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ExxonMobil

ExxonMobil was created in 1999 as the result of a merger between Exxon and Mobil, the two largest oil companies at the time. The two firms were both byproducts of the 1911 dissolution of John D. Rockefeller's Standard Oil. Jersey Standard (Exxon) initially made most of their profits through kerosene sales. By 1940 they produced other petrochemical products including aviation fuel and butyl, an artificial rubber used in consumer goods. Mobil followed a similar path of innovation and made important oil breakthroughs such as synthetic motor oils and gasoline refinement advances. ExxonMobil has kept to doing the same businesses on a larger scale. They are now one of the largest energy firms, as well as the largest oil refiner in the world (XOM, 2016).





Sector: **Basic Materials**
Industry: **Major Integrated Oil & Gas**
Full Time Employees: **73,500**

ABSTRACT

Filipino Americans' Sense of Belonging in a Predominantly Hispanic/Latino College Campus

By

Anna Katrina Alvarado

This mixed-method study seeks to examine how Filipino American college students perceive belonging in a predominantly Hispanic and Latino college campus. Previous and relevant research has primarily examined Filipino American students' sense of belonging on predominantly white institutions. Given their historical and cultural similarities with Hispanics and Latinos, Filipino Americans may perceive belonging differently in a campus surrounded by a culture more congruent with their own. This thesis attempts to fill a knowledge gap on existing discourse that examines the relationships between Filipino Americans and Hispanics/Latinos, specifically in higher education. Disaggregating Filipino American experiences as separate from the greater Asian American panethnicity is crucially important in order to address unique challenges in education, and empower all students of color in multicultural and multiethnic universities.

Untitled

A One Act
By

Emma Andreini

CHARACTERS

Luna, 21, a young woman battling anorexia and bulimia.

TIME

The present.

PLACE

Her household.

Avoundjian, Ani

Abstract

Three different projects proposing a paper-based microfluidic approach toward point-of-care (POC) diagnostics and batteries are discussed. The first project implements a chemical discipline known as chemometrics to optimize the parameters associated with a microfluidic paper-based analytical device (μPAD) on a glucose assay. The second project demonstrates an improved and inexpensive paper-based aluminum-air battery employing potassium hydroxide (KOH) as the electrolyte with sufficient energy to power light-emitting diodes (LEDs), a flashlight, a glucometer, and a pregnancy test. The final project demonstrates a rechargeable paper-based zinc battery with a layer-by-layer (LBL) assembly, which is significantly smaller and consumes less electrolyte compared to the previously mentioned aluminum-air batteries.

Objectives

The outputs that are expected from these paper microfluidic studies are 1) to use a chemometrics-based computational platform to optimize a glucose assay on a μPAD 2) to fabricate an optimized paper-based aluminum-air battery while generating sufficient energy to power small devices and 3) to demonstrate a facile and cost effective method of fabricating a paper-based zinc-nickel battery, while optimizing the battery platform, electrolyte, and electrode materials as well as providing the device with a longer life cycle.

The first project will incorporate chemometrics towards the optimization of the colorimetric response of a standard glucose assay. The chip consists of three regions: inlets, detection channel, and waste reservoir. The colorimetric response will be read at the halfway mark of the detection channel. Four factors will be varied in order to optimize the colorimetric response: length of the detection channel, width of the detection channel, volume of samples, and glucose concentration. A 2^k factorial design is first used and characterized through analysis of

variance (ANOVA) and normal probability plots to determine which factors are significant and which factors interact with each other. Optimization of these factors can be further carried out using a central composite design (CCD). The optimized factors will be obtained and tested. Finally, the experimental response will be compared to the model response to determine the efficacy of chemometrics.

The second project reports on a facile and cost effective method of fabricating a paper-based aluminum-air flow battery. The first goal includes determining the appropriate electrolyte (KOH vs NaOH) and cathode material. The next goal includes varying the size of the battery itself followed by variations in the sizes of the anode and cathode, respectively. The optimal concentration is then determined by testing a range of concentrations of electrolyte. Small devices such as LEDs and diagnostic devices, which require a minimum of 1.5-3V to be powered can be powered through these batteries. In fact, three batteries in series will generate enough power to operate an LED over a wide range of wavelengths, a flashlight, as well as a pregnancy test and glucometer. The final goal of this project will be to run an exhaustion test to determine how long the batteries last.

The last project employs paper microfluidics to demonstrate an inexpensive paper-based zinc nickel battery. The first step of the project involves determination of a platform, which consists of a lamination assembly or an LBL assembly. Currently, the LBL assembly has proven to be successful compared to the lamination assembly. Future goals including varying the membrane as well as electrolyte concentration, and amount of electrode coating. Furthermore, we also want to generate sufficient energy from these batteries to power small devices. Also, since zinc-nickel batteries are rechargeable, another goal would be to attempt recharging them, while extending the life cycle of the batteries themselves.

Bedoyan, Christian

Chipotle Mexican Grill (CMG)

Chipotle was founded in 1993 by Steve Ellis, today's Co-CEO. Ellis opened up his first Chipotle in Denver, Colorado with an $80,000 given to him from his father. He initially opened up the restaurant to generate money so he could open up a full scale restaurant. Before he knew it, Chipotle grew and the more stores he opened the more success he encountered. By 1998, McDonald's invested $350,000 in Chipotle. After seven years together Ellis realized that their companies were very different from each other; Ellis paid McDonald's $670 million to buy his company back.

Chipotle (symbol: CMG) went public on January 26, 2006. CMG is traded in the NYSE. Chipotle has been successful thus far in the market and the executives have made wise decisions to allow the company to grow. Today, Chipotle has planted many branches across the United States and consumers & investors have bought into the idea of "healthy burritos."

ABSTRACT

First Language Use During an English Sentence Repetition Task by Spanish-speaking Preschoolers with and without Primary Language Impairment in the Initial Stages of English Learning

By

María De La Luz Ortiz Campos

This study analyzes how Spanish-speaking preschoolers with and without primary language impairment (PLI), who are in the early stages of English acquisition, use their first language during English sentence repetition tasks (ESRTs). Presumably, this is the first study to analyze this topic and adds to the growing body of research regarding bilingualism. This investigation manually quantifies differences in the frequency and types of Spanish responses (code-switches with phrases, single word code-switches and translations) produced by the PLI and the typically developing language (TDL) groups. Code-switching is defined as utilizing elements from two languages in the same sentence. Results indicate that the PLI group produced more responses with Spanish, code-switches, code-switches with phrases, and translations; they produced less single word code-switches. These results are consistent with research showing PLI causing deficits in semantic skills such as word learning and word retrieval. Both groups showed comprehension and metalinguistic skills by preserving meaning from the original phrase and translating it. This is important because it speaks to a linguistic ability of young bilingual individuals that is not captured in English assessments. Further research can replicate the study with more participants.

ABSTRACT

Federal Immigration Laws and The Role of the Courts

By

Rolando Chávez Carranza

This article will analyze the changes in immigration policies in the United States. There will be a focus on the establishment, and implementation of federal immigration laws. We will see that U.S. policies have been exclusive towards non-white immigrants and inclusive to white immigrants. It is important to understand that the laws that are referred to as exclusionary are laws that clearly exclude certain groups of immigrants, mostly nonwhite immigrants, from entering the country. Those referred to as inclusive are laws that allow immigration, which have usually favored white immigrants. Questions remain about the extent to which our federal immigration laws are exclusive today. Further, there is an exploration of executive power over immigration, including questions about judicial review in deportation cases. Today, we live in a time when immigration laws are being enforced by the Department of Homeland Security (DHS), and the Immigration and Customs Enforcement (ICE) in conjunction with some state and local police departments. Proponents of the new policies insist that deportations are focused on those that have committed serious crimes, and they are necessary for the security of our citizens. Opponents suggest that these policies are racist and discriminatory, excluding people based on race, religion, and country of origin without adequate justification. We will see how the courts have stepped in to prevent the abuse of power, but we will also see some cases where the courts have allowed the abuse of immigrant rights. This study will look into the changes in immigration policies, executive power, the role of the courts in immigration policies, and how this is affecting immigrant communities in the United States.

ABSTRACT

Unclaimed Souls:

Homeless Deaths and Social Service Utilization in Los Angeles County

By

William Michael Cooper

Research in the area of homelessness says that living on the streets is a contributing factor to the early onset of chronic, treatable diseases, which in turn results in the premature death of the members of this population (O'Toole & Kane, 2013). It is the intention of this current study to acquire exploratory information about the deceased homeless population in Los Angeles County. The researchers asked for the following demographic data from the County Medical Examiner; name of the homeless deceased, gender, ethnicity, marital status if known, age, date of birth if known, cause of death, manner of death, date of death, and location of death. The dataset that was provided contained information on deaths reported to the Coroner's Office from January 1, 2001 until June 30, 2016 and includes 6,908 people. After collection of the data and coding, the data will be entered into SPSS (SPSS, 2013) for data analysis. Standard data-screening methods will be employed, including testing and analysis of assumptions from the data collected. The demographic variables identified will be examined through data analysis within and across group comparisons tests such as ANOVA, and Multiple Linear Regression analysis.

The aim of this research is to provide better identification for receiving proper treatment through appropriate medical interventions and follow-up, thereby decreasing the likelihood of premature mortality.

Keywords: homeless, homelessness, mortality, Los Angeles, Social Work

Abstract

Breast cancer in the United States is one of the most common cancers in women. Improved screening, early identification, and advanced treatment decreased mortality rates and rates are expected to decrease by 19.6% in 2020 (Weir 2015). Despite measurable progress in detecting and treating cancer, progress has not been made for women of different races, socioeconomic status, availability/ access to quality care, and risk level.

This thesis will study Hispanic women, age 20 to 55, receiving breast screenings at the C.G. De La Hoya Cancer Center at a local Los Angeles community hospital. This study will address the advantages and disadvantages of current screening guidelines and techniques, and introduce a new modality. As a digital breast examination screening tool, SureTouch™ can add clinical significance to the focused population with special attention to women with dense breast tissue. Preliminary data of the pilot population of 200 women will compare the sensitivity and specificity of SureTouch™ findings to those of manual clinical breast examination, mammography, and ultrasound imaging.

Keywords: breast cancer, breast density, screening

DeNamur,Julia

COMPANY PROFILE

Union Pacific Rail (UP) has a longstanding history in the United States. July 1, 1862 President Lincoln chartered UP with the signing of the Pacific Railway Act of 1862. As tasked by the act, it began to connect the east and west with rail making passenger travel to the west possible. Since then they have been growing as an industry leader[1]. The Union Pacific Corporation is a holdings company established in 1969 with UP as the principal operating company. On January 13th 1978[2] Union Pacific Corporation had an Initial Public Offering as UNP. After going public there were many mergers and acquisitions within the company. By 1995 they had merged with Missouri Pacific, Western Pacific, Chicago & North Western Railways, and Southern Pacific. Today Union Pacific Railroad continues as principal operating company with routes connecting the Pacific and Gulf Coast ports with the Western United States.

Sector: Industrials
Industry: Transportation & Logistics
Sub-industry: Rail Freight



ABSTRACT

FLOWERING TRANSITION AND GENOME EXPRESSION PATTERNS IN *Arabidopsis thaliana* FT AND LTP 3/4 DOUBLE MUTANT

By

Brenda Eap

Flowering Locus T (FT) is a protein that is made in leaves and travels through plasmodesmata to the shoot apical meristem to induce flowering in Arabidopsis. The protein harbors a lipid binding domain, suggesting that the real flowering signal may in fact be a lipid-derived molecule. Previous studies done in our laboratory have suggested that leaf 13-lipoxygenase (LOX) is responsible for the synthesis for an oxylipin in leaves at the floral transition, leading to a potential lipid signal. We showed that a decline of ascorbate peroxidase (APx) and increase of H_2O_2 initiates an oxylipin pathway through plastid LOX activation during the floral transition. This suggests that the production of oxylipin signals is operative either locally within the leaf or at a distance following transport. Thus, such flowering-specific oxylipin signals may be carried by a lipid transfer protein (LTP) similar to the FT protein, the presumed "flowering hormone". We found an induction of synthesis of two such LTPs in leaves at the floral transition. In our laboratory, we generated knockdown mutants of these LTPs in *Arabidopsis thaliana.* The RNAi knockdown mutants showed a longer lifespan and perennial phenotype compared to the wild-type. After senescence, these mutant plants resurrected, forming new basal rosettes, suggesting that the LTPs are also involved in meristem arrest. To better understand the function of FT and our LTPs in the floral transition, we generated a double mutant expecting a further delay in flowering. Indeed, our double mutant plants exhibited a

longer delay in flowering, thus this delay suggests that the LTP and FT are both carriers of a lipid that is associated with flowering in Arabidopsis. Our aim is to quantitatively detect expression levels of floral markers through creation of complementary DNA transcripts from RNA. We expect certain flowering genes to be up-regulated and down-regulated at different developmental stages in the plant. The results of this study would give insight to the importance of LTPs in development, meristem arrest, and overall, the lipid that binds to the LTP.

ABSTRACT

Amazons: The Evolution of American Gender Roles

By

Emily A. Franco

This thesis examines the how American gender roles have changed from 1900 to present by examining Amazonian texts. These texts are shaped by through the cultural process and reflect the issues that women faced at the time these texts were created. Since many feminist authors in the early twentieth century were influenced by Darwin, I examine to what extent these ideas influence the texts as time passes. I examine both historical and contemporary representations of amazons. I also analyze how amazons of color are represented differently in these texts.

ABSTRACT

Signal Quality Monitoring

By

Andrew Matthew Garcia

In collaboration with AT&T and the Cal State LA computer science department, this project seeks to improve AT&T's workflow efficiency with regards to troubleshooting machinery anomalies that develop at AT&T's ground stations. AT&T already has anomaly detection software in place. When an anomaly occurs, the error displays on the screens of employees' monitors and a phone call is made to a respective technician to address the issue. However, there are scenarios in which a technician is absent for various reasons and this leads to significant time delays before proper action is taken. There is also the burden of additional time needed to repair machinery once a technician has been properly informed. Time is precious and AT&T can lose customers and money with every minute that passes during a service disruption. A prototype version of the app has been installed on the phones of AT&T technicians for assessment of workflow efficiency. No relevant feedback has been returned yet. Nonetheless, the end goal of this application is to improve the efficiency and reliability of AT&T's operations. By utilizing a mobile platform, AT&T is joining other companies in using mobile apps to improve workflow efficiency and improving customer relations.

ABSTRACT

Determination of Targeted Essential Cellular Proteins for a Set of

Antimicrobial Compounds via TIPA II

By

Jeanie M. Garcia

Multidrug resistant, hospital-borne infectious microbes (nosocomial pathogens), such as the ESKAPE pathogens, are a prevalent threat to public health globally due to the lack of effective antibiotics to combat them. Antibiotics exert their activity by targeting and inhibiting the function of essential cellular proteins which are necessary for bacterial growth and survival. It is thus pertinent to discover novel antibiotics which target new essential proteins in order to treat nosocomial infections caused by multidrug resistant pathogens. Target identification is still a bottleneck in the modern antibiotic drug discovery. The objective of this study is to validate the Target Identification Platform for Antibacterials II system by determining the cellular protein targets of a set of known, and synthesized, antimicrobial compounds. Successful identification of the FabI target of known compounds triclosan and diazaborine, as well as the FolA target of trimethoprim was achieved in this study. Moreover, the FabI target was identified for boron heterocyclic compound 22. The results of this study demonstrates the usefulness of this approach in characterizing the protein targets of antimicrobial compounds. Antimicrobial compounds with novel targets may be further investigated, optimized, and developed as therapeutics for use in the clinical setting against multidrug resistant pathogens.

Abstract

Based on research supporting that fathers play an important role in their child's development, including into adulthood, associations between having an absent father, self-esteem, and attachment style in adulthood were examined. A sample of 212 undergraduate students completed measures of parental conflict, adult attachment, self-esteem, and social desirability. Contrary to hypotheses, results showed no significant differences in psychological outcomes (self-esteem and attachment style) between young adults with absent and and those with present fathers. Results did show an association between high parental marital conflict and avoidant attachment style in adulthood. Participants whose parents experienced high marital conflict and stayed married scored significantly higher on avoidant attachment than those whose parents experienced high parental conflict and divorced.

Unmanned Aerial Vehicle- Systems Engineering and Payloads

Senior Design 2016-2017

Student Team Members:

Ryan Valenzuela-Avila, Dong Seung (David) Han, Royal Huff, and Arbi Tahmasian

Technical Review: Theodore Nye

Advisors: Prof. Shaurya Agarwal and Chris Purcell

ABSTRACT

Responding to emergency situations is a vital function of the emergency management community in Los Angeles and Ventura County. The primary mission when responding to emergency incidents is life safety, followed by property and environment safety; all of these situations require cooperation between agencies and resources. The key to life, property, and environmental safety is often incident surveillance. Unmanned aerial systems (UAS), have performed disaster response missions in the military in the past, such as: overhead damage assessments, reconnaissance, and missing person searches. However, with the advancement of UAS, there is an opportunity to perform many conventional aerial missions in a safer, more expeditious, and cost-effective manner in the civilian world. This thesis explores the introduction of UAS for disaster response missions specifically for emergency response authorities within the Los Angeles and Ventura Counties, namely: law enforcement, fire department, emergency medical service and hazmat units. The UAS system must be plug and play with critical agency equipment, or payloads, such as smoke canisters, explosives, chemical sniffers, and an array of data collection cameras. An assembly of four teams of electrical, mechanical, and computer engineers shall develop the overall system architecture, flight operation concept, mission parameters, and requirements; the team shall determine the most feasible payload sensor array and equipment requirements for handling/gripping/attaching/controlling the payload. On an individual team level, the system engineering and payload team shall defend the importance of the UAS to emergency responders through the mission requirements, payload requirements, and existing or sensors shall be innovated by the payload team. Lastly, the team shall acquire and test the various payload concepts with all four teams. Liaisons with Los Angeles Police, Fire, emergency medical service, and hazmat departments have partnered with payload team to review traditional disaster response missions and opportunities for the utilization of the UAS; a comparison of trade UAS programs; and a review of barriers to implementation. Lastly, this thesis provides a strategic plan to assist an objective based mission for the next five to ten years, and the feasibility of a UAS program according to the emergency department needs. All corresponding data and analysis is the directive of personal work, disassociated from the rest of the work the team collaborated on as a whole.

ABSTRACT

Consequences of Smartphone Use on Social Interaction

by

Anthony Huy Đức Huỳnh

My project is a two-tier literature review in which I analyze the effects of smartphone use on face-to-face interaction as well as its relation to theoretical frameworks and case studies. Specifically, Bowlby's Attachment Theory and the ecological/systems framework (also known as Person-in-Environment) are used to analyze correlations to the use of smartphones. The use of smartphones is becoming more prevalent across various populations in society, yet research on this matter is slow to keep up with the development of new technology and programs which people use daily. Preliminary analyses show the smartphone can be a transitional object, but instead of being abandoned by a certain age, it is being used without stop from childhood into adulthood. It has also been found that the smartphone insinuates itself into places like home, work, and school. Additional findings demonstrate: 1) that increased use of a smartphone in everyday life can hinder the experiences a person has when physically placed in the environment; and 2) the device takes on an emotional meaning to a point where its absence can invoke panic in its owner. The awareness of the potential hazards to smartphones, however, presents opportunities for future research to look into ways society can integrate smartphones into their daily lives while maintaining the meaningful qualities of face-to-face interaction and interpersonal relationships.

ABSTRACT

Forensic science has become increasingly integrated into the current legal system. Physical evidence collected and analyzed using scientific methodologies have been crucial to defining the line between guilt and innocence. The greater reliance on forensic science has allowed unfit professionals to introduce methods that are not fully accepted by the greater scientific community. This project was designed to isolate forensic science contributions to wrongful convictions in the U.S. Numerous case studies were collected and analyzed using existing databases based on exonerations to demonstrate the existing flaws in the legal system that led to these court outcomes. The cases compiled provided examples of lying under oath, the use of misleading evidence, and the application of scientific techniques that were not accredited methods, for use in the conviction of innocent citizens. The stories of these individuals demonstrate ways to improve the legal system to prevent future mistakes of this nature.

Abstract

As urbanization increases, the amount of natural land and natural ecosystems decreases. As a result, bird habitats are decreasing at an alarming rate. This project aims to quantify the correlation between increased housing development and avian abundance among different bird habitat guilds throughout coastal regions of California. I used data obtained from North American Breeding Bird Survey routes and housing density from the U.S. Census. I used the R statistical program to determine the relationship between housing density and bird abundance. To focus my analysis, I separated avian communities into the following four habitat guilds based on their preferred breeding habitat: grassland, shrubland, forest-woodland, synanthropes (urban birds). I created these groupings because I hypothesized that birds affiliated with the natural grassland, shrubland, and forest-woodland habitats would be negatively related with increased housing density over time, whereas urban birds would be positively related. The abundance of shrubland birds were found to have a strong negative correlation with increased housing density, which became progressively more negative from 1970 to 2010 as new houses were built. There were no statistically significant correlations for grassland and forest-woodland bird guild abundances and increased housing density. However, urban bird abundance was positively correlated with increased housing density. Our results highlight the losses of shrubland birds from the Californian avian community and suggest that as more houses are built, avian communities will be increasingly dominated by urban affiliated birds. Government policies and educational steps are highly recommended to: (1) regulate housing development in sensitive shrub habitat, and (2) increase public awareness of the ecological necessity of biodiversity.

ABSTRACT

Accuracy of Online Hearing Test Results in Reference to Standard Audiometry and Effects of Using In-Ear Headphones and Supra-Aural Headphones

By

Valerie Kun

Audiologists are hearing healthcare professionals responsible for the diagnosis, treatment, and management of hearing and balance disorders. The presence of online hearing tests provides individuals with the opportunity to obtain hearing test results without a professional or regulated procedures. Thus, the purpose of this comparative study of older adult subjects is to evaluate the accuracy of online hearing test results across two different headphones in reference to warble tone audiometry. The online hearing test evaluated is found on hearingtest.online and employs warble tone signals, which led to the administration of warble tone audiometry instead of pure-tone audiometry. Sixteen participants (M = 62.56) took three hearing tests, 1) a standard clinical hearing test with TDH-39s, 2) a self-administered online hearing test with supra-aural headphones, and 3) the same online hearing test with in-ear headphones. Two sets of the participants' hearing thresholds were evaluated in this study. The first set compared warble-tone audiometry results to an online hearing test results when taken with supra-aural headphones. The second set involved comparing the online hearing test results when taken separately with supra-aural headphones and in-ear headphones. Comparison of hearing threshold results for both hearing test comparisons revealed significant differences in a majority of the frequencies across both ears. The findings of this study indicate that this online hearing test is not an accurate identifier of hearing loss and produces inconsistent results when taken with different headphones.

ABSTRACT

Levels of Variation Across and Within Geographically Isolated Populations of *Branchinecta conservatio* in Vernal Pools in California

By

Elizabeth Ann Lechtholz-Zey

The conservancy fairy shrimp (*Branchinecta conservatio*) is endemic to California and plays a very important ecological role. It inhabits vernal pools, but its habitat is being threatened by human activities such as urban development. Fairy shrimp are a vital food source during the migration of different animal species, so understanding what affects the species' habitat is crucial to improve current and future conservation efforts. I determined the relationships between genetic variation within populations of *B. conservatio* and several pool parameters—pool size, degree of isolation, and location—by examining the frequency and distribution of single nucleotide polymorphisms (SNPs) across 33 individuals with double digest RAD sequencing (ddRADseq). After performing several filtering steps to remove low quality reads and samples, I identified 1,384 loci and estimated within-pool heterozygosity and genetic differentiation among each of the seven pools. I found that pool size and heterozygosity were not significantly correlated, but that there was a significant positive correlation between geographic distance and F_{ST} (isolation by distance). A principal components analysis and neighbor-joining tree showed that there was significant genetic isolation between pools located in the San Joaquin Valley and the Sacramento Valley. This information is critical to improving current conservation efforts and creating new ones to prevent this organism's extinction.

ABSTRACT

The Effect of Nutritional Conditions, Temperature, and Farnesol on Biofilm Formation of *Candida albicans* Yeast Casein Kinase 2 Deletion Mutant

By

Karl Benjamin Liboro

Candida albicans is an opportunistic fungus that causes severe infections in the immunocompromised. *Candida* infections are difficult to treat because of its ability to form biofilms on mucosal surfaces and on medical devices. Understanding the mechanisms by which *C. albicans* governs biofilm formation is therefore important for developing new therapeutic strategies. Prior studies suggest that *YCK2* is linked to a variety of biofilm regulating factors such as nutritional condition and quorum-sensing molecules (QSMs). Deletion of the *YCK2* gene leads to altered morphology and enhanced biofilm formation, but the exact mechanisms by which *YCK2* regulates biofilm formation are still unknown. My results show that the *YCK2* deletion mutant forms increased levels of biofilm in non-biofilm inducing conditions, indicating that *YCK2* is needed for *C. albicans* to respond normally to nutritional conditions as well as temperature. However, the test with the QSM farnesol was inconclusive. Further studies will be needed to establish the exact location of *YCK2* in these pathways. *YCK2* aside, results show that YPGly is biofilm-inhibiting. Results also suggest that the combination of carbohydrate source and temperature have a large impact on biofilm induction, though further studies are needed to more deeply compare biofilm inducing factors such as media composition and temperature. The insight provided by this study may prove useful in standardizing future biofilm assays.

FACTORY

CHURCH LIEU

ABSTRACT: *FACTORY* is a collection of excerpts from a science fiction novel which explores the philosophically-engaged history of cyberpunk and its derivative genres. The project combines aspects of both my undergraduate fields of study – philosophy and creative writing – in the hopes of tapping into the special capacity of speculative fiction for philosophical inquiry. I do this by examining common cyberpunk themes and tropes, evaluating their philosophical content, and then updating them to better reflect modern technology and philosophy. My three goals with *FACTORY* are 1) to explore the effects of high-technology capitalism, and potential forms of struggle against them, 2) to use the postmodern heritage of the cyberpunk genre to inform the future of social theory, and 3) to be fun to read.

PLOT: Freelance techie Bee, after a fateful encounter with a hacker, is drawn into an underworld of digital subterfuge and counter-surveillance in a near-future Silicon Valley. She must carefully navigate a treacherous landscape of global corporate conspiracy, neo-fascist cyber terrorists, and virtual insurrection.

ABSTRACT

Media Use and the Effects of Viewing Alcohol Content

on Social Norms and the Desire to Consume Alcohol among Emerging Adults

By

Joanne M. Lightfoot

In recent years emerging adults have been exposed to an increased amount of alcohol-related content through expanding social media platforms. The focus of this study was to determine whether viewing alcohol content and time spent using social media impacts the desire to consume alcohol and perceived norms regarding drinking behaviors. Participants (304 male and female undergraduate students) viewed experimenter-manipulated Instagram posts containing alcohol or no-alcohol. Then they completed three questionnaires to assess their desire to consume alcohol, their alcohol-related social norms, and their overall use of social media. Analyses yielded a main effect for social media use on the desire to consume alcohol. The results suggest that higher use of social media is a factor in college students' drinking behaviors. The study findings add to our understanding of the impact media has on this demographic and suggests that social media use, like other forms of media, may relate to behavior. Future research should explore how other factors such as prior alcohol use and school belonging may interact with social media use to impact college students' norms about drinking and actual drinking behaviors.

ABSTRACT

Assessing General Chemistry Students' Ability to Translate Between Multiple Representations

By

Xiting Lin

Translating between scientific representations is crucial to demonstrating expert understanding of science concepts; however, such translations are difficult for science novices (e.g., students). In chemistry, for example, students can balance chemical equations without understanding the molecules or reactions that they represent. In the chemistry triplet model of chemistry education, translations can occur between macroscale, nanoscale, and symbolic representations. Previous studies have shown that translating between the three representations in the chemistry triplet increases expert-like thinking. In our research, we investigated asymmetries in students' ability to translate between representations in the chemistry triplet. In one study, undergraduate students enrolled in a general chemistry course were asked translation questions in a 3 X 2, representation (macroscale, nanoscale, and symbolic) x direction (e.g., nano-to-macro vs. macro- to-nano), ANOVA within-subjects design. Students struggled with translations involving nanoscale representations (e.g., circles representing atoms) relative to those involving symbols (e.g., equations) and macroscale phenomena (e.g., reactions and substances at the human scale). In a subsequent study, we investigated chemistry students' understanding of the nanoscale by asking them to interpret nanoscale phenomena described with words and represented with pictures. Undergraduate students enrolled in a first general chemistry course were asked translation questions in a 2 X 2 X

2, representation x direction x modality (word vs. picture), ANOVA within-subjects design. Students performed significantly better when the nanoscale was described in words than when depicted with pictures. Developing and studying approaches to teaching and assessing chemistry understanding of the atoms and molecules in the nanoscale may be essential for promoting a meaningful understanding of chemistry.

Abstract

US citizens may not have the sufficient legal protection when working abroad within the Middle East. The difference in culture is significant between the US and Middle East countries. Shari'a law, or Islamic law, is a part of cultural norms. Shari'a law is known for their discriminatory views on women. Though corporations claim they have protections and corporate codes to protect the rights of their employees, the fact of the matter is that corporations have little power over disputes when they happen overseas, especially in a country that has substantially different cultural norms and laws. It is essential for women to know what their legal protections are when working for a US multinational corporation in the Middle East, as there are plenty of loopholes that corporations don't inform their workers about.

There are many barriers for United States women when they are sent to work in countries of the Middle East. There is a significant lack of work opportunities for women, especially if they are single, as some countries within the Middle East do not allow work permits to women unless they have a spouse (Naithani). There are also problems within the workplace when women acquire leadership positions, leading to hostile work environments, as the social attitude within the Middle East make it difficult for women to gain respect from their peers (Naithani). There are also certain laws that prohibit women to work with men in certain fields and though Title VII technically protects women from the United States, there is nothing the United States government can do to help women to get these positions (Mayer).

This paper will study and analyze the progression of legal history involving worker gender protections abroad, with a focus within the Middle East, due to their unique social values of gender. It will study the evolution of legislation that regard worker protection of women from the United States, such as Title VII. It will focus on the implications of the amendment of Title

VII within Civil Rights Act of 1991and the impacts it made on US worker protections in the Middle East. The paper will include cases from countries in the Middle East region; Bahrain, Cyprus, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, and Yemen. It will also analyze cases from other countries outside of the United States, and apply these cases to hypothetical situations within the Middle East by analogy.

Abstract

Within the Arthurian Legend there are many iconic male characters, but few iconic female characters. The few females represented within the legend are presented villainously. Female characters are stripped of their dignity and because of this the men's power within the works is increased, but the question is why? Focusing on the character Morgan le Fay the transformations and societal influences are very evident. Starting from her initial appearance in *La Vita Merlini*, in which she is a powerful healer and Queen, to her appearances later on in novels such as, *Le Morte d' Arthur*. She becomes a villain, and is much to blame for the fall of King Arthur's kingdom. In present-day representations of Morgan le Fay female authors have now represented her in a positive way. Her original power is restored in present-day literature, but what new factors helped this change to come about? The answer lies in history, and as the representation of Morgan le Fay undergoes change so do women. Women have lost their voice and they have gained it, and so has Morgan le Fay. Literature reflects society, and in finding the connection between the two the answer as to why the representation of Morgan le Fay is reversed negatively and positively.

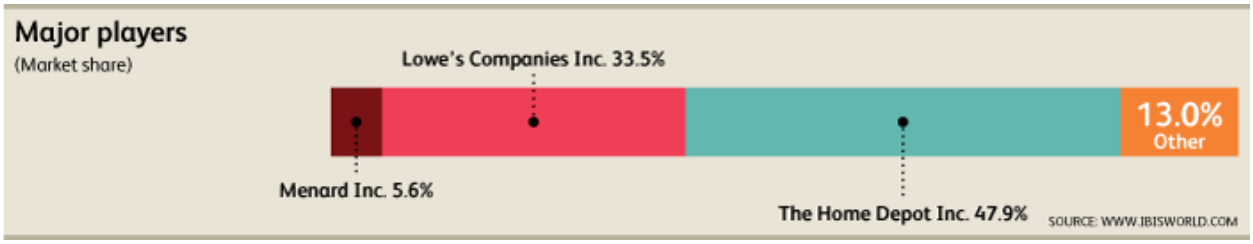
Abstract

Withania somnifera, referred to as Ashwaghanda, is a South Asian herb that is commonly used in Ayurvedic medicine. However, it could be extended to clinical use as repeated studies have shown it possesses anti-inflammatory, antitumor, anti-stress, antioxidant, immunomodulatory, and hepatoprotective properties. The project uses both behavioral and tissue tests in Sprague Dawley rats to test Ashwagandha's anti-stress, memory-enhancing, and cognition-preservative effects through its activity in the GABA A receptor of the brain, in addition to exercise, whole food diet, and a combination treatment. The rats went through a series of behavioral tests, including the Novel Object Recognition (NOR) test, and brain tissue examination using a Western Blot Analysis—a process used to detect proteins—to analyze the presence of the Brain Derived Neurotrophic Factor (BDNF) protein that is associated with neuronal growth. The behavioral data from the NOR suggests that Ashwaghanda possesses adaptogenic/cognition-preservative effects. The Western Blot analysis shows that the highest BDNF expression was found in subjects that were only treated with Ashwaghanda. According to the correlational study, there is a moderate correlation (R_2= 0.3642) between the behavioral data and BDNF expression when all five groups are taken into consideration. However, when the running group is excluded from the correlational study, there is a significant correlation between the behavioral data and BDNF expression (R_2 > 0.99).

Market and Industry Analysis

Company profile

The Home Depot is a home improvement retailer who provides its products to 3 different categories of people: those who wish to do their projects themselves, those who will hire others to do projects for them, and professionals who will use the products in their own line of work. It is currently trading on the New York Stock Exchange with the stock ticker HD. Because of Home Depot's market cap of about $157 billion, they would be considered a large-cap stock. Additionally, they are one of the 30 companies that are used for the Dow Jones Industrial Average, meaning they are among the top 30 stocks that are representative of the market. Therfore, it would be expected for the stock's beta to be close to 1 when it is calculated in later sections. There are currently over 2,200 stores in the United States and neighboring territories. It is also currently the largest home improvement retailer[1], making it the leader in its sub-industry.



[1] http://www.reuters.com/finance/stocks/companyProfile?symbol=HD

SCHOOL FOOD WASTE PREVENTION IDEAS

Abstract

According to the Food and Agriculture Organization of the United Nations, approximately one-third of all food produced for human consumption is lost or wasted. (FAO, 2016). public

Keywords: waste prevention; share table; donation; compostfood systems, food law, food insecurity, food recovery

ACKNOWLEDGMENTS

For my family, friends, and peers.
May we work together to reduce waste and solve hunger.

ABSTRACT

Mitochondrial Determinants of Redox Homeostasis in A-549 Lung Adenocarcinoma Cells

By

Elizabeth T Masciale

Mitochondria are integral for cellular maintenance of homeostasis in response to cellular metabolic and oxidative stresses. In this capacity, mitochondria provide cells with critical metabolic flexibility and significant capacity to buffer cellular redox status. Cancer cells are commonly exposed to high levels of oxidative stress due to their rapid proliferation. Therefore, the cells must find ways to counteract this oxidative stress. It is currently understood that both normal and altered mitochondrial function are essential for malignant tumors to maintain their oncogenic potential. While some mitochondrial functions which support cancer biology are known, the organelle as a whole remains to be systematically characterized for its role in cancer biology. The goal of our research is to determine whether the mitochondrial proteins responsible for maintaining cellular homeostasis in response to various stresses are necessary for cancer cell survival. To this end, we have developed strategies to measure cellular parameters associated with homeostasis, including cell viability and reactive oxygen species levels. Following this optimization, we performed an siRNA screen of 54 known mitochondrial regulators of oxidative stress management. By screening this library, we identified 14 mitochondrial redox proteins that were essential for cellular viability and 9 genes that were critical to maintain homeostatic ROS levels. Comparing these two screens revealed that the thioredoxin redox pathway may be critical for A-549 lung cancer cell survival. By performing future screens in both normal and cancer cells, our results will identify potential vulnerabilities in cancer-associated homeostatic and survival mechanisms.

ABSTRACT

The Effect of UV Light on Histone H4 Arginine 3 Methylation

By

Chase Ryker Musson

Stressors such as UV light (UVB) affect how much proteins will become post-translationally modified. Histone modifications regulate gene expression by altering their structural conformation, thereby reconfiguring chromatin and increasing or decreasing their steric accessibility to transcription factors. In histone H4, arginine 3 (H4R3) becomes methylated to regulate RNA gene transcription during cell development. H4R3 methylation is mediated by Protein Arginine Methyltransferase 1, one protein in a class of enzymes that are responsible for the methylation of the guanidino nitrogen atoms on arginine amino acids. PRMT1 is implicated (along with p300, a lysine acetyltransferase) in a signal transduction pathway that is responsible for the production and function of p53, a tumor suppressor. There is also evidence that exposure to ultraviolet light decreases the activity of PRMT1, which suggests a direct mechanism for the activation of p53 in response to UV irradiation. *In vitro* studies confirmed that histone H4 is methylated by PRMT1 at arginine 3. The effects of UV light were assessed by directly measuring the amount of methylation on arginine 3 of histone H4 after irradiation with UV light. *In vitro* methylation reactions were treated with ultraviolet light (~312 nm), and the amount of methylation was measured by immunoblot. We hypothesized that methylation of arginine 3 at histone H4 would decrease in response to UV light and found that there was not a substantial change in methylation in response to 4.0 kJ/m^2 or 9.0 kJ/m^2 of UV light.

ABSTRACT

Twining in Ring-Tailed Lemurs

By

Shira C. Nansen

This project investigates twinning and paternity among lemurs, a type of small-bodied, group-living, endangered primate. The study sample is part of a free-ranging yet provisioned population of ring-tailed lemurs on St Catherines Island, Georgia, USA. Little is known about the function of sperm competition or whether the same male or different males sire infants that are born as part of multiple-offspring births (e.g., twins), but we know it to be possible because multiple-mating exists in the species. Additionally, in evolutionary theory, genetic diversification of offspring is generally seen as adaptive and beneficial, and behaviors are expected that will help increase the genetic diversity of offspring. Through the use of polymerase chain reaction (PCR) to amplify microsatellite markers for paternity analyses, it was discovered that in 11 of the 14 sets of twins, both infants shared the same sire. However, these data also indicated 3 cases of heteropaternity. It was also found that all 14 sets of twins were dizygotic (fraternal) as opposed to monozygotic (identical). It is hoped that this project will have implications for the field of sexual selection and animal behavior, as the results will potentially foster an understanding of the function of female multiple-mating, the larger need for genetic diversity in ring-tailed lemurs, and this research's relevance to conservation efforts.

ABSTRACT

This thesis is a full-length film screenplay detailing my first year in college in narrative, autobiographical structure. The story focuses on key events, especially romantic relationships and emotions toward my classroom experience. They are highlighted through the usage of specific song choices meant to strengthen the impact of the events onscreen through intentional lyric choices and mood of the music. The reason why I am writing this screenplay is to display the emotional maturity I achieved through simply one year of interacting with people helping and hindering me as I tried functioning as an unsupervised young adult in a college dorm room. The story is tumultuous and dramatic, but the overall message is that the "bad" experiences you go through when you're young can shape you for the better as you grow older. There is an unfortunate lack of cinematic material about the college experience from the female lens and I feel that my story is a needed addition to the genre. This story is meant to introduce new perspectives while simultaneously acting as a fine-tuned journal entry for myself.

Abstract

To lucid dream is to experience consciousness during REM sleep. Multiple studies have reported an association between frequent lucid dreaming and improved mood. As a consequence of the recent successful empirical induction of lucid dreaming via transcranial stimulation, the lucid dream could soon present an effective tool in the treatment of mood-based disorders, such as reducing the nightmares symptomatic of PTSD. However, there are levels of lucid dream control, and no studies have examined whether these beneficial effects obtain for infrequent, low-control dreamers as well as for frequent, high control lucid dreamers. In the current study 70 students (Women = 71%; Latino = 70%) at an urban university serving a multi-ethnic population completed two surveys presented one month apart, separately measuring the level of control and frequency of lucid dreaming as well as mood. Although the difference in reported levels of depression between high- and low-control lucid dreamers was not statistically significant, high control lucid dreamers reported worsening mood with increased lucid dream frequency. A number of possible reasons for the results were discussed including the influence of depression on dream recall, which in turn has been associated with lucid dream onset. The study neither supports nor devalues the potential use of lucid dreams as a therapeutic intervention.

Keywords: Dreams; Lucid dreaming; LuCiD scale, Dream control, Dream Insight

ABSTRACT

UAS Ground Systems

By

Claudia Seidel

In recent years, drones have increased dramatically in popularity and become more and more common in our daily lives. However, the extent of drones' potential uses outside of commercial/domestic situations has not yet been fully explored. My senior design project sponsors, the Aerospace Corporation, aims to change this. In collaboration with several student teams from CSULA, the Aerospace Corporation is working to develop an advanced, multipurpose drone for use in civil service fields such as public safety or search and rescue. My team is responsible for creating a ground system for the drone that will let a user control it and access all of its video and data streams. The following text provides information about the background of the project, the tools involved in it, and the functions of the prototype we created after a year-long work period.

ABSTRACT

Forensic science is a field that relies on the accuracy of testing. Presumptive drug tests that are performed in the field, such as color tests, can sometimes result in false positives and false negatives especially with newer designer drugs that have reached the street. In efforts to strengthen presumptive drug testing, this thesis project tested a new method that uses copper (I) iodide (CuI) as a fluorescent indicator for illicit substances that contain a heterocyclic amine in their chemical structure. A series of heterocyclic amine containing substances were tested and fluorescence was measured. The overall hypothesis of this project is that each substance will have its own fluorescence signal due to the unique complex that is formed between CuI and each respective substance. If proven, this test has the possibility of being more discriminatory than standard color tests alone. Our results indicate the ability to form CuI complexes with various known illicit compounds. These novel findings set the stage for future work to create a database of photo-luminescent copper (I) iodide results that could be used to identify unknown specimens collected at crime scenes.

The psychological literature—including the cross-cultural literature—still contains a comparative dearth of sexuality research that *also* takes into account developments in gay and lesbian studies, gender and sexuality studies, queer studies, and so on. Due to this, I hope to round up a variety of sexuality-related studies, among other articles, in this thesis and to present this thesis as a needed addition to a growing collection of psychological research in sexuality. Furthermore, I want to connect distress to sexuality since the DSM presented homosexuality itself as a category of mental disorder until the 1970s; after its institutional de-pathologization, researchers quickly realized that gay men, lesbians, bi people, and other non-straight individuals nevertheless displayed higher rates of mental illnesses than straight individuals that, they concluded, arose due to those individuals not being straight and living in a heteronormative and homophobic society. The fact that being gay/bi was pathologized and considered a state of being to be cured provides both a fruitful avenue of discussion about the pathologizing of experiences and behaviors and an opportunity for me to confront possible theoretical contradictions and compromises between a model of mental distress and a model of mental illness. Finally, trying to articulate experiences of sexuality and distress in conjunction with one another provides an impetus to find further connections between and a model to continue to investigate distress and other social categories and stratifications. Although, for example, Meyer constructed much of his minority stress models and research in the context of non-straight sexuality, his work and logic can be translated into other avenues of mental stress and social minority positions: the logic that there are certain social stressors specific to a social category or system of oppression that affect those of us oppressed by that system and bring about significant distress among us is a logic that can be applied across nearly any line of social stratification.

Given this, sexuality or sexual identity cannot, in and of themselves, be used as theoretical constructs to explain experiences and behaviors. Helms, Jernigan, and Mascher (2005), in their critique of using racial categories as explanatory constructs, provide a set of arguments that translate to a similar critique of using sexuality categories. As racial categories themselves, used as independent variables that cause some phenomena, only seek to reify essentialist arguments in scientific research about race, the authors urge to move away from attempting to use race as a stable, theoretical construct to explain psychological phenomena in favor of constructs formed through racial categorization theory such as racial identity development/status theories.

Abstract

The Development and Optimization of Microfluidic Energy Sources

By

Santino Valiulis

Chapter 1. A historical perspective and basic principles of fuel cells (FCs) and batteries. The emphasis is on hydrogen fuel cells and aluminum-air batteries. With a historical perspective on microfluidics and applications.

Chapter 2. Fuel cells (FCs) are considered to be a replacement for conventional batteries because of the high energy densities, simplicity, and quick charging time they have. In the FCs, pumps must be used for the liquid fuels, causing parasitic power loss, however the use of pressurized gas such as hydrogen removes that need. The project studies how to use microfluidic fuel cells with a poly(dimethylsiloxane) PDMS platform to power devices such as an LED. A nafion membrane was used as the proton exchange membrane and the Platinum:Ruthenium and Platinum were used as catalysts, with carbon cloth as a gas diffusion layer. These FCs were placed in series with hydrogen as the anodic fuel and oxygen as the cathodic fuel. When four were placed in series a voltage of 3 V was achieved with a current density of 40 mA/cm^2. This was capable of powering all colors of LED and of powering up to three LEDs together.

Chapter 3. Fabric based batteries are an alternative to traditional batteries due to the low cost, portability and recyclability. Present work demonstrates two platforms for

the fabric batteries, either with the multilayered approach, or the cotton swab platform. Both platform employ an aluminum-air battery system with a KOH electrolyte. The current collector was optimized and the alternative platform was tested. For the multilayered battery, the current density was 6.75 mA/cm^2 and a maximum power density of 0.6 mW/cm^2 with a 4 cm^2 battery using 1.5 M KOH electrolyte. The alternative cotton swab platform achieved a current density of 11 mA/cm^2 and a maximum power density of 1.5 mW/cm^2 with an area of 1.5 cm^2.

ABSTRACT

Quantum Field Theory, the Higgs Mechanism, and Massive Higgs Bosons

By

Ethan Phillip Villarama

My project investigates a heavy particle, possibly a heavy Higgs resonance, that decays into a Higgs boson (H) and a W or Z vector boson (V), which can occur for example in theories with new Heavy Higgs bosons, new heavy force carriers, or new heavy Spin-1 particles [1-2]. This project will focus on a search in the final state where both the Higgs boson and the vector boson decay to quarks. I will examine jet-substructure variables to discriminate VH decays from background quark decays. At first, this thesis project started as a data-oriented project inspired by the work I did at CERN. As my work progressed, I was accepted into a theoretical physics program and became greatly interested in high energy theory, so I shifted my thesis project towards studying quantum field theory understanding the Standard Model in preparation for my doctorate. The structure this thesis is as follows:

The first chapter gives an overview of the concepts of quantum mechanics and special relativity as well as their historical motivations. Towards the end of this chapter, I will discuss the best modern description of elementary particles and forces. The second chapter covers the mathematical formalisms and concepts used in modern quantum field theory and the Standard model, including the Higgs mechanism, Higgs field, and Higgs boson. The third chapter discusses the theory of jet decays and experimental methods for identifying jet structures. The last chapter briefly discusses particle decay simulations and results from jet substructure methods.