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ABSTRACT

Analysis of Zebrafish Dyrk1a in Behavior and Development

By

Nadia Sami Ashour

The Dual-Specificity Tyrosine Phosphorylation-Regulated Kinase (DYRK) family is a group of highly conserved proteins. One member of the human and mouse DYRK family is DYRK1A, which is orthologous to two zebrafish genes, dyrk1aa and dyrk1ab. The human DYRK1A gene is in a region that has been linked to Down syndrome and autism spectrum disorders on chromosome 21 and is a candidate gene for these disorders. Because DYRK1A-/- mutant mice do not survive to birth, behavioral studies cannot be conducted using this animal model. However, dyrk1aa-/-;dyrk1ab-/- (1aa/ab-/-) mutant zebrafish have been shown to survive and are capable of mating, making them useful for studying the importance of this gene in adult behavior. We analyzed dyrk1aacsu31 transcripts to investigate how the mutant dyrk1aa allele affects gene expression and determined that it is a complete loss-of-function allele. Additionally, we conducted a social behavioral assay in order to analyze the social behavior of 1aa/ab-/- mutant zebrafish and found that the mutant zebrafish display significantly impaired social behavior compared to wildtype zebrafish. This study suggests that DYRK1A plays a significant role in the development of Down syndrome and linked social behaviors. Future studies will benefit from focusing on additional behaviors of 1aa/ab-/- mutant fish and from creating new allele combinations from offspring of the 1aa/ab-/- mutants to study craniofacial development and social behavior.

ABSTRACT

Western Food Perceptions in the Land of the Rising Sun

By

Gabriel Babuch

This thesis seeks to understand the basis of Western (specifically American) fascination with Japanese cuisine in the late Tokugawa to mid-Meiji period Japan, seen through a collaborative lense rather than an Orientalist lense. This time marked the transition of Japan from a feudal society to a wholly modern one, and was the beginning of free Western travel to Japan after centuries of border control. This thesis found that the basis of Western fascination with Japanese food was the ability of Japanese food to be representational, fantastic, and symbolic in a way other cuisines are not. Rather than having community building as its primary goal other than sustenance, Japanese cuisine's primary goal was to simply mean something, thereby fascinating travellers.

ABSTRACT

Entrepreneurial Opportunities in the Accounting Industry

By

Kevin Castillo

Many accounting undergraduate students choose the pathway of working for a big firm thinking it is the only one that will give them the best return on investment. Choosing benefits, job security, high financial reward, and opportunity to grow within the big firm sounds very attractive. However, at what cost? Time and possible self-realization issues. Sure, starting a career in accounting will always take hard work at the beginning regardless of the beginning phase of the career, but in the long-term, which path will provide CPA professionals the most fulfilling journey? This thesis will provide a report of the variety of opportunities that can be fulfilling for an Accountant choosing Entrepreneurship at any point of his or her career.

ABSTRACT

A Reply to Professor Laura Brown's Marxist Interpretation of The Rape of the Lock

By

Justin D. Chang

In 1985, Professor Laura Brown of Cornell University published Alexander Pope. In this book, she offered an interpretation of the eponymous poet's major works based on theories of Marxism and Deconstruction -- an interpretation which distanced itself from the New Criticism of that century, and which she herself agreed to label as a "re-reading" of literature. The work was published as part of a series of such "Re-readings" which, under the general editorship of critic Terry Eagleton, purported to critique in similar fashion the works of major English writers through the lenses of modern theories such as Marxism, Deconstructionism, and Feminism. Upon close examination however, the claims of Professor Brown are revealed to stand upon inadequate support. The basis for her analysis of The Rape of the Lock is her claim of Commodification, as well as her critique of Pope's Neo-Classical imitation of Homer; and yet these two pillars, when examined beside the text of the actual poem and its established criticism, are revealed to contain faults of analysis. In particular, Professor Brown fails to consider key lines of the poem which, when properly considered, dismantle her claim of Commodification; and she fails as well to see that the narrow scope of her Marxian interpretation cannot account for the complexity of the poem as a whole. This cornerstone of her book being doubtful, the reader may wish to reexamine the firmness of the superstructure.

ABSTRACT

Optimizing Surface Plasmon Resonance Microscopy for Studying the Interaction Kinetics Between Proteins and Cell Membranes

By

Megan Chang

Surface plasmon resonance (SPR) spectroscopy is a label-free technique used for the study of biomolecular binding kinetics between ligands and cell receptors. Surface plasmon resonance microscopy (SPRM) combines traditional SPR spectroscopy with optical microscopy, monitoring binding events in real-time with simultaneous spatial visualization of cell structures. While SPRM has many advantages, there is no established protocol in the field for the measurement of binding affinity by SPRM. A model system studying HER2–Herceptin binding in breast cancer cells was used to optimize the following experimental parameters: (1) flow rate; (2) incident angle; (3) concentration range. The following trends were found: (1) faster flow rates reduced stabilization time; (2) incident angle selection required consideration of both cell and substrate areas; and (3) the concentration range should not include concentrations above the saturation concentration, which typically result in saturated SPR response signals. The values of binding affinity constants obtained based on equilibrium ("Affinity Analysis") and that based on rate constants ("Kinetics Analysis") were found to be different. Future work will further optimize experimental conditions and data analysis techniques.

ABSTRACT

Launching New Product in New Market: Challenges and Opportunities

By

Xinhao Chen

Starbucks began to expand in 2003. One of the reasons why Starbucks has been so successful in expanding is it has excellent business model. Starbucks does a lot of research before entering new areas. Starbucks knows what their customers are. They also adapt different menus to different countries.

Starbucks has set a good example globally by committing and maintaining a 100% gender equity pay in all its markets worldwide. Starbucks will continue to achieve positive results as long as they maintain positive relationships with its suppliers worldwide and provide great customer service.

Singapore has set a goal to get multinational companies to want to manufacture in the country. The country has made some government policy changes in order to become more attractive for multinational companies. The laws that they created became very appealing to international investors. Besides this, Singapore has predictable, stable and good weather. This makes companies easier to plan accordingly. A series of reasonable and long-term plans have allowed Singapore to grow into thriving economy. Singapore became a very attractive country for companies to do business with.

ABSTRACT

Rental Landscape Analysis on Airbnb in Los Angeles

By

Annie Chen

In this project, we will analyze Los Angeles and San Francisco data from InsideAirbnb, which is an independent, noncommercial open-source data tool, to understand the overall rental marketplace/landscape by applying different measurements to produce static and interactive visualizations.

With this analysis, you can answer fundamental questions about Airbnb within the Los Angeles and San Francisco region. Questions include:

- Which city is the most popular in Los Angeles/San Francisco?
- Which city is the most expensive in Los Angeles/San Francisco?
- Which city is the most affordable in Los Angeles/San Francisco?
- How has Airbnb grown in terms of popularity?
- Is there seasonality based on the reviews? In other words, is there a specific season that people rent Airbnbs in Los Angeles?

ABSTRACT

Real-Time Monitoring of Interactions between Alpha-Synuclein and SH-5YSY Neuroblastoma Cells using Scanning Ion Conductance Microscopy

By

Andy Chieng

α-Synuclein (α-Syn) has been commonly associated with Parkinson's Disease (PD), the second most common neurodegenerative disorder. Recent work suggests that its oligomeric form can bind to cellular membranes inducing the death of dopaminergic neurons, resulting in the symptoms of Parkinson's Disease. However, the mechanism behind this process has yet to be confirmed, particularly using a live cell model. This study uses scanning ion conductance microscopy (SICM) to monitor the interactions between α-Syn and the neuroblastoma SH-5YSY membrane surface in real-time. After characterizing the α-Syn oligomers using atomic force microscopy (AFM) and circular dichroism spectroscopy, the oligomers were deposited onto live SH-SY5Y neuroblastoma cells at two separate concentrations (1.00 μM and 6.00 μM). Significant curvature and roughness change were observed on the membrane surface, and at 6.00 μM α-Syn, large defects were also observed. This suggests the mechanism of α-Syn's disruption of the membrane surface may be in stages, in which lower concentrations increase the permeability and curvature of the membrane surface after binding resulting in transient structures, and higher concentrations result in a lipid extraction mechanism and potentially defect stabilization.

ABSTRACT

Medication Assisted Treatment, Cognitive-behavioral Therapy, and Motivational Interviewing for the Treatment of Heroin Addiction

By

Clarice Ann D'Angelo

Heroin use, and overdose deaths related to heroin, are increasing in Los Angeles County. Heroin addiction creates a physical dependence on the drug, and it alters the brain's natural chemistry. The strong dependence makes heroin addiction difficult to overcome without strong support and effective treatment. Medication can reduce the physical symptoms of withdrawal from heroin. Methadone is an effective medication for treating heroin addiction, it is dispensed mainly in medication assisted treatment (MAT) programs. Substance abuse counseling (SAC) is often provided within MAT. SAC can integrate cognitive-behavioral therapy (CBT) and motivational interviewing (MI) to help heroin addicts change their thought and behavior patterns to sustain healthy behaviors. MAT, CBT, and MI are all individually effective treatment approaches for the treatment of heroin addiction. When combined, these services can effectively target different aspects of addiction. This literature review analyzes studies and data from the past ten years and includes tabled results of significant studies. Sources supported the hypothesis that MAT is successful with CBT and MI. MAT programs which combined CBT and MI in their counseling approach were associated with improved mental health reports and decreased reports of drug use. Limited studies on the combination of MAT, CBT, and MI were available. Gaps in current research were addressed and this review advocates for further research before generalizing treatment methods to this population.

ABSTRACT

Childhood Emotional Neglect and Its Effects on Adult Interpersonal Relationships

By

Tamara G. Dayton

Child emotional neglect and maltreatment is a prominent form of abuse with subsequent mental health disturbances that affect an individual throughout life. Chronic experiences with neglect worsen the effects one faces. It also leads to increased vulnerability to mental health illnesses such as anxiety, depression, bipolar disorder, and complex PTSD. The result of maladaptive coping mechanisms and characteristics, such as internalized shame, fear of intimacy, and a strong inner critic, provide further difficulty in the realm of developing interpersonal relationships. Survivors of childhood emotional neglect are likely to have trouble developing/maintaining healthy relationships and are at risk of entering abusive relationships. This study utilized a key informant interview method to gain greater insight into the trends found in therapeutic settings. In doing so, the detrimental nature of chronic childhood emotional neglect was further revealed along with the need for more comprehensive lifespan treatment guides. A focus on complex PTSD also arose as it was found to be a commonly developed mental illness as a result of childhood emotional neglect. The moderating factors of resiliency and at least one stable relationship in childhood were discussed as potential ways to decrease these effects. Directions for future research and implications of the information gathered are further discussed with the acknowledgement of the need for more efficient therapy treatments.

ABSTRACT

Elucidation of the Mechanism of Rbp2 in Modulating KaiC Localization in S. elongatus

By

Nicholas Ray Duncan

The circadian clock of the cyanobacterium S. elongatus is a commonly used model for the mechanisms of circadian rhythms in general. However, some of the underling mechanisms of the clock and clock-related proteins have both unknown functions and causes. An example of this is KaiC, one of the core clock proteins in cyanobacteria. During the day, KaiC is diffused throughout the cell, but at night, KaiC is condensed to a cell pole. Rbp2, an RNA binding protein, has been implicated as part of the pathway to KaiC localization. Here, it was determined that S. elongatus with Rbp2 loss of RNA-binding function mutants have circadian phenotypes similar to that of mutants with no Rbp2. This suggests that the role Rbp2 fills in modulating the circadian rhythm is primarily a result of Rbp2's RNA binding capabilities. In addition, we note that the circadian phenotype of S. elongatus is unaffected by a Strep-tag attached to the C terminus of Rbp2. These findings lay the groundwork for future research to determine the role Rbp2 has in controlling KaiC localization and allows for a better understanding of the cyanobacteria circadian clock, a useful model for other circadian rhythms.

ABSTRACT

Sexuality As It Relates To Individuals With Intellectual And Developmental Disabilties: A Development Of Sexual Health Resources For Parents And Caregivers

By

Kathryn Fazzi

With the high rates of discrimination and violence against people with disabilities, young adults with intellectual disabilities should be given as much knowledge and practice as possible to help keep themselves safe. In reality, though, adolescents are often excluded from classes on development and sexual education in schools because of incorrect beliefs about their maturation levels. Many parents and caregivers are then left to figure out how to educate their children on their own with very few accessible resources. To combat this issue, the website, entitled Sexuality on the Spectrum, was created with the purpose of providing resources to parents of adolescents with intellectual disabilities on five topics related to sexual development (Puberty, Dating and Relationships, Sex Education, Disability Awareness, and Safety). To find sources for the website, an evaluation process was created to filter through various sources complied from internship, volunteer, and work experience with nonprofits as well as online sources discovered through google searches. The source list was narrowed down so every topic has four of the most useful sources displayed with brief summaries. In the future, more sources will be added to each topic and more refined explanations of them will be developed so that the website can be expanded for a larger audience.

ABSTRACT

The Environmental Accessibility for the Disabled Throughout Cal State LA

By

Jasmin Flores

The Americans with Disabilities Act, Title II, passed in 1990, prohibits discrimination based on disability. These laws protect against those attending public schools to reinforce the expectation that schools are meeting specific criteria to fulfill every disabled students' needs of getting a full and non-disrupted education like those who are nondisabled. At California State University, Los Angeles (Cal State LA) there have been significant changes throughout the years in order to improve their environmental accessibility, but like many other schools there is still room for improvement. Both sides of the spectrum were researched in order to gather information on the pros and cons of accessibility throughout the campus. Major changes have occurred within the years including: ramps being added throughout campus to create alternate routes, elevators being fixed when needed, and automatic doors being easily accessible. Issues that still need to be addressed are: classroom congestion, accessible desks being readily available in every classroom, and making commutes from one classroom to another more efficient. While there are already laws in place to help persons in need of accommodations, there are still so many alterations that can and should be made to allow for an equal playing field for those with a disability.

ABSTRACT

An Application of Data Mining Techniques to Happiness Data

By

Patricia Gallagher

Data science is an amalgamation of other fields of academia--namely statistics, mathematics, computer science, and business analytics--that has developed into its own independent discipline. Data science focuses on a niche aspect of data analysis concerning the understanding of linkages and pattern identification in numerical simulation. Using data science as an approach to problem solving is uniquely efficient because it relieves pressure from the process of hypothesizing; unlike other fields, data science does not rely on a preconceived idea to allow for the identification of patterns but rather allows the data to identify the patterns itself. Furthermore, data science is a distinctly important field in the way that it streamlines the usage of fundamental principles from other fields and in the way that its lack of restrictions allows it to be applied to various other disciplines. This report was designed as a learning project to, as an extension of my experience with Economics research and mathematics, introduce me to data science algorithms and allow me to apply them using Python, a programming language that contains several packages specializing in data mining and statistical analysis. This was done through a comprehensive literature review covering data mining techniques and an application of data mining techniques to happiness data.

ABSTRACT

Development of an Underwater Sound Localization Algorithm Using

Cross Correlation for the RoboSub Competition

By

Sidra Gibeault

The international RoboSub competition requires competing Autonomous Underwater Vehicles (AUVs) to perform a wide range of tasks. Recent trends in AUV technology have prompted the addition of new functionalities to our submarine, especially in navigation. The process of directing the vehicle towards a sound source, called sound localization, has many underwater applications, including biological research and military operations. A sound localization algorithm employing cross correlation was used to calculate the direction of the sound signal source. Determining the time difference of arrival of the signal between hydrophones within an array, the orientation of the AUV can be computed. This algorithm was tested in 2-dimensional and 3-dimensional settings, yielding high accuracy and precision. Overall, the performance in the 2D case was superior to the performance in the 3D case. However, both situations yielded a high enough accuracy for proper navigation. After filtering erroneous results due to environmental factors, the results imply the navigation algorithm would be sufficient for navigating the AUV towards the sound source. Future efforts to test the functionality of the system include implementation on an AUV and overall navigation performance quantification in water.

ABSTRACT

The Effects of Physical Activity on Brain Oxygenation during Virtual Reality Gaming

By

Valerie Vanessa Gonzalez

Physical activity has been linked to brain oxygenation and cognition. However, very few studies have explored the implications of engaging in virtual reality (VR) gaming, which has become increasingly popular overtime. The purpose of this study was to investigate the relationship between physical activity and VR gaming on brain oxygenation. The primary goal was to assess cerebral oxygenation during VR gaming in order to determine if a relationship exist with PA levels. Nine subjects took part in the study by wearing the ActiGraph GT9X (ActiGraph, FL, USA), a triaxial accelerometer device for seven consecutive days on their left wrist. Data for number of steps, calories burned, and percentage of time spent either sedentary, in light intense activity, or moderately intense activity were collected. Changes in oxy-(ΔO2Hb) and deoxy-(ΔHHb) hemoglobin were measured using with the OxyMon MkIII Laser-based near infrared spectroscopy (NIRS) system. The data for this study showed that there was a positive correlation between light PA intensity and O2Hb ($r=0.54$) but no correlation between time spent in moderate intensity PA vs O2Hb. Overall, participants showed an average decrease of O2Hb during VR gaming. In the end, there was a trend between light PA and O2Hb but no correlation was found between moderate PA and O2Hb. Therefore, the data does not show that PA is a main driving force for brain oxygenation and no true relationship was seen between PA and brain oxygenation during VR gaming.

ABSTRACT

Gun Culture in America: A Critique via the Deconstructive Western Anthology Screenplay, All the Jewels in Heaven

By

Luke Henshaw

The feature length screenplay, All the Jewels in Heaven, was crafted for the purpose of looking at the American fascination with firearms, which is a major contribution to modern gun culture in the country. In the process, the script was built to address the western genre of film and deconstruct the processes of which the golden age of the genre contributed to the audience's perceptions on themes such as gun ownership, race, imperialism, and masculinity. The script is told in three stories in order to critique and observe the aforementioned thematic topics in a divided manner. All the Jewels in Heaven is a contribution to the film community in its critique, status as an anthology, and its practice of narrative divergence.

ABSTRACT

Socratic Dialogue Video Essay: There Is No Future Under Capitalism Seen Through Disney Parks

By

Andrew Hernandez

In this screenwriting project, I wrote a Socratic dialogue script between two characters to delivers a crash course in dialectical materialism using a well understood concept, the Disney park. This is significant because explicit critiques against hegemonic capitalism are not normally found in mainstream media, and organization to improve society is predicated on widespread education. The script can educate widely because it is meant to attract and engage a wide audience through the Disney park relation. In the script, a layman janitor meets an eccentric socialist robot in the basement of Walt Disney World. The characters conflict, but they eventually see eye to eye and gain a renewed drive to improve the world. To write the script, I wrote progressively longer drafts from recorded notes and research. Each draft was evaluated and reworked based on feedback. The script is like other Socratic dialogue style productions on YouTube but is unique in subject matter, characterization, and plot. After more revision, a future goal is to solicit grant funding for an independent production of the script.

ABSTRACT

Predictors of Drug Use Among Latino Adolescents in Los Angeles

By

Anna Alexandra Hernandez

The purpose of this research study was to identify predictors of substance use among Latino adolescents. By examining how social support and perceived stress affect alcohol and tobacco use when comparing adolescents with parents born in the United States versus parents born elsewhere. The study uses secondary data that was collected under Project RED (Reteniendo y Entendiendo Diversidad para Salud). The key findings of this this study were that: 1.) perceived stress and smoking had a positive relationship when parents were born elsewhere, indicating that more perceived stress could likely increase tobacco use, 2.) social support and smoking had a negative relationship when parents were born elsewhere, indicating that more social support could likely decrease tobacco use and vice versa, and 3.) social support and lifetime days drinking had a negative relationship, indicating that more social support could likely decrease alcohol use and vice versa.

ABSTRACT

Investigating the Effects of Antidepressant Compounds on The Rates Of Regeneration in the Planarian Schmidtea Mediterranea

By

Jobel Hernandez

Schmidtea mediterranea is a species of planarian that make great animal models to study factors that influence regeneration due to their remarkable ability to regenerate any lost or damaged body parts. Ketamine is a pharmaceutical compound that is finding new use as an antidepressant. Although the method by which ketamine produces these antidepressant effects is still unknown, studies have shown that the drug is able to promote synaptogenesis, the formation of new synapses in the nervous system. This project investigated whether ketamine had an influence on the regeneration rates of Schmidtea mediterranea, as well as how this influence compares to that of a traditional antidepressant, fluoxetine. To measure regeneration rates, planarians had their heads cut with a scalpel and the average amount of time that worms needed to grow back their eyespots was recorded for both drug-exposed and unexposed planarians. Our data shows that both ketamine and fluoxetine appeared to inhibit regeneration, with the latter having a more pronounced effect. While this data may provide potential insights that may be utilized in regeration studies, these results are very preliminary and more work is required before forming conclusions.

ABSTRACT

Investigating the Mitochondrial Disease Leigh Syndrome through the Development of Cellular Models and Exploration of AK4 Knockdown as a Potential Therapeutic Solution

By

Jessica Ya-Shin Hsueh

Leigh Syndrome (LS) is a severe neurodegenerative disease that is characterized by lesions in various parts of the brain and nervous system, resulting in respiratory problems and a delay in motor control and cognitive functions. Most LS patients are diagnosed during early infancy and childhood, with death occurring shortly after; while the disease has a high mortality rate, there are no effective treatments and no cure. Because LS arises from genetic mutations in the electron transport chain in the mitochondria, patients typically have lower ATP levels that greatly reduce cell viability and function. My thesis investigates the role of adenylate kinase 4 (AK4) in increasing ATP levels in LS cellular models, as AK4 has previously been shown to play a critical role in cell stress and increases ATP levels when knocked down. HeLa cells were first treated with mitochondrial toxins to generate LS models; antimycin was found to effectively reduce ATP levels by 20-25% from normal ATP levels, which is similar to what LS patients experience and resulted in the successful generation of LS cellular models. After conducting optimization experiments, siRNA transfections were conducted to knock down AK4 in HK2 cell lines but showed conflicting results for whether AK4 knockdown increased ATP levels. Future research directions include continually verifying that AK4 knockdown in LS cellular models does increase ATP levels and examining how reactive oxygen species (ROS) production is altered in LS models.

ABSTRACT

A Retelling And Analysis of Classical Love Mythologies Through the Lens of Contemporary Gender Relations

By

Mikaila Y. Ishaaya

The classical tradition encompasses a vast tradition of works up to the contemporary period. Though prevalent across disciplines, the tradition is split within itself between the creative and the scholarly. The latter analyzes and comments upon the former, and the former often spurs future creative work, but these spheres remain complementary at most, rather than merged. This thesis bridges that gap through a trifold approach of creative retellings of eleven classical myths, reflections on those creative works, and scholarly analyses between the retellings, reflections, and a preexisting body of academic works. Through the lens of gender relations, this thesis uses its trifold approach to discuss gender, sex, and love, with a particular focus on the ambiguous concept of eros. It reveals the rigid hierarchy of patriarchal Ancient Greece that places the Greek man at the center of civilization and power, pushing non-Greeks to the outskirts; at the same time, it delves into the commodification of women in Ancient Greece. All perceived threats to this hierarchy, especially by strong and sexual women, are externalized and confronted in myth, utilizing gods, heroes, and monsters to enforce and justify societal norms. Mythology is a tool for understanding and structuring reality. My thesis reverse-engineers this mirrored and yet fantastical reality with a novel, uniting approach.

ABSTRACT

A Self-Made Cabin or a Small Cot in the Corner of a Palace:

Global Dynamics on the International Economic Stage

By

Connor Hershel Johnson

The hierarchy of nations in the modern globalized age is indicative of hundreds of years of development based on geographic and cultural factors, resulting in what today can be described as an intensified version of the feudal dynamic that dominated much of Europe and Asia in pre-modern times. There continues to be a relationship between large, powerful "leaders" that trap "serf" nations into nearly-unbreakable economic servitude, the former using their privileged positions to acquire resources that grow institutional power which is used in turn to maintain that very same institutional power, a positive feedback loop that controls the abilities of labor-heavy and natural resource-rich, less-developed countries and keeps them from being able to use their tools to take control of their own economy. Instead, they are exploited by these global authorities and barred from self-development through international financial institutions that inflict harsh liberal economic policies and the support of autocratic leaders who are not obliged to grow or maintain a civil society or protect human and labor rights, keeping production costs low in those areas and saving most of the profit to be made for those political and economic elites.

ABSTRACT

The Context and Meaning of Human Child Sacrifice of the Maya.

By

Hannah Johnston

Ancient Maya society practiced many rituals in caves including child sacrifice. A variety of research has been done on historical ethnographic sources and ritualistic sites of the Maya. From these studies, enough information has been compiled that we have a basic understanding of their theology and why they practiced sacrifice. However, subadult remains have been commonly neglected in a majority of the studies on this topic. Subadult remains do exist in the archaeological and this paper centers the studies focused on interpreting the role they served in sacrificial rituals. The site in Midnight Terror Cave (MTC), located in Belize, was used for large scale ritualistic practices. MTC contained over 10,000 bones, making it one of the largest skeletal assemblages documented in a Mayan site. This assemblage has proven to be useful for the archaeologists committed to understanding investigating this topic. By examining the philosophical sources and sacrificial sites, this thesis provides a foundation of the current state of knowledge in this field of study. With that, a critical analysis of our understanding of the MTC site is provided, along with suggestions for future research.

ABSTRACT

2nd Generation Building Testbed

By

Alexis Kam

The client has requested a building testbed for energy research. The facility will be used for a multitude of purposes, such as testing the heat retainment of different wall materials or maximizing the efficiency of cooling and heating for isolated areas instead of the whole building. The testbed has been optimized to incorporate a modular system for swapping walls and sensors for data acquisition. This project will be used to research ways to save energy and construct sustainable buildings. This paper presents the progress of the project with an overview of the project organization and timeline, requirements, building design, materials, HVAC system, electronic system, and heat transfer analysis.

ABSTRACT

Responsive Adsorptive Properties of Zr-Based
Metal-Organic Framework-Hydrogel Composites

By

Shirell Eliezra Klein

Metal-organic frameworks (MOFs) have emerged as promising candidates for a wide range of applications due to their high surface area and customizable structures. However, their lack of stimuli-responsiveness on macroscopic scales has limited their industrial applications and processability. Large-scale structuring of MOFs within conformationally adaptive materials can be achieved in hybrids that incorporate MOF components into responsive hydrogels during the cross-linking process. Adopting this strategy, a MOF-hydrogel hybrid material (Zr-trimesic acid-alginate) was synthesized using a green chemistry approach. Compared to the MOF or the hydrogel alone, the MOF-hydrogel hybrid demonstrated higher adsorption capacity of a dye molecule (methylene blue) in aqueous solution and displayed pH-responsive adsorption behavior, rendering possible applications in water purification, drug delivery, and/or as environmental sensors.

ABSTRACT

Role of Yeast Casein Kinase 2 In Ph-Responsive Morphogenesis And Biofilm Formation of *Candida Albicans*

By

Jalen Genine Langie

Candida albicans is an opportunistic, dimorphic fungus known for causing oral, vulvovaginal, and systemic infections. A key virulence factor is its ability to form, which is resistant to many antifungal agents. Our previous studies demonstrated that casein kinase 1 homolog (CaYck2p) is involved in biofilm production and morphogenesis . However, the regulatory pathways are intertwined, and the mechanisms that govern morphogenesis-associated biofilm mediated by CaYck2p have not yet been elucidated. Said regulatory mechanisms become activated in response to environmental cues, such as pH, temperature, and nutrients. Due to morphogenesis' dependence on pH, CaYck2p may govern pH sensing pathways. One such pH sensing pathway, Rim101p, facilitates in hyphae and biofilm formation in alkaline environments. Preliminary research connects Rim101p pathway regulation to ScYck1p – a protein in *S. Cerevisiae* that bears amino acid similarity to CaYck2p. I hypothesized that CaYck2p is involved in pH responsive morphogenesis via Rim101p regulation and functions in a manner similar to ScYck1p. Using the wild type, *yck2*Δ/*yck2*Δ , and revertant strains, I conducted several biofilm assays under varying pH (pH 4-9), temperature (30℃ and 37℃), and media (YPD and RPMI) using a quantitative colorimetric analysis. I also evaluated morphological transitions of the aforementioned strains in YPD media at 37℃ and 30℃ . The *yck2*Δ/*yck2*Δ strain formed more biofilm than the wild type and revertant strains in all pH's in YPD at 30℃ and most pH environments in YPD 37℃, but not RPMI at either temperature. In terms of morphology, pronounced yeast to hyphal transitions occurred in response to pH in the wild type and revertant strains in YPD at 37℃, while morphological changes at 30℃ were limited. The mutant strain formed pseudohyphae, regardless of pH. These results suggest that the pH influences biofilm and morphological changes; however temperature and media type may override pH as a factor. While the findings in YPD suggest CaYck2's role in the Rim101p pathway, other studies must be conducted to determine an established pattern.

ABSTRACT

Grapher Module of the User Interface of the Operations Data Analysis
and Management System for Analyzing Operational Telemetry Data Produced from Spacecraft
Command and Control Systems

By

Nathan S. Lee

In response to the increasing number of satellites and proportional increase in available telemetry data, the grapher module of the Operations Data Analysis and Management System handles real-time visual representation of telemetry data for analyzing health and status telemetry for any satellites from any user or organization by plotting datasets and providing an analytics suite. Previous literature details the design of similar command and control systems, but these only accept specific satellites from a specific user or organization and are not generalized, and cannot run on different operating systems. It is designed to plot hundreds and millions of satellite data values. The module receives JSON object inputs from the REST API framework of the backend, and uses React and Plotly to plot and provide data as table values. The module centers on the Report Card, containing the plot graph, but descriptions and table chart values accompany it through time. The grapher module, accepting data sourced from anywhere, can be considered a step forward in the exercise of data visualization. Offering more graphing types is the likely next step for the module's future development.

ABSTRACT

The Therapeutic Potential of Adenylate Kinase 4 for the Amelioration of Leigh Syndrome

By

Sarah Lillian Madira

Leigh Syndrome is a rare neurometabolic disorder characterized by mutations in the electron transport chain (ETC) and a subsequent 20% ATP deficiency. The shortage of ATP critically impairs cellular function and large organ systems, leading to a myriad of problems including psychomotor regression, cardiovascular disease, kidney failure, and more. To make strides in the development of Leigh Syndrome treatments and therapies, the establishment of an accurate disease model and method of elevating ATP levels to normalcy are crucial. A 2014 RNAi screen of mitochondrial protein-encoding genes by Lanning et. Al identified the suppression of the mitochondrial matrix protein, Adenylate Kinase 4 (AK4), to most significantly elevate cellular ATP levels by 20-40% across multiple cell lines. To assess whether AK4 knockdown can alleviate the ATP deficiency seen in Leigh Syndrome, Leigh Syndrome cell models were developed using the ETC inhibitors and siRNA-mediated AK4 transfections were performed on HK2 cells. Cells exposed to 250 nM oligomycin demonstrated an approximate 30% decrease in ATP levels, which was closest to the 20% ATP deficiency seen in Leigh Syndrome, deeming it an acceptable disease model. AK4 knockdown under optimal media and lipid conditions demonstrated an approximate 30% increase in ATP levels, which preliminarily suggests it would be effective in elevating ATP levels of the disease models to baseline levels. To further evaluate the therapeutic potential of AK4 for the amelioration of Leigh Syndrome, additional optimizations of the ETC inhibitors and knockdowns of AK4, as well as AK4 knockdowns on the optimized Leigh Syndrome cell models, should be conducted.

ABSTRACT

Turning to Twitter: Emergence of an Alternative News Source

By

Samantha Mariano

The purpose of this research is to perform a content analysis on both traditional news media and social news media. The literature review looks into scholarly research on agenda setting theory, framing, news, social media, and Twitter. The methodology involves categorizing news headlines and Twitter trending topics onto a coding sheet. The analysis answers two hypotheses created regarding Twitter's ability to set the agenda and to frame the agenda.

ABSTRACT

SHRM Certified Professional (SHRM-CP)

By

Cristina Martinez

According to the Society for Human Resources Management (SHRM), the importance of a Human Resource Certification is either getting recognition as an expert and leader in the HR field, being an asset to your organization or just earning a distinction that sets you apart from your colleagues. For me, this certification has to do with the impact HR can have on the workforce and therefore in our society. In other words, I believe that by creating an engaged workforce, we create civic engagement. As an example, the COVID-19 situation we are living and the responses of many businesses thanks to their HR team.

Nowadays, business leaders understand that effective people management is a strategic imperative. As a result, employers expect HR professionals to demonstrate, in addition to a thorough knowledge of HR concepts, the behavioral competencies required to effectively apply that knowledge in the modern workplace in support of organizational goals. In other words, is not longer about what you know but rather how you can effectively implement that knowledge every day in any given scenario.

ABSTRACT

Unwanted Purpose: A surreal animation

By

Miguel Martinez

Paul Wells explains in his book Understanding Animation that the history of animation can be seen as going as far back as 70 B.C. However, animation as we know it now only began in the late 19th and early 20th centuries with the inventions of the Praxinoscope and Kinematoscope (Wells 12). For example, one of the earliest characters animated was a dinosaur called Gertie in the film Gertie the Dinosaur released in 1914 (Wells 15). Animation is also generally seen to carry an inherit innocence which has disguised its more daring imagery (Wells 19). This means that if a surreal animation is trying to be taken seriously in America it is at a disadvantage since animation is seen as a childish medium.While surrealism has no true definition, I will be trying to evoke the uncanny valley in my animated work. My thesis will be evoking surrealism and the uncanny in an animated medium. I will mostly do this with the visuals, sound design, and movement and whether these categories are enough to be uncanny.

ABSTRACT

Zebrafish Knockout of Down Syndrome Gene, DYRK1A,

Shows Social Impairment and Reduced Anxiety

By

Mayra Selene Mendez

Each year, Down syndrome (DS) affects over 5,000 newborns. Alzheimer's disease (AD), Huntington's disease (HD), DS and autism spectrum disorder (ASD) are associated with dysfunctional levels of *DYRK1A* and/or mutations in *DYRK1A*. The overexpression of DYRK1A causes defective cortical pyramidal cell morphology, synaptic plasticity, and excitation/inhibition imbalance. Thus, DYRK1A dosage is crucial for proper neurite development. However, the role *DYRK1A* plays in social behavior is less clear. Using mouse models to study *DYRK1A* in DS is limited because *Dyrk1a* knockout displays severe growth delay and leads to embryonic lethality. This study proposes using the zebrafish model organism to study the role Dyrk1a plays in animal behavior. This study found that *dyrk1aacsu31/csu31; dyrk1abcsu40/csu40* (1aa/ab-/-) double mutant zebrafish displayed significantly impaired social behavior compared to wildtype siblings. Likewise, 1aa/ab-/- double mutant zebrafish displayed significantly less anxiety than wildtype siblings. Thus, the zebrafish Dyrk1a orthologs play essential roles in behavior.

ABSTRACT

A Semi-Autobiographical Examination of Differing Writing Pedagogies in American Public Education and Their Impact on Young Artists of Color

By

Alexander Emil Montgomery

This thesis is a stage play written by a student of color which melds numerous creative influences from theatre artists across American history with a critical perspective on differing styles of pedagogy used to teach creative writing. This play is meant to directly address the accessibility of the Western theatrical canon to students of color and what it might take for someone to fill that gap. The play itself follows the story of Freddie, a young man of mixed racial heritage as he struggles to reconcile the conflicting influences of two English teachers in his efforts to write a stage play that could potentially win him a reputable scholarship, all while trying to maintain an amicable relationship with his family. The two teachers in his lives both embody different styles of pedagogy: one is an aging white man who propounds the importance of the Western canon and those who built it, and the other is a younger, more progressive white woman who utilizes a feminist perspective to illustrate the importance of writer-focused instruction. These differing pedagogies are rooted in both published playwriting guides and peer-reviewed articles written on the importance of creative writing as a mode of learning and how it might be implemented in a classroom setting.

ABSTRACT

Applications of resistive pulse techniques in controlled delivery of antimicrobial liposomes and label-free detection of individual bacteria

By

Georgia A. Morgan

Resistive Pulse techniques utilize the ionic current flowing through a microscopic aperture to sense or deliver microparticles or nanoparticles as they pass through the orifice and partially block the current. In this project, we contribute micropipette-based resistive pulse techniques to a collaborative project with Dr. Edith Porter's group on studying antimicrobial activities of liposomes and peptides in the following two aspects: (1) performing controlled delivery of antimicrobial liposomes onto bacterial cell membranes to achieve single bacteria treatment in real time; (2) conducting label-free detection of bacteria to achieve the non-invasive sensing of the geometric variation of individual bacteria before and after treatment of antimicrobial agents. Both of these will allow us to monitor how bacteria are affected by antimicrobial lipids and peptides and determine their mechanism of action. For aspect (1), we successfully controlled the delivery of 154 1,2-distearoyl-sn-glycero-3-phospho-rac-glycerol (DSPG) and liposomes and were able to monitor liposome diffusion from a nanopipette onto a gold chip over a radius of 18.5 μm using surface plasmon resonance microscopy (SPRm). For aspect (2), we conducted proof-of-concept tests with two different bacteria, rod-shaped Mycobacterium smegmatis and spherical Staphylococcus epidermidis, and successfully obtained distinct population distributions of current change in resistive pulse recordings for each shape. We determined that resistive pulse sensing and delivery are effective tools to provide new information in studying the interaction between antimicrobial lipid and peptide with cell membranes; however, further optimization needs to be done with a special focus on the pipette size and shape.

ABSTRACT

Investigation of the Photocatalytic Properties of a Tin Doped Porphyrinic Metal-Organic Framework In The Detoxification Of A Mustard Gas Simulant

By

Edgar Karo Papazyan

Sulfur Mustard (bis(2-chloroethyl) sulfide) is dangerous chemical warfare agent, most commonly known for its use in World War I. Due to its toxicity, it was banned from use in warfare in 1925, but stockpiles were accumulated across the world throughout the rest of the 20th century. There exists a need for an efficient method of safely neutralizing these sulfur mustard stockpiles. Oxidation of mustard gas by singlet oxygen is an ideal method of detoxification due to its lack of highly toxic chemical byproducts. Singlet oxygen is a chemical species that has been shown by previous studies to selectively oxidize a sulfur mustard simulant into a less toxic sulfoxide. Metal-organic frameworks (MOFs) are a class of organometallic polymers that have proven to be effective photosensitizers of singlet oxygen. Herein, a study to test the catalytic properties of the tin doped porphyrinic MOF Zr PCN-222 (Sn) in the photooxidation of a sulfur mustard simulant, 2-chloroethyl ethyl sulfide (CEES) by generation of singlet oxygen is presented.

ABSTRACT

Stability of a Beetle Antifreeze Protein in the Presence of Trypsin

By

Gor Ando Papazyan

Antifreeze proteins (AFPs) are proteins found in many organisms that live in cold conditions. These proteins can lower the freezing point of the solution they are in without effecting the melting point and the temperature difference between the two points is called thermal hysteresis. Given their properties in protecting living organisms under low temperatures, AFPs may be used to preserve cells, tissues, and organs in cold temperatures. In order to test the protective effect of a protein on acinar cells, the protein must be tested for its stability in the presence of the digestive enzymes that these cells produce. The enzyme being tested, trypsin, is a serine protease, and it is known to bind and cut a single peptide bond next to arginine and lysine residues. Since trypsin is found in acinar cells and other cells in the human body, any protein used for cell preservation should be able to stay stable in its presence. A species of beetle, Dendroides canadensis, produces an AFP, DAFP-1. However, its natural form contains arginine and lysine residues, which are usually the targets for trypsin cleavage. A survey of protease enzymes and DAFP-1 was conducted followed by a prediction on the stability of DAFP-1 in the presence of the digestive enzyme, trypsin. While gathering preliminary data, DAFP-1 was placed in incubation with trypsin at various molar ratios the integrity of DAFP-1 was examined by gel electrophoresis. At 37 °C in 1X PBS buffer, DAFP-1 was found to be stable in the presence of trypsin.

ABSTRACT

Web Development of Special Events Page for

Los Angeles County Parks and Recreation Department

By

Ryan Matthew Peralta

The Los Angeles County department of Parks and Recreation sponsored the Computer Science department's Senior Design this year to provide the opportunity and enlist one team to update their Special Events webpages. By having a group from the CSULA Computer Science Senior Design cohort support, goals were to increase reservations made as well as boost web traffic. We are creating a new version of the county's special events page that will help interested individuals find information pertaining to special events. By combining all relevant information, we hope to encourage users to register for events throughout the county. The improved webpage will also allow parks staff to easily update and remove information at a moment's notice.

ABSTRACT

Influence of Antidepressant Compounds on Schmidtea mediterranea Eyespot Regeneration

By

Jennyfer Valeska Perdomo

Schmidtea mediterranea are a species of Platyhelminthes capable of regenerating lost or damaged body parts over the course of a week. They are excellent animal models due to their regenerative abilities as well as the similarities of their central nervous system to that of vertebrates. Ketamine, originally intended to be an anesthetic, has recently been found to have fast-acting and long-lasting antidepressant qualities. The mechanisms through which ketamine produces these antidepressant qualities is still unknown but is thought to be related to synaptogenesis, or the formation of new synapses between neurons. This study explored the influence of ketamine on the regeneration of Schmidtea mediterranea and compared the influence of ketamine to that of nortriptyline, a traditional antidepressant. This was accomplished by cutting off the worms' heads and tracking the regeneration of their eyespots when exposed to the two drugs in comparison to the regeneration of worms under control conditions. The results of this study suggest that ketamine and, more strongly, nortriptyline have negative effects on S. mediterranea regeneration. These findings may have significance in the treatment of diseases such as cancer, where a decrease in regeneration would be favored. However, because of various limitations including lack of repetition of the experiments and lack of dose-response testing, as well as the fact that data collected throughout this project is very preliminary, further experimentation is necessary in order to verify these findings.

ABSTRACT

Birthing A New Era of Technology:

The Use of Technology to Improve Maternal Health Outcomes

By

Sydney Pham

Each year millions of women become pregnant and undergo the stages of pregnancy leading up till the birth of a fetus. With technology spreading rapidly through other fields of healthcare, it is on the horizon of the realm of pregnancy as maternal needs become open to more advanced approaches to achieve. Research to date has been investigating the impacts of these technologies and how they can help attain maternal health outcomes. New technologies have been created to tackle concerns and outcomes in each stage of pregnancy. While the information for these technologies exists, they are not consolidated in one area for ease of accessibility. A related problem faced by prospective, pregnant, and new mothers is the lack of awareness about and acceptance of these technologies. The project subsequently developed an informational website to provide awareness and access to information about these potentially helpful technologies. It includes information on gaps in the conception, prenatal, labor and delivery, and postpartum periods in addition to the technologies of each period that can fill these gaps. This informational website was created in hopes that it built knowledge of technologies and confidence of resource availability in women who plan to or are undergoing the pregnancy process.

ABSTRACT

Vaccination Misinformation: Investigating How Reputable Sources Are Using Social Media to Combat Vaccine Myths

By

Guadalupe Pliego-Gijon

Vaccination refusals have quadrupled since 2001, impacting the previously "eliminated" state of the measles and causing various outbreaks in the United States. Along with vaccination refusals, online consensus may be influencing public perspective on vaccines, which can lead to an impact on choices relating to healthcare and health prevention. The purpose of this qualitative review is to analyze the impact of social media posts on vaccination hesitancy/refusal and identify what reputable sources can do to counter this. Efforts to counter vaccination misinformation and hesitancy/refusal are presented via the use of the Health Belief Model (HBM). Results for the reputable sources were categorized into the following: type of information offered based on the HBM, presence or absence of further resources provided, and site interaction. Results demonstrated that reputable sources are not directly addressing vaccine hesitancy/refusal concerns. Future implications require implementing methods used by the anti-vaccination movement to create popular posts, addressing common myths directly, and providing various resources. Future research needs to be conducted on the best methods to disperse reliable information on social media sites, identifying quantitatively which sites perform better, and to survey how the population perceives that their health choices are affected by what they see on social media sites.

ABSTRACT

Children of War

By

Maria Pogosyan

This thesis project consists of a feature length script and a research paper. The feature screenplay tells the story of a young girl who runs away from her father, a General in the military powered by dark magic, and joins an anti-war youth movement. The research paper will discuss the elements of screenwriting, inspiration for the story, scholarly articles that explore the topics in the screenplay.

The story takes place in a war-torn country, where dark forces rule and try to break the human spirit by taking away the most valuable things. Despite the elements of magical realism, this script is partially based on some real stories my friend told me while living in a hotspot in a war-torn country of Ukraine a few years ago. While trying to support her, I was emotionally affected by the horrors of violence, poverty, and destruction she shared with me. Sometimes, I would stay awake at night, worried and thinking about all the ways I could help her. This screenplay will discuss the resilience of the human spirit and the horrors of war, especially how it affects children and young adults.

ABSTRACT

Trafficking of Yeast Casein Kinase 2 During Morphogenesis of Candida albicans

By

Salvador Prieto

The exact mechanisms governing morphogenesis of the opportunistic pathogen Candida albicans are complex and have yet to be further elucidated. Our previous study identified yeast casein kinase 2, a member of Casein Kinase I (CKI) family as a key regulator of morphology and cell wall integrity in C. albicans. Its closest homologs ScYck1/2p in Saccharomyces cerevisiae are known to govern cell integrity, suggesting the fungal casein kinase homologs have shared function. ScYck1/2p are predominately cytoplasmic proteins with membrane anchoring via palmitoylation, with loss of proper localization significantly diminishing function of ScYck1/2p. Given the highly conserved nature of CK1 homologs and high amino acid sequence similarity between ScYCK2 and CaYCK2, as well as localization being crucial to protein function and interaction, I hypothesized that CaYck2p localizes on the cytosolic surface of the cell membrane via palmitoylation of the C-terminus. To test this, a fusion gene was generated using the promoter and open reading frames of CaYCK2 tagged with Green Fluorescent Protein (GFP) and reintroduced into C. albicans yck2 mutant strain. Upon confirmation of construct integration, expression of CaYck2p-GFP was detected in transformant T-3 via RT-qPCR, though subsequent viewing of these cells under fluorescence microscopy detected no fluorescence. However, growth of other transformants under hyphal conditions resulted in significant fluorescence, indicating construct expression was somehow increased during morphogenesis. Future work should focus on comparing CaYCK2 expression between yeast and hyphal cells to test this finding and additional transformations to replicate these results.

ABSTRACT

Home Sweet Home: Home Theater and its Effect on the Film Industry

By

Kaitlin Elisabeth Ragland

For the past ten years, advancements in non-theatrical technologies have accelerated and the non-theatrical market has become the highest-grossing entertainment market for consumer spending. Responding to the growing popularity and technological advancements of non-theatrical film release, major motion picture studios have shifted their focus more towards non-theatrical release, increased their communication with sound technology companies, which has helped further instill the symbiotic relationship that exists between the two, and are outputting content for a multitude of different formats.

ABSTRACT

Using Biochemical Techniques to Analyze Archaeological Bone Fragments from the Santa Monica Mountains, California

By

Jessica Reyes

Analyzing bone fragments collected from archaeological sites is an important way to understand the ecology of the past. Since some fragments collected are indistinguishable, scientists need to be able to identify the species to which it belongs to. Zooarchaeology by Mass Spectrometry, or ZooMS, is a new method developed to analyze unknown bone fragments. Cal State LA students have had the opportunity to explore the Danielson Ranch site (CA-VEN-395) in the Santa Monica Mountains and collect bone samples from the multiuse area. Many samples are unknown, and ZooMS was used to try to identify them. Collagen was extracted from these samples through acidification, gelatinization, and trypsin digestion. Although further analysis was incomplete due to unprecedented circumstances, ZooMS still seems to hold a lot of potential in helping identify bone fragments from Danielson Ranch because of the low requirement of materials and reagents.

ABSTRACT

Social Entrepreneurship: A Comparative Study of

the United States and the Philippines

by

Michael Salcido

This thesis considers how students in the United States differ from students in the Philippines regarding interest in social issues and entrepreneurial activities by examining the extent to which college students in two countries from the east and west embraced social entrepreneurship. A conceptual model of factors predicting social entrepreneurial intention (SEI) was tested by collecting data from 500 respondents, 250 each from the Philippines and United States. Simple regression analysis found that concern for five social problems (corruption, environment, human health, human rights, human suffering) significantly predicted SEI in the overall sample. Across countries, we found support for all the five concerns in the United States sample, and four concerns in the Philippines sample. Concern for human health did not significantly predict SEI in the Philippines sample. Testing for direct effects using simple regression supported social entrepreneurial self-efficacy as a potential mediator in both countries' samples, and life satisfaction as a potential moderator in the Philippines sample. Results suggest that cultural contexts may have an effect on these models, and further research is necessary to examine the implications of national or local culture on SEI. Implications of the study and ideas for future research are discussed.

ABSTRACT

Revolution of Imagination

By

Jordan Smith

In a world that is heavily dominated by the entertainment industry, meticulous study about the structure of these companies is needed to understand a truly capable business model. Netflix, Hulu, and Amazon have become some of the most powerfully influential corporations around the globe. Netflix and Hulu do not actually focus on selling physical commodoties and instead, yield high revenues through streamed content. Much like movies in theaters, they have managed to earn millions to billions of dollars in revenue based upon their creativity and unique style of their own original series. Both of these companies competed as the two greatest streaming services for years, much like Pepsi vs Coca-Cola. They consistently warred over the rights to stream certain TV shows and when that was not enough, they decided to produce their own content. However, Amazon has only recently developed as a third player in the streaming service battle. Originally a company that sold books, then retail products online, it is no wonder Amazon broadened its horizons into directly producing content. With a business model that is designed to have a presence in every industry, it is not very surprising to see Amazon rise as a top competitor in the video streaming service.

Because of their ability to become the largest company in the world in many different fields, many start-up companies would be able to take great lessons from Amazon. The question to be addressed is, how can aspects of Amazon's tactics inspire the creation of an entertainment company with a strong business foundation?

ABSTRACT

Conversational Analysis of Undergraduate Students' Interactions in Problem Solving Situations

By

Robert Ray Snyder

Conversational entrainment is the phenomenon of interlocutors synchronizing or accommodating communication behaviors (Borrie et al., 2019). This study investigated the use of linguistic and paralinguistic variables (e.g., utterance and word output, lexical diversity, use of filler words and repetitions, and speech rate) in intracultural and intercultural interactions between college students of different ethnic backgrounds (two Caucasian and two Latina students). It compared speakers' performance across intracultural and intercultural contexts to measure objective communication accommodation (convergence, divergence, or maintenance). The Systematic Analysis of Language Transcripts (SALT) software was used to quantify linguistic and paralinguistic variables across four audio recorded conversations (two intracultural and two intercultural interactions). Individual factors such as strength of identification to one's cultural group, and linguistic experiences and abilities will be considered in relation to the use of linguistic and paralinguistic variables. Preliminary findings reveal that in intracultural conversations speakers produced more utterances and words, had longer conversational turns, and appeared to speak faster than in intercultural exchanges. In intercultural conversations, speakers produced a larger number of different words, longer utterances, and more fillers (revisions, repetitions, hesitations) when they spoke.

ABSTRACT

Medical Misinformation: A Look into the Impact of Technology on Vaccination Hesitancy

By

Clarice Jarrett S. Sotiangco

Due to the decrease in vaccination rates, vaccine-preventable diseases – such as the measles – returned. This is partly due to social media, as online consensus may influence the public's health care practices. Considering such, the purpose of this project is to analyze and identify how social media posts affect vaccination hesitancy. To do so, we completed a qualitative review by identifying common misconceptions listed in social media posts from anti-vax parents. These misconceptions were then grouped together, depending on themes such as autism, toxins, spirituality, and mistrust in professionals. Our results showed that the anti-vax posts were based on emotions and personal stories, rather than evidenced-based research, and can be explained by applying the findings to the Health Belief Model. This study further emphasizes the need for social media to better disperse online health information, in addition to encouraging the government and other reputable sources to actively dispel vaccination misinformation.

ABSTRACT

The Birth of American Nationalism Through Death, 1775 To 1818

By

Elan Sierra Studebaker

This thesis examines the impact of the deaths of early American political figures General Richard Montgomery in 1775 and President George Washington in 1799. By examining both of these deaths, a clear trend is presented, showing the rise of patriotism leading to nationalism in early America. This movement is documented through qualitative data present in personal letters, Congressional meetings, and eulogies all produced within the years of 1775 to 1818. From how each figure is spoken about in death, the American narrative moves from positive feelings about the country's past to a negative feeling about hostility towards other countries in order to preserve the country's future.

ABSTRACT

TatBoo: A Short Documentary

By

Vivian Shuiching Tse

From the past to the present day, there has been a stigma surrounding tattooed individuals. This stigma puts negative connotations upon these people that are mostly false when compared to their true nature. The thesis project is a 12-minute short documentary that lays out the stigma through the stories of tattooed individuals and tattoo artists. It further explores stories behind tattoos, the history of tattoos, and the tattoo art process with the purpose of bringing out the positive significance of tattoos against its negative implications. It recommends ways to combat the stigma so tattooed individuals can wear their meaningful art on their skin with confidence and without discrimination. The documentary is one way of fighting the stigma as its sole purpose is to spark open dialogue on it by uncovering the layer of assumed danger around tattooed individuals and speak with them as just humans. This project was achieved through research, interviews, and a documentary filmmaking process.

ABSTRACT

Thread-Based Electrodes for the Detection of Glucose and Acetylthiocholine

By

Kathryn Uchida

Chapter 1. An introduction to microfluidics and electrochemical sensors is described. An overview of fabrication techniques for applications in molecular diagnostics and point-of-care (POC) technology is detailed, as well as the biomedical significance and methods of detection for glucose and acetylthiocholine (ATC). Finally, a primer on electrochemistry is provided to demonstrate its capabilities for expanding and lowering the detection capabilities in microfluidic applications. An overview of cyclic voltammetry (CV) for detection of analytes, as well as the role of three- and two-electrode systems in this study is described.

Chapter 2. The development of a three-electrode system for the detection of glucose composed of thread- and capillary tube-based electrodes is described. Three nylon thread-based electrodes (reference, working, and counter) were fabricated by painting trifurcated nylon thread with conductive inks and threading the electrodes into glass capillary tubes. The efficiency of the sensor was evaluated for detection of a range of glucose concentrations. The electrodes were submerged in a solution (500 μL) containing glucose oxidase (GOx), potassium ferricyanide ($K_3[Fe(CN)_6]$) (as mediator for the enzyme), and increasing concentrations of glucose (0-14 mM) in PBS. Using cyclic voltammetry (CV), a scanning voltage of -0.5 to 0.6 V was applied to measure the oxidation of glucose by GOx, yielding a graph of voltage applied (V) vs. current output (A). Glucose concentration was observed to be linearly proportional to the current output as demonstrated by the increased height of the oxidation peak at 0.45 V ($R^2 = 0.966$).

Chapter 3. Once the efficiency of the three-electrode system was analyzed, the sensor was implemented into both a wax-printed circles platform and a bubble wrap platform for the detection of glucose and acetylthiocholine (ATC). Wax circles (5 mm diameter) were printed onto chromatography paper, and solution (12 μL) containing GOx, $K_3[Fe(CN)_6]$, and increasing

concentrations of glucose (0-20 mM) in PBS was spotted onto the circles. The sensor was placed on top of the saturated circle and CV was used to measure the oxidation of glucose by GOx. Glucose concentration was observed to be linearly proportional to the current output as demonstrated by the increased height of the oxidation peak at 0.45 V ($R^2 = 0.966$). Similarly, the paper platform was used to detect increasing concentrations of ATC (0-9.84 mg/mL) by measuring the oxidation by AChE (0.08 U/mL). ATC concentration plotted against current output at the oxidation peak (0.60 V) produced a linear correlation ($R^2 = 0.985$). Secondly, a bubble wrap platform was implemented with the three-electrode system for detection of glucose and ATC. For glucose detection, solution (30 μL) containing glucose (0-20 mM), GOx, and $K_3[Fe(CN)_6]$ was mixed inside bubbles on a sheet of bubble wrap, and the sensor was placed inside each bubble to run CV. Glucose concentration was observed to be linearly proportional to the current output at 0.45 V ($R^2 = 0.991$). The bubble wrap platform was similarly used to measure ATC concentration (0-9.84 mg/mL) in AChE via CV, and ATC concentration was plotted against the current output at 0.60 V ($R^2 = 0.982$).

Chapter 4. A two-electrode system using nylon-based electrodes was developed, in which one electrode served as both the reference and counter. The efficiency of the two-electrode system was first analyzed by measuring the oxidation of glucose by GOx in a beaker via CV. Glucose concentration was found to be proportional to the current output at the oxidation peak at 0.30 V ($R^2 = 0.9762$). The two-electrode system was then implemented with a wax-printed rectangles platform to measure glucose and ATC concentrations. Solution (2.5 μL) containing GOx, $K_3[Fe(CN)_6]$, and increasing concentrations of glucose (0-20 mM) in PBS was spotted within the rectangles, with the electrodes placed on top to run CV. A graph plotting glucose concentration against the current output obtained at 0.30 V produced a linear correlation ($R^2 = 0.9974$). ATC concentrations were also measured via CV by spotting solution (2.5 μL) containing AChE (0.08 U/mL) and ATC (0-9.84 mg/mL) in PBS within the rectangles. The oxidation peak height was measured at 1.0 V and plotted against ATC concentration ($R^2 = 0.9023$). The CVs obtained using a two-electrode system experienced voltage shifts of the oxidation and reduction peaks. However, the reduced size of the two-electrode system allowed for minimization of the wax-printed rectangles platform and, consequently, solution volume.

ABSTRACT

Weed Hazard Ownership List for the Los Angeles County Agricultural Commissioner Weights & Measures Department

By

Austin Lee Vargason

Los Angeles County has over 10 million residents, the largest county population in the nation. These people live in over 80 cities spanned 4000 square miles. Keeping track of all of the owned pieces of land becomes an arduous task. Some of these owned pieces of land go vacant or unmaintained. Unmaintained pieces of land reduce surrounding property values and pose a considerable fire risk to county residents. The Los Angeles County Agricultural Commissioner Weights and Measures department mediates the risk by maintaining data on all vacant pieces of land and by clearing vegetation overgrowth to prevent possible fires. The system that maintains this process is technologically ancient and relies heavily on paper forms, making it more difficult for the County to prevent fires. For my senior design project for the Computer Science department at California State University, Los Angeles, my team had to redesign the legacy system in modern technologies. This thesis explains relevant literature, overall methodologies, and outcomes of the system redesign.

ABSTRACT

The Role of Transnational Advocacy Networks in Gender Violence and Latin America

By

Daisy Villalobos

This study seeks to establish how transnational organizations may be more dominantly hindering rather than assisting with the issue of gender violence by imposing their Western model of aid in Latin American countries victimized by a neoliberal economic system. Historically, Latin American countries have adopted a great cultural acceptance of violence against women due to rising domestic tensions as a result of the economic impacts of the neoliberal system without access to basic and essential resources. Recently, these factors have only led to increasing numbers of violent killings and behavior against women across countries of Latin America. This thesis will point to Western organizations that have failed to adequately provide resources and strategy methods to both a U.S. border country and Central American country due to imposing their Western model of aid. And therefore, this study will provide urgent recommendations to transnational organizations regarding a complete and more considerate reconstruction to the model of aid for Latin American countries victimized by the neoliberal economic system.

ABSTRACT

Effects of Renewable Energy on Gasoline Consumption In California

By

Ruizhe Wang

Climate change has become one of the greatest global challenges today, threatening the livelihood of ecosystems, coastal communities, and the lives of many all around the globe. As the burning of fossil fuels like coal and petroleum began to skyrocket after the industrial revolution, so did carbon dioxide levels in the atmosphere. This elevated level of carbon dioxide in the air has since caused a greenhouse effect where energy is trapped inside of the earth's atmosphere causing global warming. This paper analyzes the relationship between renewable energy growth and gasoline consumption in California. Other variables including natural gas consumption and transit usage are also included in the model to examine whether these factors affect gasoline consumption in a similar fashion. Ultimately, this study aims to create more insight on the topic of renewable energy and its ability in replacing traditional gasoline. Results from this study can also be of aid in the future of climate policy making.

ABSTRACT

Introduction to Generalized Linear Models: A Basic Primer

by

Paul Yang

Actuaries assist organizations with forecasting future events to minimize the effects of risk and uncertainties. They utilize a variety of mathematical models to help generate reliable predictions. This paper develops an understanding of generalized linear models, a powerful tool employed by actuaries to predict future events. The first section of this paper discusses simple and multiple linear regressions and introduces their shortcomings. The second section presents the framework for generalized linear models. Finally, this paper shows potential scenarios where utilizing generalized linear models could result in robust and reliable predictions.

ABSTRACT

Identifying the Discrepancy between the Number of Forensic Anthropology Women Graduates and the Number Women Hired within the Field

By

Caitlin Jovelle Zarate

The purpose of this thesis is to determine if men are hired more often than women within the field of forensic anthropology, despite the number of females graduating in the field being exceedingly higher than males. On average about 83% of forensic anthropology dissertations and theses were written by women based on data calculated from the University of Tennessee, Knoxville and the University of South Florida. The change over time within forensic anthropology certification with the American Board of Forensic Anthropology shows that about 79% of all female diplomates received their certification from 2000-2020. It can be estimated through this information that women began to dominate the field around the late 1980s to the early 1990s. At nine different forensic anthropology research facilities, 17 out of 30 faculty were women. Still however, about 43% of employees were men. Thus, though there are more women hired at these jobs, there is still a discrepancy between male and female employment in the discipline compared to the number of women that are graduating from forensic anthropology. This inconsistency may be due to the fact that women dominating the field is a recent occurrence that only began about 20-30 years ago. The high number of women in forensic anthropology is perhaps caused by the “CSI Effect” or due to the increasing amount of female role models that young women may admire within the field.