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ABSTRACT

Investment Analysis of Texas Instruments

By

Alix Alcázar

This study examined factors that determined how an investment in Texas Instruments is expected to perform in the future and how suitable it is for investors. The methods used to evaluate the value and performance of the company in the industry are financial statement, systematic risk, capital asset pricing model analysis. In addition, a company valuation was performed to determine if the price of Texas Instrument stock is underpriced, overpriced or at a fair/intrinsic value. Based on the analysis the company is sound and it is recommended that investors who already own shares keep them, and investors who are planning to buy should do so at the lower price range of the 52-week range.

Daniel Antalan

Whole Foods: A Market Analysis

Abstract

An investment analysis report involves making financial decisions regarding the stock of a company based on its information and insights derived from raw financial data. These decisions consist of buying, selling, or holding the stock. Clearly, buying and selling is when an investor purchases or gives up their stock depending on the information given; however, holding is when an investor who bought the stock is indifferent and choosing to keep it. In this report, research was conducted on Whole Foods Market, Inc. and its financial statements as well as its cash flows were analyzed to decide whether to buy, sell, or hold the stock.

ABSTRACT

Background: The aging population is increasing and physicians will need to broaden their role in geriatric care. Research has found significant associations between vitamin D and cognitive health. Moreover, cognitive function and physical function have shown to be positively correlated. Physician knowledge on the relationships between vitamin D, cognitive function, and physical function will be important in treatment of their patients.

Methods: A qualitative study was undertaken to examine physicians' knowledge and opinion of the association between vitamin D status, cognitive and physical functioning. Semi-structured interviews were conducted with six physicians at the Veterans Administration, Greater Los Angeles (VA GLA). The responses were analyzed and themes identified.

Results: Twelve themes were identified. (1) all physicians lacked nutrition education; (2) all physicians diagnosed cognitive dysfunction using cognitive and physical screening; (3) there was no consensus on how to treat cognitive dysfunction; (4) half of the physicians believed there was no relationship between serum vitamin D & cognitive function and the other half were unsure; (5) half were not aware of the relationship between other biomarkers and cognitive function; (6) physicians used age as a predictor for ordering serum levels of vitamin D; (7) half of the physicians recommended RBC test to be routine, while albumin and high density lipoprotein cholesterol (HDL-C) had no consensus among the physicians; (8) all physicians responded that a relationship between cognitive and physical function exists; (9) physicians reported that the prevalence of vitamin D deficiency was high; (10) all expressed the absence of racial prevalence in vitamin D deficiency; (11) all were unaware of the recommended dietary allowances (RDA) for vitamin D for older adults; (12) half believed there should be routine assessment of vitamin D nutriture.

Conclusion: Additional elucidation on modifiable factors that influence functional performance will be necessary to address a growing older-aged veteran population. Increasing discussion on the role of vitamin D may have profound implications on the care of patients.

ABSTRACT

Background: Research suggest links between vitamin D levels and physical functioning. In addition, physical functioning status has also been associated with cognitive functioning. There has been no research, to our knowledge, that has investigated the opinions and knowledge of physicians about these associations, which may impact treatment and care of patients.

Methods: A qualitative study was utilized to investigate the knowledge and opinions of physicians at the Veterans Administration, Greater Los Angeles (VA GLA), about the association between vitamin D, physical function and cognitive function. Six physicians were interviewed using a semi-structured instrument. The responses were analyzed for general themes.

Results: There were eleven general themes found: (1) all physicians reported working with veterans both cognitively impaired and those with limited physical functioning; (2) all physicians lacked nutritional education; (3) assessment of serum levels of vitamin D based on age; (4) three physicians reported recommending testing for red blood cells (RBC) routinely. However, there was no consensus for other nutrition-related biomarkers such as albumin and high density lipoprotein cholesterol (HDL-C; responses varied); (5) all physicians had awareness of the term "physical functioning"; (6) more than half agreed that an association between vitamin D and risk of falls exist; (7) most agreed that there is an association between cognitive and physical functioning; (8) physicians reported that the prevalence of vitamin D deficiency was high; (9) all physicians reported absence of racial prevalence in vitamin D deficiency; (10) all physicians lacked awareness of the recommended dietary allowances (RDA); (11) half believed there should be routine assessment of vitamin D nutriture.

Conclusions: Additional research is needed on the relationship between vitamin D, physical and cognitive functioning. The data is inconclusive, with a small sample size. However, increasing nutrition knowledge of physicians may be important in determining if interrelationships exist. This in turn may affect older-aged veteran care.

ABSTRACT

The effects of pH and Dissolved Oxygen on the surface normal microbiota of *Sebastes caurinus*

By

Russel Flores Bacosa

Eutrophication and ocean acidification are growing problems in the world due to industrial expansions in developing countries. As sewage treatment facilities dump enriched wastes into aquatic systems and atmospheric CO_2 levels rise, there have been observed decreases in dissolved oxygen (D.O.) concentrations and pH in various regions on earth. This study aims to look at changes in the surface microbial communities of *Sebastes caurinus* (Copper Rockfish) and how changes in pH and D.O. affect their microbiota. Through the use of Illumina sequencing and the QIME bioinformatics pipeline, alpha diversity and beta diversity indexes were created to compare the microbial diversities from each individual group and within treatment groups. Analysis of variance suggested that there was no significant difference in the diversity within each sample in comparison to one another. The Bray-Curtis plot also revealed no changes in the microbial community based on treatment. These findings are attributed to the high tolerance of microbes to changes in the environment. For future studies, researchers should compare the microbial communities with extreme changes in the environment or investigate more sensitive microbial communities (e.g. gut flora).

ABSTRACT

Home Depot Stock Analysis

By

Areli Baires

The purpose of this thesis is to conduct a fundamental analysis of Home Depot's (HD) financial performance in order to determine if purchasing their stock would be a positive investment. To conduct this analysis, my research focused on the Home Improvement industry, the United's States economic outlook, and on Home Depot's last six years of annual financial statements. With the data obtained, I looked at performance ratios to find trends and assess the firm's growth and stock performance in the recent years.

To determine whether HD stock would provide a positive return on investment I used the Discounted Cash Flows Model to find the stock's intrinsic values from forecasted cash flows. The averages and patterns obtained from the financial statements and research were used to forecast Home Depot's free cash flows to the firm and free cash flows to equity up to the year 2025. The research concludes with two intrinsic stock values being calculated, one for each type of cash flow used. The two intrinsic stock values were compared to the current stock price to determine if the stock is deemed a good buy or not.

ABSTRACT

Late Journey

By

Lucas Tomas Geronimo Benitez

This thesis is the written accompaniment to my short film that explores a broken relationship between a father and daughter and how a family unit is able to reconcile and move forward with their lives. The intent of this project was to produce a short film from beginning to end, and to essentially put my skills as filmmaker to the test and grow from the resulting experience. The literature review in the thesis is intended to deeply examine the key aspects of filmmaking from script writing, directing, and producing as a way to help me with the project I did. The method used in completing this project was to actually make the short film using the key elements of production I have studied while in college, as well as a tremendous organization process I went through. However, aside from the film itself, the affects of this project are what stand out. In the results section I discuss the fact that I accomplished what I set out to do, by actually making the film. In the discussion section I talk about the value in doing a creative project like this and how this experience has not only helped me grow, but how it can possibly help others grow or see things differently in their own lives. This whole project is about how filmmaking is one avenue of storytelling and how storytelling is a way that we as people try to make sense of this sometimes complex world. In short, that is what this film aims to do and so does this paper.

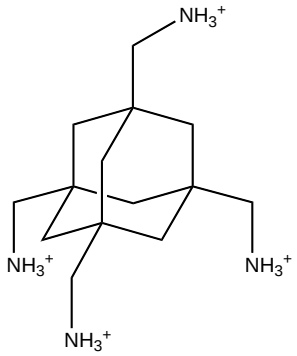
ABSTRACT

Selective Acylation of Symmetric Polyamines

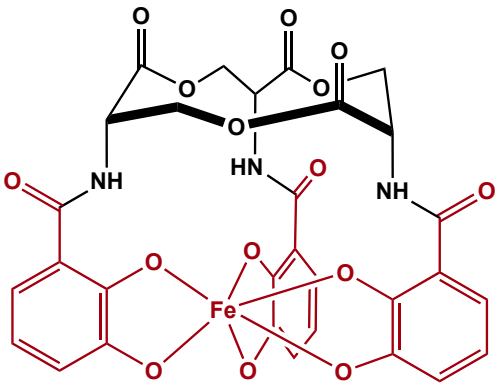
By

Carla Tara Bezjian

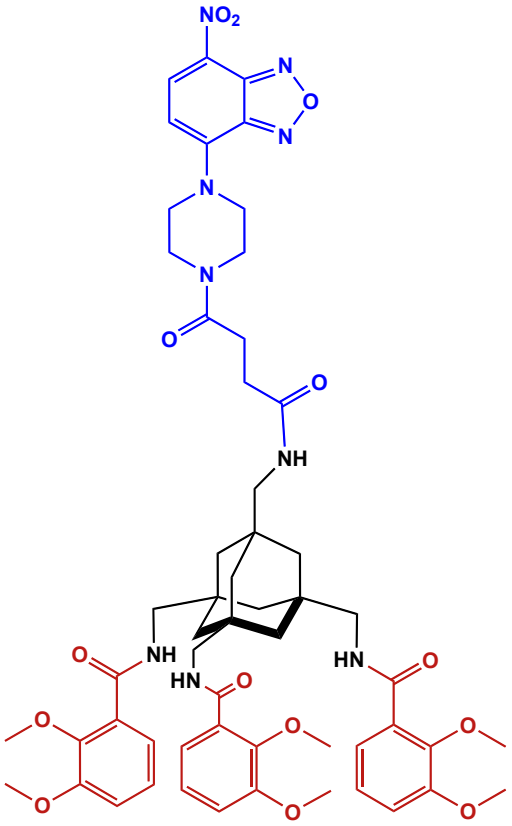
The selective orthogonal acylation of 1,3,5,7-terakis(aminomethyl)adamantane **1** is being optimized by taking advantage of the pK_a differences of the ammonium ions on the polyammonium salt. A strong base is added slowly in low concentrations so that the reaction does not equilibrate, and only deprotonates the initial ammonium salt. The second acylating agent and excess base is added directly after the first reactions acylating agent has been consumed. This allows the remaining of the ammonium ions on the adamantane to react with the acylating agent and yields a C_3v symmetry for the molecule in higher yields than previously reported. This system, once optimized, can be used to create asymmetric molecules with C_2v, C_1, and S_1 symmetry. We also prepared **3,** an analog of the E. coli siderophore enterobactin, **2,** that can function as Trojan horse delivery system for cargo like antibiotics and fluorescent agents. Analog **3** was synthesized as a fluorescent agent in 52% yield.



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Abstract

The art of songwriting involves the art of problem-solving, the problem being that we want to communicate an idea or emotion that cannot be expressed by words alone. The beauty of solving the problem lies in the methods' variations and their elasticity. It is generally recognized among musicians that there is no one way to write a song. Rather, each songwriter develops a method in which he or she feels most comfortable, and therefore most productive to create their art. Therefore, I will discuss in this section a few major, general starting points that songwriters leap from when beginning their work.

ABSTRACT

Development of a Human Head Surrogate for Blood Spatter Research

By

Alex Hong-Man Chan

Testing models currently used in forensic science to investigate human cranial backspatter are either lacking in complexity or are not readily available. Backspatter is characterized as any material that travels in the retrograde direction of the projectile. Various models have been developed to study the dynamics of head trauma and bloodstain patterns, and the models have shed some light on cranial gunshot wounds. Past research has employed anesthetized pigs, but this research was met with criticism over the ethical use of animals and its limited usefulness given the anatomical differences between the pigs and humans. The current project aimed to develop a surrogate human head to study the complex events that contribute to the final backspatter pattern. The physical properties of human tissues and organs was researched in the literature and experiments were conducted to evaluate the similarities of substitute materials for the artificial head model. The elasticity of the brain was estimated by shooting pig's brain in a graduated cylinder with a BB gun and measuring the penetration depth of the metal BB traveling at a velocity of 190-220 feet per second. To determine the concentration of clear ballistics gelatin that approximates the elasticity of brain, clear ballistics gelatin in graduated cylinders at 10% and lower were also shot with the BB gun and the penetration depth of the metal BB was recorded. The 10% gelatin was found to be significantly denser than pig's brain. In preliminary tests, the boundary condition (skull) was found to significantly affect the size of the temporary cavity formed in ballistics gelation by the

passage of the bullet, and to produce peripheral cavities which may correlate with the subarachnoid hemorrhaging seen in casework. Skull plates were used in the head model, which were determined to be representative of human bone based on the observed fracture patterns and beveling of the bullet hole. The test model developed consisted of clear gelatin in a clear plastic cylinder capped at both ends with the bone plates. Test were also conducted on blood soaked sheepskin attached to the test model to simulate the vasculature of the skin. Currently, the test model lacks a blood source that simulates the vasculature of the human brain, and requires further validation testing.

ABSTRACT

Maternal Mortality in California and the United States

By

Kathleen Ann Cortez

This thesis provides a history of maternal mortality in the United States and reviews the steps California has taken to reduce their maternal mortality. The California Maternal Quality Care Collaborative has been found to have implemented toolkits throughout California that provide the research and protocols for health professionals in delivery-related services. The toolkits are extremely detailed in providing information for health professionals and also address patient education. At the time of implementing the toolkits, the California MMR decreased. There is a lack of research available that provides any further explanation for the decreased maternal mortality ratio in California. However; in states with high maternal deaths, such as Oklahoma and Georgia, Oklahoma has implemented a similar initiative to lower their MMR, whereas Georgia is seeking out a standardized protocol to implement. Recommendations include further research to strengthen the argument that the California Maternal Quality Care Collaborative toolkits are key contributors to lowering MMR and identifying other factors that play a role in maternal mortality.

Keywords: maternal mortality, United States, toolkits, standardized protocols, maternal care

ABSTRACT

Brand Identity on Instagram:

A Content Analysis of Starbucks Consumers

By

Tegan Alaina Cramer

Social media plays a large role in the current consumer market. Today, companies experience less control over their brand image as online networking resources allow expeditious communication between consumers. The following content analysis reviews 404 images posted on Instagram by the Starbucks Coffee brand and their consumers. Social identity theory is used to discuss the effects of expressing brand identity on a social media platform and the relationship between content consistency and engagement. Results indicated that the Starbucks brand and its consumers post Instagram content displaying either status or community at consistent ratios. The study illustrated no overall consistency between content and engagement at significant rates, but select variables displayed consistency at low rates.

Keywords: *brand identity, social media, social identity theory, Starbucks, Instagram*

ABSTRACT

Arguō: Empowering Individual Political Efficacy for Resisting Societal Political Apathy

By

Raphael-Dale Banaag Dacanay

Arguō is a Latin word, which means "to enlighten". The Latin is used as a reminder of the fact that many of the laws and systems of government that we use in the "West" today are derived from Roman law. The United States prides itself on being a bastion of democracy in Western civilization, heir to the legacy of the Greco-Roman tradition, yet today we have trouble inspiring our people to participate in a political process that so many others in history, the world over, have died for. Voter turnout (Voting age population turnout) in the last U.S presidential election in 2012 was just 53.6%, far behind fellow democratic countries such as the U.K (61.1%), Germany (64.6%), Italy (68.5%), France (71.2%), South Korea (80.4%), Australia (80.5%), and Sweden (85.8%) in their respective national elections. (Desilver 2015). More precisely the U.S ranks 120th out of 169 countries, for which there is data, in voter turnout according to a 2012 study. (Ghose 2012). This comes as no surprise as we have been seeing a downward trend concerning political participation for several decades. The goal of this project seeks to reverse this trend, in the hopes of increasing political participation.

Arguō is a website, an online community that seeks to chip away at the barriers between the common person and the confusion of the political world. It has two main objectives: To empower individual political efficacy, and to resist societal political apathy. Political efficacy refers to how much an average citizen feels that they can influence the political process. Political apathy refers to a common attitude in society in

which discussion of politics is shunned and discouraged. By addressing these two objectives, there is a hope that Arguō can jumpstart a new trend to chip away at society's disdain and disregard for politics by inspiring political participation. By providing people with an online resource for them to educate themselves about politics, as well as presenting a social media platform for them to voice their concerns, argue their viewpoints, and connect with others, Arguō allows for an environment in which political discourse is praised and appreciated.

ABSTRACT

Stress and Hypertension Among College Students

By

Diana Jean A. Diokno

The purpose of the research was to assess hypertension and its risk factors among college students by analyzing the prevalence of diet, sedentary lifestyle, stress, psychological illnesses, sleep patterns, caffeine intake, and alcohol consumption on this population. However, the focus of this thesis was primarily on two variables, stress and hypertension. Approximately 566 college students at California State University, Los Angeles (CSULA) completed a comprehensive health survey and were measured for their height, weight, and blood pressure levels. The study found that 35% of students had pre-hypertension and 7% of undiagnosed students were hypertensive based on the average of three blood pressure readings. The study also found that 1 out of 2 students reported high levels of perceived stress with high rates of stress in females than males. Stress was found to be significantly associated with more depressive symptoms, fewer hours of sleep, and less physical activity. This study could have public health implications on the development of educational health programs, hypertension prevention programs targeted, and future research on the health and lifestyle of this population.

ABSTRACT

Design and Optimization of Microfluidic Fuel Cells

By

Kryls Ong Sitco Domalaon

Three different projects concerning the fabrication and optimization of microfluidic fuel cells (MFCs) are discussed. The projects focus upon three separate MFC platforms: (1) polydimethylsiloxane (PDMS), (2) chromatography paper, and (3) cotton and polyester textiles, under acidic media (i.e. methanol) for the former and alkaline (i.e. potassium formate) media for the two latter. All investigations attempt to characterize the MFCs and optimize the fabrication techniques in order to improve MFC performance. The MFCs within each project will also be used to attempt to power small electronic devices, such as LED lights, a calculator, a flashlight, a thermometer, and point-of-care (POC) diagnostics.

The significance of this research centers on its aim to design and optimize PDMS, paper, and fabric-based microfluidic fuel cells to increase the feasibility and appeal of their integration into commercial products. Each project focuses on one of the aforementioned platforms and tests the parameters given below:

Project #1 studies the effects of heat, catalyst application (brush vs. spray-paint), methanol concentration (2 M and 4 M), and the treatment of the proton exchange membrane (Nafion 117) on the performance of passive micro-direct methanol fuel cells (μDMFC). In regards to the treatment, FCs utilizing this fuel are susceptible to methanol crossover across the membrane. Thus, a layer-by-layer method will be utilized in an effort to reduce the effect of crossover on fuel cell performance. The best fuel cell

performance was achieved with an FC tested at 60°C and 2M methanol, attaining a potential of 1.3 V and a power density of 0.19 mW/cm^2. There was no significant difference between fuel cells held together by steel or nylon screws when heated by the thermocouple, but performance was seen to decline in tests with methanol concentrations above 2 M because of crossover.

Project #2 investigates the development and performance of paper-based microfluidic alkaline fuel cells (PMFCs), with electrodes composed of pencil-stroked graphite (anode & cathode) or Pd/C (anode) and active carbon (cathode) painted electrodes. The initial experiments vary the paper type (chromatography paper, Whatman 1 filter paper and Whatman 2 filter paper), the pencil type (HB #2 and 6B), and the stroke number of the paper FCs in order to optimize fuel cell performance. Later tests study the effects of altering the current collector (brass plates, silver epoxy, steel mesh, and copper plates), catalyst composition, and MFC dimensions. All paper FCs with pencil-stoked graphite electrodes were tested in an alkaline solution of 1 M potassium formate (KCOOH) and 1 M potassium hydroxide (KOH). The anode fuel and cathode oxidant for PMFCs with painted electrodes were 5 M KCOOH and 30% hydrogen peroxide (H_2O_2), respectively. A maximum power density of 2.53 mW/cm^2 was achieved by a single DFFC (surface area 3.0 cm^2, steel mesh current collectors, 5% carbon to paint mass ratio cathode electrode) tested with 30% hydrogen peroxide. With continuous flow of streams, MFC longevity extended greater than eight hours. Individual MFCs and a 3 MFC series configuration also generated enough energy to power light-emitting diodes and a handheld calculator.

Project #3 examines the fabrication and performance of fabric-based microfluidic alkaline fuel cells with Pd/C (anode) and activated carbon (cathode) electrodes. The experiments attempt to mitigate fragility and durability issues found in paper FCs caused by long periods of fuel immersion. To characterize fuel cell performance, the fabric type (100% cotton or 100% polyester), the barrier type (saran wrap, cellophane, or tape), and the sealing (lamination or tape hot-pressed) of the fabric DFFCs were varied. All fabric FCs were tested in an alkaline solution of 5 M potassium formate (KCOOH) and 30% hydrogen peroxide (H_2O_2). The maximum current (22.83 mA/cm^2) and power (4.40 mW/cm^2) densities were achieved with a 65% cotton/35% polyester blend material and outperformed previous studies with Y-shaped paper-based MFCs. In series configuration, the MFCs also generated sufficient energy to power a handheld calculator, a thermometer, and a spectrum of LEDs.

ABSTRACT

The Development and Applications of Poly(Dimethylsiloxane),

Paper, and Thread-Based Microfluidic Platforms

for Point-of-Care Diagnostics

By

Lissette Estala

Chapter 1. An introduction to microfluidics by providing a brief historical perspective is presented. An overview of the evolution of fabrication techniques for applications in molecular diagnostics and point-of-care (POC) technology. Chemometrics is introduced to demonstrate its bolstering capabilities for the field of microfluidics.

Chapter 2. The testing for the optimization of a microfluidic enzyme reactor utilizing magnetic micro-beads and fluorescence detection is discussed. A rare earth magnet embedded in a section of the poly(dimethylsiloxane) (PDMS)-based microchannel holds magnetic micro-beads that have been derivatized with diaphorase (DI) in position. A solution containing resazurin, nicotinamide adenine dinucleotide phosphate (NADH), potassium chloride (KCl), and zinc chloride ($ZnCl_2$) was flowed through the channel. Resazurin is non-fluorescent but DI reduces it to fluorescent resorufin in the presence of NADH. The pH of the system, flow rate, and the concentration of NADH and $ZnCl_2$ are factors that lead to differences in the amount of fluorescence produced. For the optimization of these variables to result in maximum fluorescence, chemometrics is applied. A 2^4 factorial design was used to screen factors (pH, NADH, $ZnCl_2$, and flow rate) and 2^3 central composite design was used to optimize factors.

Chapter 3. A novel microfluidic thread/paper-based analytical device (μTPAD) to detect glucose through a colorimetric assay is described. The μTPAD was fabricated from nylon thread trifurcated into three channels terminating at analysis sites comprised of circular zones of chromatography paper, which had previously been spotted with glucose of different concentrations. A solution of glucose oxidase (GOx), horseradish peroxidase (HRP), and potassium iodide (KI) was transported via capillary action to the analysis sites where a yellow-brown color was observed indicating oxidation of iodide to iodine. The device was then dried, scanned, and analyzed yielding a correlation between yellow intensity and glucose concentrations. Both a flat platform constructed mainly of tape, and a cone platform constructed from tape and polyvinyl chloride, are described. Studies to quantitate glucose in artificial urine showed good correlation using the μTPAD.

Chapter 4. A microfluidic thread-based analytical device (μTAD) for the colorimetric detection of immunoglobulin G (IgG) antibodies is presented. Nitrocellulose (NC) paper was successfully dissolved by chloroform and deposited onto the μTAD. The surface was ideal for protein interaction binding as demonstrated by the bonding of biotin labeled IgG. It served as a base for streptavidin-alkaline phosphatase (Strep-ALP) and the colorimetric reaction of alkaline phosphatase yellow (p-NPP) liquid substrate system for a pseudo enzyme-linked immunosorbent assay (ELISA). A correlation between increasing IgG concentration and yellow color intensity is observed. Further modifications to the development process are required to increase the sensitivity of the μTAD prior to the construction of a calibration curve for the determination of unknown concentrations of Strep-ALP. The successful development of an NC μTAD can contest NC microfluidic paper-based analytical devices (μPADs).

ABSTRACT

Role of *Candida albicans* yeast casein kinase I in governing the expression of virulence genes

By

Jesse Garcia Castillo

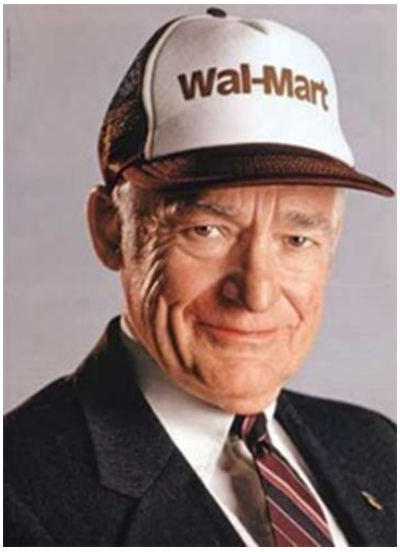
Hydrolytic enzymes have been suggested to be an important virulence factor that allows for colonization and invasion of human host cells. The secreted aspartyl proteinases (SAP) are a family of hydrolytic enzymes encoded by ten SAP genes that have been suggested to be the main hydrolytic enzymes necessary for the initiation of infection in humans. Past studies demonstrated that yeast casein kinase I (YCK2) homozygous deletion mutant demonstrated attenuated virulence, increased susceptibility to environmental stressors, and lack of hyphae formation in hyphae-inducing conditions. Because the YCK2 mutant demonstrates attenuated virulence, we set out to investigate if YCK2 regulates the expression of SAP2-5, which are expressed during vaginal infections.. It is expected that the YCK2 mutant strain will have a decrease in the expression of the SAP2-5 genes since the mutant strain is unable to transition into its virulent hyphae form. These results will help in understanding the pathways that are necessary for *C. albicans* to initiate an infection and potentially identify a target for therapeutics to develop preventative strategies against vulvovaginal candidiasis.

Ejmin Hakobian

Walmart

Abstract

The Wall-Mart Stores, Inc. (NYSE:WMT) was established in 1945 in Bentonville, Arkansas by Sam Walton. The Company expanded its operation into North East and West Coast starting in 1990. In 2000, the Company was listed as the largest corporation in US by Fortune 500. The company operates chain of discount stores and warehouse stores. Walmart is the largest retailer in the world and more than 50% of its stocks in the Company is held by Walton family.





Abstract:

This document will provide address the progress and completion of the Heat Run Analysis Tool project sponsored by Southern California Edison (SCE). In doing so, it will provide an introduction to the problems with the electrical devices known as transformers and the consequences of overloading them. Overloading of transformers can cause heat to occur and damage insulation life. This causes the overall life of the transformer to deteriorate each time it is necessary to overload the transformer to continuously deliver power to its customers.

By researching the IEEE (Institute of Electrical and Electronic Engineers) Standards provided, it is possible to develop a computer algorithm to calculate this loss of life provided given parameters and conditions. This document shows the software that was developed to calculate the loss of life as well as the programmatic, technical progress, research findings, decisions and risk analysis of the project.

ABSTRACT

Cloud-based Library and Dashboard Services Tab Sharing Optimizations

By

Steven Michael Hewitt

The World Wide Web is the single largest source of data transfer currently known. Web services such as Google Docs allow users to share textual data with other users by saving the data to a server and downloading it, while YouTube Live and Twitch stream visual data to other users. Attempting to transfer such data as efficiently as possible requires a knowledge of what information could be sent. Cloud-based Library and Dashboard Services, or CLDS, is one such program that needs to transfer data efficiently. For this thesis, I developed a methodology by which I analyzed various types of data transmission through the Internet, in particular for use with the CLDS system. By performing this type of analysis, a tester can understand the limits to how many users can access the system concurrently and how much data they can access. The tester will also be able to understand whether these limits are bound by network bandwidth, processing ability, or data storage speed. These methods can be applied to any World Wide Web software project.

ABSTRACT

SAE BAJA-Planetary Gear Transmission

By

Joel Huerta

The purpose of this project was to design, analyze, and fabricate a planetary gear system that would help the CSULA SAE BAJA team become more competitive. At the beginning of the fall quarter, several requirements were specified. Unfortunately, it was not possible to meet all the desired requirements under the given timeline and, as a result, the scope of this project had to be altered. The new scope still required the design and analysis of a planetary gear system, however, fabrication of the actual design would not be undertaken. Instead, a 3D prototype system would be fabricated in order to determine if the actual design was possible and reasonable for the BAJA team to use. The team was able to design and analyze a planetary gear system that met most of the BAJA team's requirements. With the chosen design, all three transmission modes were obtained, and the gear, shaft, and bearing analysis was performed. Design of the transmission box including the bearings, bolts, and screws were completed. Lastly, the prototype gear system was printed and tested. This report will cover the design and analysis of the actual planetary gear system and will conclude with the fabrication of the prototype gearbox.

Abstract

Scholars across disciplines, including communication studies and linguistic anthropology, have grown intrigued and concerned with the portrayal of terrorism in media outlets since the occurrence of major terrorist attacks on Western countries, such as 9/11 (Papacharissi and Oliveira, 2008; Hodges and Nilep, 2007). U.S. newspapers are major political and popular influencers in U.S. society, where national newspapers such as *the New York Times* and the *Washington Post* occupy social niches as elites in both business and communication politics, through their massive readership and their economic and social power. This gives communicators in these newspapers a dominant position in the chain of international news communication, a cycle which proceeds from world events to media perception before being altered and selected into the media images which are perceived by readers (Galtung and Ruge, 1965: 65).

The purpose of this thesis is to deliver an analysis of when and how the Islamic State was covered in the *New York Times* and the *Washington Post*, from the Islamic State's beginning as the Islamic State of Iraq (ISI) in October 2006 to its present status as the Islamic State, a self-declared caliphate and internationally recognized violent jihadist group. While many articles have given discourse studies on media, they frequently do so in a purely political context, through analyzing news coverage in relation to public policy and government or public relations (Entman, 2007; Entman, 1993; Entman and Rojecki, 1993); in addition, these discourse studies are conducted in a cross-cultural context where two media systems are compared through case studies of a similar event (Stenvall, N.D.), through analysis of spoken discourse through television reports (Beker, N.D.; Schulthies and Boum, N.D.), or through studying the construction of broad identities through written discourse in major newspapers (Lemons, N.D.; Stoltz) which give overly broad implications based on a small or narrow selection of data. Most studies spanned from one to four years, and some revealed potential inconsistencies in their manner of picking data or else attempted to draw too wide of conclusions based on data that they covered.

ABSTRACT

Sleep and Hypertension Among College Students

By

Xiaoying (Shirley) Jiang

The purpose of this research study is to determine the prevalence of both hypertensive and pre-hypertensive individuals in the CSULA student body population. The focus of the thesis was to look at certain lifestyle behaviors such as hours of sleep and its association with subsequent blood pressure readings. A total of 566 participants were used in this study. Participants were directed to complete health behaviors surveys with over 100 questions including those on hours of sleep, caffeine and alcohol intake, and stress levels. The completion of the survey prompted the participants to attend a blood pressure screening booth outside the CSULA student health center. At the screening booth, data collection was obtained for participants' height, weight, and three sets of blood pressures. The data collection process was spanned across three consecutive days. The findings of the research study are as follows: 5% of the total population was clinically diagnosed with hypertension; 48.15% of the total population did not achieve the optimal hours of sleep; 7% of the population was found to be hypertensive and 35% of the population was pre-hypertensive. The results also indicated the need for hypertension education among the population. The importance of the study looks at the health status of the college student population through blood pressure screenings and certain health behaviors. It aims to stress the importance of early detection and intervention of the young adult population in hypertension to decrease cardiovascular risks later in life.

ABSTRACT

Quarantine and Isolation: Analysis of Social and Political Factors in 3 Case Studies

By

Lauren Kellee Jorgensen

This thesis takes a qualitative approach to analyze the social and political factors that influenced the quarantine or isolation of people in three case studies throughout American history. “Typhoid Mary” in the early 1900s, Leprosy (Hansen’s Disease) in the 1940s-1980s and Ebola in 2014 illustrate complicated and dynamic ethical problems involved in restricting someone’s civil liberties to protect the public’s health. Multiple public health, social behavior and public policy theories explain how unjust quarantine and isolation measures were implemented in these three case studies. Societal constructs, individual health behavior, political phenomena and the relationship between the media and fear were all factors were all evident in one or more of the three case studies. Recommendations for further research and potential policy change are made to ensure that quarantine and isolation measures are implemented effectively and ethically in the future.

ABSTRACT

Contemporary Christian Music and Bringing Youth Back to Church

By

Victoria Lynn Kause

Religious worship and religion are significant components of humanity throughout its existence that has shifted alongside human history. Today, the usage of Contemporary Christian Music (CCM) has created a more relaxed approach towards Christian subgenres, including Christian rap and Christian pop. There has been pushback on this emphasis of CCM instead of keeping to quieter, traditional practices instead of making worship a spectacle. There is a focus upon artists and bands such as Lecrae, Hillsong United and Rend Collective who are influential with their words and actions inside and outside of the music industry. With Lecrae's powerful presence in social activism, and Hillsong United's creative interpretation of worship, the catchy music falls on younger ears that intrigues their interests in the Christian church. Through particular study of worship styles collected through demographics, interviews and surveys, there has been a significant rise in youth attention towards Christian music due to the popular and intriguing artistic styles of Lecrae, Hillsong United and Rend Collective. Interviews were conducted with several people, including a highly religious relative, worship leaders and an expert in the religious music field.

ABSTRACT

Corporate Democracy in the Shadow of *Citizens United*

By

Lilia Kavarian

The 2010 Supreme Court decision in *Citizens United v. Federal Election Committee* drastically altered the composition of campaign financing. Since the decision, corporations and labor unions are free to use as much of their general treasury money to ultimately call the election or defeat of a candidate. Restrictions have essentially been eliminated on the amount of corporate funds used in elections. Left behind are the true owners of the corporation: shareholders. This paper will take a closer look at the role of shareholders in corporate democracy and the loss of their voice in campaign financing.

ABSTRACT

Nuclear phylogeography of a California-endemic sea slug with a rare developmental polymorphism

By

Juliana Capri Lawrence

Alderia willowi, recently identified as a separate species from the similar organism *Alderia modesta*, thrives in the waters of southern California (Ellingson and Krug, 2006). Unlike *A. modesta, A. willowi* exhibits poecilogony and is therefore capable of producing both dispersive planktotrophic larvae that develop in the water column and lecithotrophic larvae that hatch as crawling juvenile slugs (Krug et al., 2007; Krug et al., 2012). Similar to other sacoglossan sea slugs, *A. willowi* is highly co-evolved with its host alga, *Vaucheria longicaulis*, and uses chemical clues from its algal host to determine where planktonic larvae metamorphose, most often inhabiting intertidal zones of protected bays and estuaries (Krug, 1998; Krug and Manzi, 1999; Krug and Zimmer, 2000). Due to the geographical separation of these coastal populations and the inherent unpredictability of planktonic larvae dispersal, it is unclear how *A. willowi* populations are genetically interconnected and how many genetic groups are present within the species. This study used nuclear microsatellite alleles to elucidate the genetic diversity of and gene flow among populations by extracting DNA from preserved sea slug specimens, amplifying the DNA sequences, running bioinformatics programs such as Geneious and Structure, and visualizing the results in the software environment R. The results showed that there are likely two distinct genetic groups within *A. willowi* populations along the California coast, with no observed hybridization between the two genetic groups; this

could potentially be explained by genetic linkage of one or more of the analyzed microsatellite alleles to a gene essential for survival in varying environments or by sampling limitations. Based on the distribution of alleles, one group likely originated in southern California before proliferating using planktonic larval dispersal. Further research is necessary to clarify which factors have driven this genetic division and explain why no hybrid individuals were observed.

ABSTRACT

Montevina Water Treatment Plant Access Improvement and Expansion
by

Joshua David Lundblade

The Montevina Water Treatment plant is a 46-year-old plant located in the city of Los Gatos. It is responsible for treating up to thirty million gallons of water per day. Upon recent years, the plant has faced an increase in demand for water as well as the need to purify the water to higher standards as more pollutants make their way into our water sources. The Montevina Water Treatment Plant Access Improvement and Expansion Project will provide an additional safe access road and storage silo to the Montevina Water Treatment Plant. In order to increase the effectiveness of water treatment processes, Powdered Activated Carbon is being incorporated into the plants filter design. In order to effectively use this material as a medium in its filters, onsite storage is necessary. This is to be accomplished through the installation of a 14-foot-diameter, 35-foot-high silo which can contain up to forty-three tons of Powdered Activated Carbon. The scope of this project includes the transportation, retaining walls, foundations, environmental concerns, costs, and structural calculations for the silo. This thesis focuses on the transportation section of this project. The problems encountered throughout this project were solved through the engineering process allowing the entirety of the Senior Design Class of 2016 to develop alternatives, evaluate them, and finalize a single alternative into a complete set of design drawings.

ABSTRACT

Caffeine and Hypertension among College Students

By

Haewon A. Macfarlane

The purpose of this research study was to identify how hypertension and other health determinants, including sleep, perceived stress levels, and caffeine consumption affect college students at California State University: Los Angeles. The purpose of this thesis specifically analyzes two variables: caffeine and blood pressure. 566 students participated in the study by completing an online survey containing over 100 questions, which included questions concerning hypertension knowledge, general health status, and caffeine-intake habits. The participants also had their blood pressure measured three times, and had their weights and heights measured to calculate their body mass index (BMI). The research found significant associations with high caffeine intake and fewer hours of sleep. While over 54% of college students had normal blood pressures, 35% had pre-hypertension and were at risk for developing hypertension. 7% of individuals had hypertension. The implications for this study promote increased hypertension knowledge and healthy lifestyle behaviors teachings. This study established a risk behaviors baseline that can promote the establishment of programs and prevention tips for this specific demographic population.

ABSTRACT

AK4 Modulation as a therapeutic approach to Leigh Syndrome.

By

Deshna Majmudar

Leigh Syndrome (LS) is a neurological disease that is genetically heterogeneous and stems from mutations in mitochondrial DNA as well as several nuclear genes that code for proteins localized in the mitochondrial inner membrane. Most of these mutations result in disturbance of oxidative phosphorylation and subsequent ATP loss. There is no current therapeutic approach to combat this degenerative disorder, but because Leigh's Syndrome involves severely compromised cellular energy levels, the ability to directly manipulate ATP levels within the cell may prove to be an important therapeutic approach. The mitochondrial enzyme, adenylate kinase 4 (AK4), represents a potential therapeutic target for LS as its expression significantly impacts cellular ATP levels.

In this study, I sought to replicate the LS bioenergetic deficit phenotype in cell culture in order to provide a model to study the therapeutic potential of AK4 in this disease. To this end, I measured cellular ATP levels following chemical or genetic inhibition of electron transport chain complexes (ETC). My results indicate that the LS bioenergetic phenotype can be replicated by these methods. Additionally, I suppressed AK4 expression in the context of reduced ETC components. My initial results showed that suppressing AK4 expression only rescued ATP levels for one ETC complex. Together, this work provides a model to investigate LS and suggests that suppressing AK4 expression may rescue ATP levels in Leigh's Syndrome. However, further investigation into the ability of AK4 expression to reestablish ATP levels in a disease context will help in the clinical application of LS treatment.

ABSTRACT

Physical Activity Workshops for Preschool Aged Children

By

Kayley Masumi Martin

Childhood obesity has become a national epidemic with 1/3 of children ages 2-5 considered overweight. As interventions are created to combat the present childhood overweight and obesity rates, research has shown that initiatives that include parent participation and promote an increase in healthy eating and/or physical activity are the most effective. In creating and conducting my own parent-child physical activity workshops at WCC I was able to observe and further identify how a child engages in physical activity, the roles and obstacles that parents face in engaging children in physical activity, and the steps and responsibilities of an organization in encouraging families to increase physical activity through physical activity workshops. With these findings, future project coordinators and early childhood organizations will be able to use my curriculum as a pilot while applying the knowledge and strategies that I discovered about engaging children and parents in physical activity to successfully conduct their own interventions to reduce childhood obesity.

Keywords: physical activity, engagement, childhood obesity, intervention, workshop

Introduction

In business, it is crucial to know how to analyze a firm's financial statements. This type of analysis is so crucial that an audit of a firm's previous financial statements can make an auditor decline an audit engagement that might have been deemed as very profitable to an unknowledgeable individual. Furthermore, without the capacity to read and analyze financial statements, an investor could lose millions of dollars by making foolish investment decisions. Other types of analyses that are also crucial for investors and accountants are SWOT analyses and industry analyses.

This report will consist mainly of an analysis of Nike's 2015 Annual 10-K Report. An annual report is a report that every public company is required to provide each year to their shareholders and it is a detailed report on the financial performance of the company during its fiscal year. This analysis will consist of five different sections, which are an industry analysis, a SWOT analysis, a competitor analysis, a financial statement analysis, and an accounting analysis on the topic of leases.

Nike, Inc., the world's leader of athletic footwear and apparel, was incorporated under the State of Oregon in 1967. As stated in Nike's Form 10-K, their primary business is in the design, development, marketing, and selling of athletic apparel, footwear, equipment, accessories and services. Philip H. Knight, co-founder of Nike, is the current Chairman of the Board of Directors. Mark G. Parker has been Nike's President and Chief Executive Officer since 2006 (Nike, Inc., 2015).[1]

The vast majority of Nike's apparel and footwear products are manufactured mainly oversees by independent contractors (primarily from China, Indonesia, and Vietnam). Nike's

[1] All data presented in this report was gathered from Nike's 2015 10-K form, unless otherwise noted.

ABSTRACT

The discourse surrounding social entrepreneurship has primarily focused on creating a concrete definition for the term both as a part of and separate from traditional entrepreneurship, and the prevailing literature has furnished theoretical studies on the characteristics of social entrepreneurs. However, given the emerging nature of this field there is a lack of empirical research studies that validate some of the proposed theories. This paper will address this gap in the literature by provide empirical research on the fundamental traits and learned behaviors of social entrepreneurs by providing a conceptual model and testing it in the context of Latin America. The findings of the current pilot study provided evidence for altruism, perseverance, global risk taking, and social-entrepreneurial self-efficacy. They all have a direct and positive relationship with social entrepreneurial intent. The paper will conclude by outlining the agenda for future research, particularly the relationship between the identified characteristics and social impact in the context of Latin America.

Social Entrepreneurship in Latin America

By

Autumn Jaye Moore

ABSTRACT

Interrelationships between socioeconomic status, cortisol, and visceral adipose tissue among overweight minority adolescents

By

Kevin Taing Ngov

This study examines associations between socioeconomic status, cortisol, and visceral adipose tissue among overweight Black and Hispanic adolescents from the greater Los Angeles County. Individuals living in low socioeconomic communities experience elevated undue stress as a result of higher rates of exposure to violence, unemployment and low income, lack of safety, and more. Stress, quantified by the presence of cortisol, may be a contributing factor to the obesity epidemic through the obesogenic effects of cortisol such as accelerated adipocyte growth and "stress-eating". Obesity, defined as an excess of adipose tissue, has been linked to several morbid conditions, but the onset of morbid conditions is dependent on where the excess adipose tissue is located in the body. Excess adipose tissue around the intra-abdominal area, or visceral obesity, has higher risk for detrimental health outcomes compared to other adiposity accumulating areas of the body. This study is designed to determine whether social stressors and cortisol have a significant relationship with childhood obesity. The results of the study will help to determine whether policy addressing socioeconomic status in relation to obesity or stress reduction interventions should be promoted.

ABSTRACT

An assessment of the therapeutic potential of human amniotic epithelial cells for the treatment of ornithine transcarbamylase deficiency

By

Kevin Murphy R. Parducho

Ornithine transcarbamylase (OTC) is a urea cycle enzyme that plays a key role in the metabolism of ammonia. Mutations throughout the *OTC* gene lead to decreased or absent activity of the OTC enzyme. Without the ability to metabolize ammonia, individuals with OTC deficiency develop hyperammonemia, which can result in severe brain damage and death. OTC deficiency is one of the most common urea cycle disorders, occurring in about one out of 80,000 births (Nagata et al. 1991; Lichter-Konecki et al. 2013). Collectively, urea cycle disorders occur in about one out of 35,000 births (Summar et al. 2013). The long term treatment for urea cycle disorders such as OTC deficiency is liver transplantation, and there have been recent successes in hepatocyte transplantation (Stéphenne et al. 2005; Puppi et al. 2008; Enosawa et al. 2014). However, these procedures are limited by the scarce availability of donor livers. Potential alternative sources for hepatocyte transplantation are stem cells.

In this study, we investigate the therapeutic effects of an untapped cache of stem cells – the placenta. Placentae from childbirth are abundant and contain pluripotent human amniotic epithelial cells (hAECs) that can differentiate into hepatocytes both *in vitro* and *in vivo* (Marongiu et al. 2011). We hypothesized that transplanted hAECs in OTC deficient mice would give rise to OTC-expressing hepatocytes, rescuing the mice's

ability to metabolize ammonia. The therapeutic efficacy of hAEC-derived hepatocytes was assessed using measurements of urine orotic acid, OTC activity, and behavioral evaluations of mice after ammonia challenge. Our preliminary results suggest that OTC deficient mice treated with hAECs were less likely to display orotic aciduria, had improved levels of OTC enzyme activity, and had increased tolerance to ammonia challenge. In summary, these preliminary results suggest a potential future for hAEC transplantation as a therapeutic measure against OTC deficiency. This warrants further research on hAEC biology. Further research in this field could help the scientific community ascertain whether or not the abundant placenta-derived hAECs can be used as an alternative measure to hepatocyte transplantation in treating liver diseases.

ABSTRACT

The purpose of this engineering project is to aid California State University Los Angeles' EcoCar 3 team in the EcoCar 3 national engineering competition. Tasked as a member of EcoCar 3 Year 2's Innovations Team, my team and I are assigned to study, prepare, and program a touchscreen dashboard for the EcoCar 3 vehicle. The product that my team will deliver by the end of the school year is an integrated police computer. This police computer contains a database—that has (experimental) records of criminals, vehicle information, and arrest records—and a navigational module that tracks the vehicle's current location and gives routes to destinations. This thesis documents the methods and challenges my team underwent throughout the engineering process, and communicates to its audience the importance of this senior project.

The main goal of this project is to implement an intuitive touchscreen computer police program. In turn, this will hopefully aid CSULA's EcoCar 3 Year 2 team in the creation of a vehicle that meets and exceeds the EcoCar 3 judging guidelines, and to benefit police forces in today's society.

ABSTRACT

Construction, Identification, and Analysis of *Arabidopsis thaliana* FT and LTP 3/4 Double Mutant

By

Pranati Pillutla

We seek to understand the biochemistry of lifespan determination in *Arabidopsis thaliana*, a model plant. Mutant plants with three nonfunctional signal-carrying molecules, lipid transfer proteins (LTPs) 3 and 4, and flowering locus T protein (FT), were generated in order to better understand the role of LTPs in flowering. LTP 3/4 RNAi knockdown mutants isolated in our lab showed a perennial-type growth pattern, producing many flowers and seeds and living over six times longer than wildtype plants. Additionally, FT and LTPs 3 and 4 are up-regulated during the floral transition and have lipid-biding domains, suggesting they carry a lipid signal that may be the true flowering hormone. Double-mutants were created by crossing FT and LTP 3/4 RNAi mutants to yield heterozygous FT and LTP 3/4 RNAi plants. After these plants self-crossed, seeds were collected and grown on sulfadiazine/kanamycin agar plates to select for double-mutants. Genomic extractions will be used to confirm genotypes after the plants bolt. These plants exhibit unusual phenotypes compared to wildtype plants, such as asymmetrical, bushy rosettes and rosette-like patterns growing on shoots. A double mutant that did not bolt was previously isolated from the F_2 generation and was confirmed through genomic extraction. Additional double mutants isolated from the F_3 generation flowered over seven months after germination. These mutants also produced long bolts with only a few flowers at the tips, suggesting that FT and LTP 3/4 are carriers

a lipid hormone. Studying senescence in Arabidopsis will provide applications in longevity or fruit production of agricultural plants.

ABSTRACT

Study of pro-survival mechanisms in hippocampal cultures with the use of *Withania somnifera*, or ashwagandha

By

April Reyes

Withania somnifera (WS), which is also known as ashwagandha, is a plant that stimulates the immune system. This herb has been used in India for thousands of years as Ayurvedic medicine. This type of medicine, Ayurveda, which is one of the oldest types of medical systems, is primarily based on "herbal compounds, special diets, and other unique health practices".[8] This type of traditional Indian medicine has been shown to have antioxidant, antistress, and adaptogenic characteristics.[7] WS is considered to be an adaptogen, which is a natural substance, or plant extract, that promotes the body's ability to counterattack the harmful effects of stress and restores normal physiological functioning.[1] My project focused on the neuroprotection of WS in hippocampal neuronal culture. This culture underwent nutrient deprivation stress. In preliminary studies of Dr. Russo's lab, it was shown that WS provided neuroprotection to nutrient deprived hippocampal cultures and increased expression of brain-derived neurotrophic factor (BDNF), which is a molecule that sustains the wellbeing of cognitive function and neuronal survival.[4,9] With the overall focus that key constituents of WS help maintain hippocampal neurons, pro-survival responses will be confirmed. Embryonic hippocampal neuronal culture in nutrient deprivation stress and the intracellular signal transduction pathway, Phosphoinositide 3-Kinase (PI-3K), was tested for this pathway's involvement in promoting neuroprotection with the treatment of WS, withanolide A, and withaferin A, which are constituents of WS. If the survival of hippocampal neurons decreased with the PI-3K inhibitor, then this will support that ashwagandha's mechanism of neuroprotection may be due to the requirement of the PI-3K

pathway. Western blot results in Figures 5-7 suggest that the mechanism for WS and withanolide A may be the PI-3K pathway, but the mechanism for withaferin A may be due to a different pathway. This study of pro-survival mechanisms in the brain is significant because of the critical need for different treatments that support the enhancement of brain function and also to prevent neurodegenerative diseases without severe side effects. An important factor is that WS can be further studied for the use of neuroprotective treatment in various disorders and it is unlike known drugs and antidepressants because it does not have any known severe side effects.[7]

(References from Chapter 1)

ABSTRACT

Maternal Gestational Diabetes as a Risk Factor for Type 2 Diabetes and Obesity in Latino and African American Youth
By

Alejandra Paula Rivas

According to the CDC, approximately 12 percent of Latina mothers were diagnosed with gestational diabetes in 2010. Compared to the overall prevalence of GDM, which is 4.6 percent, this is a significant health disparity affecting expectant Latinas. Gestational diabetes is a temporary state of high blood glucose which usually resolves after pregnancy. The literature shows that there is a potential future risk to the child being diagnosed with obesity or type two diabetes. This aim of this project was to determine if maternal gestational diabetes associated with obesity measures or type 2 diabetes risk factors during childhood in Latino and African-American children. Results revealed GDM exposure in-utero was associated with lower HDL-cholesterol and higher liver fat, both of which are risk factors for type 2 diabetes. Future studies should aim to more thoroughly track minority children exposed to maternal GDM and to address additional confounding factors.

ABSTRACT

The Analyses of Colorimetric Biomedical and Environmental Assays on Paper-Based Microfluidic Devices

By

Frances A. Tsai

Chapter 1. A perspective on the history and development of microfluidics is presented. Paper microfluidics has emerged as a branch of microfluidic studies and has led to several biomedical applications, such as point-of-care (POC) diagnostic devices. An emphasis is placed on different novel techniques to fabricate paper microfluidic devices (MDs).

Chapter 2. A printer wax-based microfluidic paper-based analytical device (μPAD) is used to study a colorimetric acetaminophen assay. With there being an increasing concern for drug abuse in the biomedical field, several illicit and abused drugs, including acetaminophen (commercially known as Tylenol), can be colorimetrically detected and tested for in therapeutic and toxic ranges. Specifically, the acetaminophen assay forms a dark green metal-drug complex with ferric ions. After reaction, the device was scanned and analyzed, yielding a linear relationship of green color intensities versus acetaminophen concentrations.

Chapter 3. Using organic solvent-based μPADs, an environmental assay for iron (Fe^{3+}) is studied via colorimetric analysis. Water is composed of a myriad of nutrients and ions, including metal ions such as Fe^{3+} that may be toxic to humans. Particularly, Fe^{3+} forms a reddish-brown metal-ligand complex with thiocyanate (SCN^-) that was analyzed on a cost effective and easy to use μPAD drawn from commercially available

Sharpie permanent markers. The markers are composed of a hydrophobic resin, colorant, and an organic solvent that is allowed to dry prior to starting the experiment. After the reaction runs to completion, the device was dried, scanned, and analyzed, yielding a linear range of red color intensities versus ferric iron concentration.

Chapter 4. An environmentally friendly paper microfluidic platform made from natural beeswax dissolved in chloroform is developed and applied to an enzymatic glucose assay as proof-of-concept. With an increasing concern to be environmentally conscious, this study aims to develop a μPAD that inflicts minimal harm on the environment. The μPAD was used to mix a yellow and blue solution and was then compared to the assay. An assay composed of glucose oxidase (GOx), horseradish peroxidase (HRP), potassium iodide (KI), and glucose resulted in a yellow-brown color produced by the oxidation of KI to iodine. The mean inverse red intensity was quantified for 15 mM glucose. The μPAD will be applied to other concentrations of glucose in the therapeutic range.

An alternative approach to treating Diabetes Mellitus using Cinnamon

California State University, Los Angeles

Honors College Thesis, Spring 2016

Gabriela Vaca-Flores

ABSTRACT

Everyday tasks such as walking down the street, grocery shopping, and simply washing the dishes, require energy. A normal functioning human body acquires energy from food intake, specifically, carbohydrate intake. From carbohydrates, the body receives glucose, commonly known as sugar. The glucose molecules are transported through the body via the blood. Liver, muscle, and fat cells then uptake the glucose molecules available in the blood, and convert them to usable energy. Entry to these cells is not a passive mechanism. In order to demonstrate how glucose enters the cell, it is helpful to look at the cell as a house with many doors. In order for glucose to enter the house, all the doors must be opened, and a key is required. This key is known as the hormone, insulin, which signals the cell to allow glucose to enter. Diabetes Mellitus (DM) is an umbrella of various metabolic diseases that disable the body to generate sufficient insulin. In other words, the doors cannot be opened, and the cells are starved of usable energy.

ABSTRACT

Effects of *Dendroides canadensis* Antifreeze Protein on the Cryopreservation of Lactate Dehydrogenase

By

Marlene Villegas-Ortega

The effect of an antifreeze protein (AFP) isoform from *Dendroides canadensis* (DAFP1) on the cryopreservation of lactate dehydrogenase (LDH) at pH 7.4 was evaluated. Almost all living cells have LDH, an enzyme converting lactate to pyruvate and back, where the optimal pH for the backward reaction of LDH is around 10. This thesis is a part of the study currently being done at pH 10 which found the optimum ratio of LDH to DAFP1 to study the effects of DAFP1 on the freezing and thawing processes on the enzymatic activity of LDH. Here, the study was performed at pH 7.4, a physiological pH, instead. Antifreeze proteins from beetles *Dendroides canadensis* were expressed using *Escherichia coli* (*E. coli*) and purified using affinity and ion-exchange chromatography. Samples and controls were subjected to fast freeze and fast thaw processes both of which required the sample to freeze or thaw at a rate of 8°C/min. A UV-Vis Spectrophotometer was used to run assays to determine the specific activity of LDH. The results showed that LDH maintained a higher specific activity in the presence of DAFP1 compared to the control, suggesting that DAFP1 protects the enzyme from damage caused by freezing at a physiological pH.

ABSTRACT

ACCENTEDNESS IN REVERSE LINGUISTIC STEREOTYPING
By

Stephanie S. Wong

This study focused on 20 Hong Kong students and their perceptions towards non-native English speaking teachers (NNESTs) foreign accent. The students filled out a questionnaire, which was designed to show their attitudes towards NNESTs and their accents. Afterwards, the students listened to a short English speech and subjectively rated each speech for foreign-accentedness and comprehensibility using a 9-point scale. The results showed Hong Kong students' perceptions of how easy or difficult an utterance was correlated with the perceived foreign accent of the speaker. There were no findings in this study that proved it is more difficult to understand NNESTs foreign accents compared to native English speaking teachers (NESTs).

ABSTRACT

Effects of Antifreeze Proteins from Cold-Adapted Beetles on Freeze and Thermal Protection

by

Ariga Bianca Yaghoobi

Antifreeze proteins (AFPs) belong to a class of proteins that are known to prevent or delay ice crystal formation and are expressed by a wide range of organisms including fish, plants, and insects. They function by depressing the freezing point of solutions to create a thermal hysteresis gap by adsorbing to ice crystals and making ice growth or aggregation kinetically unfavorable. In this study, the temperature-dependent activity of antifreeze proteins from cold-adapted beetles was investigated in both subfreezing and thermal environments. AFPs from *Tenebrio molitor* (TmAFP) and *Dendroides canadensis* (DAFP-1) are known as hyperactive AFPs that create a large observable gap between melting and freezing temperatures of solutions. Both proteins were expressed and purified with newly developed methods that improved yields and purity of the proteins. Through cell viability assays, TmAFP was shown to improve cell viability of bacterial cells under freeze stress and proved to be a better cryopreservation agent than glycerol, a common cyroprotectant. DAFP-1 was shown to protect enzyme activity in thermal stress more efficiently than trehalose, a molecule known as a thermal protectant.

ABSTRACT

THE IMAGINATION INFLATION EFFECT FOR COMPLEX EVENTS

By

Rebecca C. Ying

Prior research on human memory has repeatedly shown that imagining a counterfactual event may lead to increased confidence that the event actually occurred. This effect is known as *imagination inflation*. Imagination inflation research has been dominated by two primary paradigms. The first model, developed by Garry, Manning, Loftus, and Sherman (1996), focuses on the effects of one major imagining on memories of childhood events. Other studies have adopted Goff and Roediger's (1999) paradigm, which studies the effects of multiple imaginings on recent, verifiable simple events conducted in a laboratory setting. However, past research has not examined the imagination inflation effect for recent, verifiable *complex* events.

The aim of the current study was to determine whether Goff and Roediger's results could be replicated, and to extend this work to see if the same effect is observable for complex events. Specifically, this study looked at how 0, 1, or 3 imaginings influenced the likelihood of forming false memories and the confidence in those memories in 102 undergraduate college students at California State University, Los Angeles. Results indicated that the imagination inflation effect exists for both simple and complex events, although the effect is much stronger for simple events than complex events. However, our findings also suggested that the current paradigm for studying imagination inflation has several limitations, and may not effectively measure the effect for complex events.