknown. Attentional resources are required to provoke the reaction of laughter, therefore, in instances where a cognitive task occurs in parallel with humorous stimuli (i.e. attention is dually allocated), there is potentially a competition for attentional resources. This competition may result in reduced cognitive abilities during laughter. This study will utilize brain electroencephalographic (EEG) event related potentials (ERPs) to measure attentional processing during concomitant humorous exposure or non-humorous exposure. Specifically, we will utilize two videos previously shown to be 'humorous' or 'non-humorous. Here, we hypothesize that the P300 ERP measure will have a smaller amplitude and longer latency in participants in the humorous condition compared to participants in the non-humorous condition, indicating that during the humorous exposure, there is a potential competition for attentional demand. The results of this study will provide insight into the physiological aspects of human laughter and the processing capabilities of humans during humorous experiences.

The Effects of Mood Manipulation on the Recall of Neutral Stimulus

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Faculty Sponsor: **Dr. Weylin Sternglanz**

Abstract

According to research by Clark and Teasdale (1985), an individual's mood has a strong influence on memory of past events. Other studies have found that the experimental manipulation of mood via hypnosis (Bower, Monteiro & Gilligan, 1987) and music (Kihlstrom & Miranda, 2005,) affects memory, such that positive mood is more conducive to memory than negative mood. In the present research, I propose to test the effect of an experimental mood manipulation on recall of a neutral stimulus. Thirty participants will read a short emotionally neutral passage, after which they will be randomly assigned to watch either a happy or sad movie clip (to induce a happy or sad mood). Finally, all participants will be tested on their ability to recall the passage they read. I predict that participants in the happy mood condition will be more likely to recall the neutral stimulus than participants in the sad mood condition. Implications of these findings for research on memory and emotion will be discussed.

The Effects of the Herbal Enzyme Bromelain Against Breast Cancer Cell Line GI101A

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Farquhar College of Arts and Sciences

Faculty Advisors: **Dr. Appu Rathinavelu and Dr. Mark Jaffe**

Abstract

Bromelain is a proteinase derived from the stem of pineapple and has been studied for its anti-inflammatory, antithrombotic, and antimetastatic properties. Bromelain has also been known to significantly reduce local tumor growth and to raise the impaired cytotoxicity of monocytes in the immune system against tumor cells. The goal of this project is to advance the mechanistic knowledge of herbal remedies and to confirm the already known antimetastatic properties of Bromelain. The MTS assay method was used 24 hours after Bromelain treatment to detect the cell death. The data show that after 1 μM of Bromelain treatment, the population of GI101A cells is significantly reduced by up to 70%. Using the M30 Apoptosense assay, levels of the protein cytokeratin 18 (CK18) were measured to detect any apoptotic activity. After 10 μL of Bromelain treatment, CK18 levels increased and a large number of apoptotic cell bodies were observed. The antitumor effects of Bromelain are mainly involved in cancer cell division by the induction of apoptosis.

The Impact of Emotional Stress on Raynaud's Disease

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Faculty Sponsor: **Dr. Jaime L. Tartar**

Abstract

Raynaud's Disease is a condition that causes blood vessels to constrict resulting in discomfort in and discoloration of the hands and feet. Raynaud's Disease can occur in both a primary and secondary form. The primary form is idiopathic while the secondary form is comorbid with a second disease and is often classified as 'Raynaud's Phenomenon'. The sympathetic nervous system(SNS) mediates the vasoconstrictive responses to cold exposure and also emotional stress. In fact, the symptoms of Raynaud's Disease are often exaggerated during periods of emotional stress. However, the impact of emotional stress on the development and instances of Raynaud's Disease is not well understood. Here, synthesize the available literature on the impact of emotional stress on Raynaud's Disease and provide a model of how emotional stress, primarily through SNS activation, can exacerbate the symptoms of the disease.

The World Ages in Myth and Science

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Farquhar College of Arts and Sciences

Faculty Advisor: **Dr. James Doan**

Abstract

The concept that time is cyclical in nature pervades the beliefs of most cultures worldwide. Even those cultures who believe there is a definite beginning and apocalyptic end to the universe believe in a rebirth of some sort. Many cultures that lack even this belief have some notion of the "fall of man." This notion of an idyllic "golden age" in the past usually holds that humans in the remote past lived longer and more peacefully. Through successive ages, each worse than the last, humans have sunk to their present state. Eventually, humans may rise again to attain the golden age. Though most such beliefs may be nostalgic, psychological "wishful thinking," there may be firmer foundation for these beliefs. This paper analyzes the concept of "world ages" in ancient Sumerian, Judeo-Christian, Greek, Roman, Irish, Norse, Indian and Mayan accounts. In addition, it explores connections among these accounts and examines recent scholarship in the field. Finally, it asks whether there is a possible scientific basis for these views, such as a connection with the precession of the equinoxes, an astronomical cycle of the earth's axis lasting approximately 26,000 years.

Trashing the Past: Butch and Femme Labels in the Lesbian Community

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Faculty Sponsor: **Dr. Eileen Smith-Cavros**

Abstract

Since the 1970's, there has been an ongoing argument within the lesbian community over whether the genders butch and femme should be rejected or embraced. Some lesbian feminists and now queer theorists have gone to great lengths to convince lesbians to reject the labels of butch and femme. They claim that lesbians of the past were forced into these gender roles because of the necessity to conform to a heterosexist society. On the other hand, scholars of gay and lesbian cultural studies oppose the rejection of these genders based on the importance they have played in lesbian history. After a brief review of lesbian history and its relationship with the labels of butch and femme it is evident that modern day lesbians are not being forced into the binary roles of butch and femme. Therefore, it is not necessary to disparage and reject the genders set by lesbian predecessors. Rather, along with other emerging genders, these should be welcome within the community.

Using Qualitative Research Methods to Guide Cultural Adaptations to Evidence-Based Practices for Effective Discipline: An Illustration

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Faculty Sponsor: **Dr. Mindy Ma and Dr. Diana Formoso**

Abstract

Connections is a school-based, family focused intervention intended to enhance the family and school support available to ethnic minority and immigrant youth. In its development, we struggled with how to adapt evidence-based practices developed largely for European American families for the Latino, West Indian, and Haitian families served by the project. Ideally, cultural and contextual adaptations to EBPs are guided by research, but in our case, there was very little literature to guide our efforts. Furthermore, the immigrant population in South Florida continues to become more diverse, bringing with it ever-changing cultural customs and languages, which begs the question of how school-based interventions will respond to each new immigrant group as it arrives. In such situations, it can be adaptive to adopt a "learning how to learn" perspective (Trickett & Formoso, 2007), where interventionists seek to educate themselves on context, culture, strengths and needs of a community of interest and use this information to guide intervention efforts. This presentation describes how qualitative research methods can be used to assess parents' reactions to evidence-based practices. More specifically, we reviewed audiotapes of the effective discipline sessions and coded them for parents' endorsements, questions, concerns, and objections to the discipline skills taught in the program (e.g., praise, supervision, work first then play, removal of privileges, and time out). This information will be used to further enhance the cultural competence and contextual relevance of the intervention.

What is a Fractal?

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Abstract

What are fractals? Mathematicians like to make simple models to understand and advance the world around us. Common geometric objects, unfortunately, are often too simple to model the world we live in. A line as a model for a river, or a cone as a model for a mountain could be overly simplistic. Many objects in nature, such as broccoli, twigs and the venous and arterial system of a child's kidneys, exhibit a self-similar structure whose geometry can be modeled using "fractals." Fractals are much more than just pretty pictures. Fractals have many interesting and seemingly paradoxical properties. Such as a bounded curve of infinite length or a planar figure that contains no area. In addition, some fractals exhibit a broad array of symmetry which can be explained, and depicted, by a variety of dihedral and rotational groups. While the aesthetic appeal of fractals is captivating, the true beauty is in the mathematical theory behind them. In this presentation we will examine the mathematical theory behind fractals and depict a variety of real world applications.