

College of Saint Benedict and Saint John's University

DigitalCommons@CSB/SJU

Celebrating Scholarship and Creativity Day

Undergraduate Research

2018

2018 Program for Celebrating Scholarship & Creativity Day

Lindsey Gunnerson

College of Saint Benedict/Saint John's University, lgutsch001@csbsju.edu

Follow this and additional works at: https://digitalcommons.csbsju.edu/ur_cscday

Recommended Citation

Gunnerson, Lindsey, "2018 Program for Celebrating Scholarship & Creativity Day" (2018). *Celebrating Scholarship and Creativity Day*. 1.

https://digitalcommons.csbsju.edu/ur_cscday/1

This Article is brought to you for free and open access by DigitalCommons@CSB/SJU. It has been accepted for inclusion in Celebrating Scholarship and Creativity Day by an authorized administrator of DigitalCommons@CSB/SJU. For more information, please contact digitalcommons@csbsju.edu.



CSC



DAY



Celebrating Scholarship & Creativity

2018

Alcuin Library 381, SJU

Global Business Leadership

Lindsey Anderson, Ramon Angeles, Isaac Beste, Michael Borrell, Colton Busse, Danielle DeBlieck, Brooke DeMets, Richard Fischer, Michael Flicek, Leonard Gutierrez, Kennedy Hageness, Amy Lager, Annabelle Larson, Madison Liapis, Alicia Ridge, Kyle Rookaird, Claudia Schulte, Ramsey Sorrells, Benjamin Turnham (Margrette Newhouse, Global Business Leadership) GBUS 381 - Consulting Project Presentations (Newhouse) Section 01A

Three student teams from the GBUS 381 Advanced Global Strategy - Newhouse classes will be competing to present the best strategic recommendations to CSB/SJU alum owned business, Curt's Special Recipe. Each presentation will be about 45 minutes in duration (including Q & A). Representatives of the company will be present in order to "judge" the best strategic research, recommendations, prototyping and implementation recommendations for strategic challenges presented to the consulting team three weeks prior.

Katherine Bomersine, William Borgerding, Precious Drew, Kimberly Ficker, Jacob Fritz, Zhiyuan He, Nicholas Machemehl, Alexandra Savre, Jacob Sterling, Alexandra Williams, Brady Yoerg (Margrette Newhouse, Global Business Leadership) GBUS 381 - Consulting Project Presentations (Newhouse) Section 02A

Three student teams from the GBUS 381 Advanced Global Strategy - Newhouse classes will be competing to present the best strategic recommendations to CSB/SJU alum owned business, Curt's Special Recipe. Each presentation will be about 45 minutes in duration (including Q & A). Representatives of the company will be present in order to "judge" the best strategic research, recommendations, prototyping and implementation recommendations for strategic challenges presented to the consulting team three weeks prior.

Alcuin Library HMML 140 (Wallin Rm), SJU

Honors

McKeigh Bossuyt, Madeline Bremel, Bryan Crossman, Anne Dockendorf, Peyton Foster, Hunter Hicks, Carisa Hilton, Margaret Kosir, McKenna Mages, Christine Rolfzen, Conner Strong, Katherine Timmerman, Anh Tran, Emma Uecker (Yvette Piggush, Honors) A Haunting Legacy: Culture and the Persistence of Racism

The European exploitation of Africa took millions of African peoples from their homes, and displaced both bodies and identities. In the American south, American plantation and farm owners established grossly inadequate living and working conditions, allowing them to establish full control over their workforce. Similarly, in the West Indies, colonization led to an established system of slavery that stripped the enslaved of their humanity. Europeans actively misrepresented Africa and its peoples to justify their actions and beliefs as they forcibly relocated Africans to the Americas. This exhibit examines a paradox: Culture, the realm of ideas and institutions that we usually think of as an opportunity for creativity, choice, and consent, produces race, a significant form of coercion and domination in the West. This exhibit introduces viewers to the way that Western culture misrepresented Africa and its peoples for the benefit of Europe and the developing western world between the eighteenth and nineteenth centuries. The exhibit examines European representations of the European exploration and colonization of Africa. The other two sections of the exhibit further explore the misrepresentation and enslavement of African peoples in the Americas as well as the African diaspora's resistance to systemic oppression. In a section on the Caribbean, the exhibit will particularly delve into the role of women of color in the West Indies using examples of how eighteenth and nineteenth-century texts and images represent these women. Finally, the United States' section of the exhibit, will explore how enslaved Americans were represented and represented themselves. This section of the exhibit will also provide insight into the post-Civil War creation of African American identity using works by Black authors and representations of Black institutions from the late nineteenth and early twentieth centuries. Ultimately, this exhibit seeks to use rare materials from the HMML and the CSB/SJU Libraries to promote understanding of how past representations of race persist and shape our modern conceptions and experiences of race and racism.

Alcuin Library Lobby, SJU

Environmental Studies

Thomas Bowman (Jennifer Schaefer, Environmental Studies) Potential Impacts of Frac Sand Mining on Minnesota Waters

As demand for oil and natural gas has risen in recent years, a mining technique called hydraulic fracturing was developed to help reach tough to access deposits. An important ingredient in this mining technique is a particular size and shape of silica sand that is commonly found near the shores of the Mississippi River in Minnesota and its neighboring states. As

mining operations broke ground with increasing frequency to reach this sand, concern has grown as to what health and environmental safety ramifications might accompany them. Little direct research has been done locally on the impact that mining may have on nearby rivers and streams, but similar cases elsewhere reveal areas of concern. This paper will take a deeper look at the potential impacts on Minnesota's rivers and streams as a result of nearby frac sand mining.

Alcuin Library Main Floor Lobby, SJU

Environmental Studies

Eleanor Babcock (Joseph Storlien, Environmental Studies) *The More Than Human World*

Natural history, the parent to all modern forms of natural science and psychology, has the potential to heighten community awareness of natural systems as well as increase the power of nature and place. There are multiple perspectives on natural history, from scientific to modern. The perspective of this thesis defines natural history as “a practice of intentional, focused attentiveness and receptivity to the more than human world guided by honesty and accuracy.” Through this perspective, the practice of natural history serves as a foundation to connect our lives to the more than human world, contextualizing our lives with a sense of place, strengthening wellbeing, and providing educational benefits. As a result of these benefits, this paper will propose natural history programming to be integrated into the College of St. Benedict and St. Johns University (CSB/SJU) First Year Experience curriculum so all students at CSB/SJU will experience the subject of natural history in their first year at college.

AnnMarie Backstrom (Jean Lavigne, Environmental Studies) *Cost Analysis of an Edible Landscape at the College of St. Benedict*

Colleges aspire to be more sustainable, but many campuses are covered in turf grass, which is not a sustainable landscape. However, the problem is finding an alternative landscape that is aesthetically pleasing and provides a clean campus appearance. The challenge is meeting all of these goals while decreasing the amount of turf grass, and keeping the amount of maintenance time needed low. The question is how can college campuses, like the College of St. Benedict (CSB), accomplish this goal, and how does the college's current policies hinder or promote alternative landscapes? Therefore, I looked at an edible landscape as an alternative to turf grass in spite of the challenges including weather, student access, maintenance, and

overcoming the current culture of foraging. After evaluating edible landscapes incorporated by other universities as case studies, I concluded that the challenges are worth overcoming because an edible landscape can reduce turf grass space while promoting pollinators and providing an educational opportunity for students. In my thesis I analyzed a potential location for an edible landscape on the CSB campus, discovered the type of soil present, calculated the cost associated with implementing an edible landscape, and developed a list of potential edible plants that could be used in the landscape. This information can then be used by the CSB Grounds to create an edible landscape on campus.

Rachel Benson (Jean Lavigne, Environmental Studies) Deal or No Deal: A Historical Analysis of Redlining and Its Impact Today

In the 1930s, an agency called the Home Owners' Loan Corporation (HOLC) was created as part of the New Deal. Its purpose was to prevent foreclosures of homes by creating maps to color-code what neighborhoods were at risk for foreclosure and what neighborhoods had the highest credit worthiness. HOLC labelled maps that had high credit worthiness as "Type A" – typically located in affluent suburbs. Neighborhoods considered most risky were labelled "Type D," and were typically black neighborhoods. Research has suggested that these maps created by HOLC led to practices such as redlining and perpetuated racial segregation in residences. A recent project called "Mapping Inequality: Redlining in New Deal America" shows the maps created by HOLC in major cities in America. Using GIS, I compare data on current housing demographics in Minneapolis to the map of Minneapolis made by HOLC. I hope to answer the questions: Currently, how racially segregated are residential neighborhoods in Minneapolis? And could this be the result of HOLC's legacy?

Jaden Bjorklund (Corrie Grosse, Environmental Studies) Climate change is impacting game species: How are hunters and anglers responding?

Climate change is impacting all types of species in the US. Popular game species, which are of key interest to hunters and anglers, are being affected in different ways. This paper will examine the impacts of climate change on game species like moose, deer, waterfowl, walleye, and trout in the Minnesota region and how hunters and anglers respond to these changes. This group of people, with such a connection to these species (and large donations to conservation efforts), seems well positioned to care about climate impacts on wildlife, yet their actions to mitigate climate change are not well known. Drawing on scholarly research and interviews with

hunter/angler organization leaders and a representative from the MN Department of Natural Resources, I find numerous climate impacts on key fish/game species, but little response from hunters and anglers in Minnesota. There are many hunters and anglers who believe in climate change, but there is lack of Minnesota organizations. There should be more hunters and anglers involved because these groups have personal and financial stakes in climate change impacts on wildlife.

Christian Cancino (Jean Lavigne, Environmental Studies) Discovering Goddess Immanence: Applying Popular Wiccan Beliefs to the Mainstream Environmental Movement

The Wiccan religion is deeply rooted in nature worship and environmental consciousness and sustainable living. However, despite the current mainstream environmental movement's widespread popularity and influence, there are still marginalized groups that are excluded from the movement. For instance, those who follow the nature-based Wiccan religion have largely been stigmatized and ridiculed by the general public and by mainstream environmental organizations. The stigma and ridicule surrounding the nature-based Wiccan religion undermines the fact that this religion offers considerable advice for sustainable living and key environmentalist teachings. The Wiccan religion can offer a unique outlook on climate change that the mainstream environmental movement cannot afford to disregard or ignore. This paper discusses these connections through a literature review and a content analysis of four self-proclaimed Wiccan blogs on the social media site Tumblr. The paper thus argues that the environmental movement should incorporate Wiccan beliefs, specifically Goddess immanence and emotional ties to nature, in order to establish and emotional as well as ecological commitment to the environment.

Tanner Chadderdon (Jean Lavigne, Environmental Studies) Mille Lacs Lake Low Walleye Population in Recent Years

Walleye fishing on Mille Lacs Lake is very important to the history of Minnesota anglers and resorts around the lake that helps bring in a large amount of tourism each year. In 2012, the Minnesota Department of Natural Resources (DNR) found that the walleye population in Mille Lacs has declined, resulting in an increase in fishing regulations on what anglers can harvest each year. The central questions of this research are the cause of the decrease in the walleye population and the effect that is having on the communities around the lake. To address these questions, I looked at angler

and resort responses to the increased regulations and how it has affected their lives and relationship with the DNR. Economic impacts around Mille Lacs Lake include a drop of roughly \$26 million in property value and almost a 50% decrease in resort tourism. Factors that may have helped decrease walleye populations include hooking mortality, invasive species contributions, and effects of climate change on the lake. According to the DNR, the younger walleye are not reaching mature ages and thus not contributing to the overall population in the lake. I think that this information could be used to inform anglers that are not fully aware with the problem on Mille Lacs and what changes in the environment we should see either as natural or ones that we can fix.

Emily Christian (Jean Lavigne, Environmental Studies) Milk and Honey Cidery
Apple Sources

This map shows the farms which provide Milk and Honey Ciders with their apples. The farms are found across the United States. Each farm and farmer is unique. This map aims to show the variety of farms and farmers which supply the Cidery, as well as familiarize customers with where the product comes from. The orchard in the St. Joseph area is highlighted because it is the most local orchard to the Cidery. Each orchard also provides different varieties of apples. The infographics included on the map are part of an effort to provide transparency in the food industry. Customers are asking more questions about where their food is sourced from, and this map is Milk and Honeys' reply to the customer demand.

John Clark, Thomas Fiorentino-Strawn (Jean Lavigne, Environmental Studies)
Maps of Milwaukee

Our client wants us to make maps of the population, labor force participation and household income by race from 1900 to the present in a series of 10 maps. This information is important to the client because of the potential impact and insights that could be gained for the next election. The goal of this project is to clearly show the voting patterns of the constituents of Milwaukee. We will be using census data reaching back 100 years to show the change over time.

Blake Dahl (Jean Lavigne, Environmental Studies) Why Aren't They Biking?: A
Look at a College Campus Cycling Culture

Two colleges, five miles apart in central Minnesota provide a window into the mind of the early twenty-year-old and the barriers that prevent them

from choosing to travel by bicycle. The trip between the two campuses takes between twenty to thirty minutes by bicycle, fifteen by bus, and eleven by car. Drawing from small towns and colleges that have successfully fostered a strong cycling community; there are many cycling specific infrastructures, policies, and community engagement practices that the College of Saint Benedict and Saint John's University can implement. In order to foster a stronger cycling community, it is imperative that CSBSJU implement cycling specific infrastructure and invest in active community engagement as it relates to cycling.

Lydia DeMorett (Jean Lavigne, Environmental Studies) Mapping Walk CSB

During the centennial celebration at the College of Saint Benedict, an app was made to help people hear about some of the different structures on the CSB campus. It is called Walk CSB, and has audio tours about our campus called Centennial Historical, Statues at CSB, and Natural History. Each of these takes the walker around the CSB campus and even into the Saint Ben's Arboretum to explore and learn about these histories. There was little direction in the audio tour other than telling the walker to go east or north. I have made maps of the tours so that the walkers have an easier time going to each place. Now they may enjoy hearing more about the structures and worry less about getting lost.

Morgan Durbin (Jean Lavigne, Environmental Studies) MN Food Deserts

The USDA defines food deserts, or low-access communities, as any census tract of the population where 33 percent and/or at least 500 individuals live more than one mile from a supermarket or grocery store. These locations, where fresh fruits, vegetables and whole foods are largely unavailable, often correlate with low income communities. The maps created will show where in Minnesota these low-access communities are located, by both age, particularly children 0-17, and income. Data was collected by the USDA, and the purpose will be to show correlations between those factors.

Thomas Fiorentino-Strawn, John Clark (Jean Lavigne, Environmental Studies)
Milwaukee: 1900 - Present

Currently and historically, people of color have been discriminated against through various tactics. Redlining, in particular, has had lasting effects on these communities. Redlining was used to dictate what communities were given loans, often excluding areas with a higher percentage of minorities. This meant that communities of color were unable to get loans and buy

better homes that could then be passed down to their children. Using census data, we mapped population, labor force participation, and household income by race in Milwaukee from 1900 to the present to see the effect that redlining has had over time in these communities.

Paul Flanagan (Jean Lavigne, Environmental Studies) Salt Lake Valley Liquefaction

The Salt Lake Valley in Utah sits on the Wasatch Fault which is highly susceptible to liquefaction. Liquefaction occurs when sandy soils are subjected to ground shaking and the effects can be intensified if there are susceptible soils, shallow ground water and high earthquake probability. Using census level data, I will be mapping liquefaction potential in order to understand which locations and people in the Salt Lake Valley will be at the highest risk of damage based on population density.

Zachary Fritz (Jean Lavigne, Environmental Studies) Canoe Route Distribution for Les Voyageurs Inc.

Les Voyageurs Inc. expands the horizons of young people as it challenges their physical, psychological, social and learning skills through an intense outdoor experience. There are two distinct trips. The 1st year trip, which contains two sessions each summer of about 28 days each, explores Manitoba and Ontario east of lake Winnipeg. The 2nd year trip or “Far North” ranges from 35-50 days in Canada’s Arctic. These trips vary greatly in location, length, as well as things to do and see. The goal of my project is to compare the routes of the two sessions from a 1st year trips, along with plotting out which areas of the routes are near burned areas from forest fires and First Nation reservations on a zoomed in scale of Manitoba and Ontario. My project will also display a zoomed-out map of Canada showing the Far North trip routes done by Les Voyageurs Inc. in the past in relation to a first-year trip, as well as displaying the length and key highlights of each arctic routes. The routes are displayed by latitude and longitude points gathered from a SPOT device on past trips. Data for forest fire history, as well as First Nation reservation locations were all gathered from Natural Resources Canada.

Zachary Fritz (Corrie Grosse, Environmental Studies) Protecting National Treasures: The Boundary Waters Canoe Area Wilderness and Voyageurs National Park’s Fight Against Mining and Climate Change

This study aims to identify the major potential impacts of mining and climate change on the Boundary Waters Canoe Area Wilderness

(BWCAW) and Voyageurs National Park (VNP) in northern Minnesota. The BWCAW and VNP are prized for being gems of northern Minnesota with their pristine waters, forests, flora, and fauna. Through investigation of scholarly literature and environmental campaigns working to protect these areas, I explore how these areas may be impacted from mining runoff into the watersheds and warming temperatures. The study investigates how these issues can impact the economies of local communities, as well as the population and migration of the areas' flora and fauna.

Samuel Gerdts (Corrie Grosse, Environmental Studies) Fighting Climate Change: The economic and emissions benefit of removing food trays from college dining halls.

In the modern world where climate change has become an issue that has been proven to affect all life on earth, dealing with it and its repercussions to come has been on the minds of many people. Some of the biggest challenges we face to combat its drastic, future effects is changing our habits and infrastructure to better address the issue. One way to do that is by transforming the food industry, an industry that contributes significantly to greenhouse gas emissions. This essay examines how eliminating food trays in university dining halls affects carbon emissions and other sustainability indicators. SJU still uses food trays in the dining hall, whereas its sister campus, CSB, eliminated food trays from the dining hall. Through interviews with representatives at both campuses, I find that the removal of trays can lead to a significant reduction in food waste, save the dining service money each year, and helps reduce greenhouse gas emissions.

Samuel Gerdts (Jean Lavigne, Environmental Studies) Locating Maple Syrup Taps and Barrels at SJU

Saint John's University (SJU) hosts a yearly event for people to come and help with the maple syrup tapping and refinement process within the arboretum. Some concern within the event is which area is going to be producing the highest amount of sap given the density of trees within that area, as well as which areas start earlier in the season. There are also different methods of tapping the trees that are being compared, such as the use of plastic taps with drop lines into buckets on the ground vs. traditional, stainless steel taps with buckets on trees. Through GPS data point collection and the measurement of sap within a given area, we will be able to see which area was able to produce the most sap, while also comparing whether that area was tapped with plastic taps and drop lines or with the traditional, stainless steel taps.

Justin Haase (Jean Lavigne, Environmental Studies) Land Use by Raptors in Urban vs. Rural Areas

As Urbanization increases, wildlife is learning to adapt to these human-made landscapes. It is not just mammals like foxes and coyotes that are doing this, the list of species moving into human-made landscapes includes birds of prey. Gabriela Zaldumbide, an undergraduate at University of Wisconsin-Madison, conducted a study looking at urban vs rural land use by these birds. The goal of her project is to analyze how the birds in both urban and rural areas use the land. It is important to learn how the species around us are adapting to human made landscapes because it will determine how we will interact in the future. How do the raptor's hunting tactics differ in rural and urban areas? What is the population density of birds in rural and urban areas? Once Gabriela collected her field data, I built a map showing the location of her 148 raptors in Wisconsin and Minnesota. My goal was to analyze how the birds are using the land around them. I transferred the data collected in the field into ArcMap10.4 and built my analysis using mapping tools within the program. I used a land cover map provided by the National Land Cover Database 2011 in order to show the usage of land around where the birds were located. I added data such as states, counties, and roads to include human population and density. I also added Gabriela's data from excel. This data includes information about whether the bird was flying or perched, whether its perch was natural or man-made, etc. The maps I produced include the land use and bird points.

Anne Johnson (Troy Knight, Environmental Studies) Wild Minds - Integrating Nature into Daily Life

Many CSBSJU students struggle with mental health and are seeking ways to improve their daily lives. Spending time in nature is an outlet for countless people, giving them a sense of serenity amongst the stressors of life. Studies have shown that spending regular time in nature can reduce stress, increase resiliency, improve cognition, and more. There are many natural resources on the CSBSJU campuses that can benefit all students. Through the pilot program "Wild Minds," senior Annie Johnson has sought to bring awareness of these resources to students. The program includes a group of nine students who have met twice a month (starting in February of 2018) to spend time reflecting in nature, doing various outdoor activities, and bonding socially. These activities have ranged from participating in a low ropes course, learning how to rock climb, doing wilderness art, volunteering in the Saint John's Arboretum, and more. At

the end of the semester, the Wild Minds program will culminate in a 4-day canoeing trip in the Boundary Waters Canoe Area. The ultimate goal of this program is to show students that nature is a resource to help improve mental health and heighten their quality of life.

Colin Kroll (Jean Lavigne, Environmental Studies) Stargazing and Light Pollution: The Best Places to See the Night Sky Near CSBSJU

Stargazing is becoming increasingly more difficult due to light pollution and urban sprawl. According to BBC, “83% of the world's population, and 99% of Europeans and people in the US, live under skies nearly 10% brighter than their natural starry state” (BBC, 2016). Thus begs the question, where are the best places to go stargazing in Minnesota, and where specifically are the best places to go within a 30 mile and 60 mile radius of CSBSJU? Through striving to find a solution, this project maps areas of high and low light pollution within Minnesota. This data is then compared with the locations of gas stations for snacks, bathrooms, gas, etc., and 24 hour emergency rooms in case of an injury or emergency during an excursion. Data within these maps was obtained through lightpollutionmap.info (light pollution), and Google Maps (24 hour emergency rooms and gas stations).

Shennie Lee (Jean Lavigne, Environmental Studies) Sustainability: How Hmong Farmers Can Bring About Sustainable Methods and Practices to Modern Agriculture

Contemporary farmers care about how fast their crops/products can grow as well as what they should look like. To do this, they resort to pesticides, fertilizers and GMO which can potentially affect the surrounding environment by contaminating water sources and depleting the land. American agriculture today uses so much fertilizers and pesticides which are not good for the environment. This is an important problem because fertilizers and pesticides deplete important nutrients in the soil which makes it harder for crops to grow. They can also be washed into rivers or water sources and contaminate humans and wildlife as well. The methods of practices of the Hmong people are not as harmful. The Hmong people have been farming for a long time and it is their way of life. Their knowledge of the land and crops derives from an intimate relationship with the way they treat the land and crops. By treating the land with respect and safe/non-toxic chemicals, they can sustain their family and those around them. Community-Supported Agriculture (CSA) is like Hmong agriculture in the sense that they both have knowledge of the land and they respect the land. I

will be doing literature reviews as well as interviews with Hmong farmers and CSA farmers. What sustainable methods and practices can modern agriculture gain from Hmong farmers? I will ask them about the use of pesticides and fertilizers as well as the kind of methods they use to plant their crops. I will also be asking them if they are aware about climate change and if that changes what products they use on their crops as well as how they can be more sustainable. With these questions and data from scholarly articles, I will be putting together a table comparing Hmong farmers and their use of fertilizers, pesticides and methods with modern farmers as well as organic CSA farmers to show how contemporary agriculture can be more sustainable in the future.

Jacob Ney (Jean Lavigne, Environmental Studies) Olympic Success: Built, Born, or Bought?

During the Olympic Games, a ranked medal count often compares performance by country, but this system may be an unfair and inaccurate representation of Olympic success. To fairly balance how this success is measured, factors such as a country's participation, population, and GDP must be considered. These choropleth, Robinson-projected world maps display normalizations of these factors using medal count and participant information from every summer Olympics since 1896, as well as data on each country's current population and GDP.

Dorothy O'Brien (Jean Lavigne, Environmental Studies) Living with Mountain Lions in California

The population of California has been steadily increasing over the past 20 years. Currently there are approximately 39 million people living in California, a population predominantly located in Southern California near Los Angeles, San Diego, and the San Francisco Bay Area. However, these areas are also prime habitat for mountain lions, with their expansive cover for stalking prey and a healthy population of deer. With California's growing human population there has been an increase in urban sprawl. Yet, this expansion encroaches upon existing mountain lion habitat which increases the likelihood of a human-mountain lion encounter. The goal of this project is to answer the question, which areas in California are people most likely to encounter mountain lions, and how close these places are to urban and suburban areas? Multiple maps were created by utilizing data from California's online Geoportal in order to highlight the places humans and mountain lions are most likely to come in contact. This project was done as an extension of my senior thesis: Fearing the Fearsome: Avoiding

Minnesota's Trouble with Timber Wolves with the Mountain Lions in California.

Dorothy O'Brien (Jean Lavigne, Environmental Studies) Fearing the Fearsome: Avoiding Minnesota's Trouble with Timber Wolves with the Mountain Lions in California

The population of California has been growing slowly but steadily over the past twenty years. As this growth occurs urban and suburban areas are expanding too. Generally, these areas expand outwards into nearby wildlife habitat. In California, mountain lions are one of the animals that have been impacted by the growth of housing developments in the state. People and mountain lions are encountering each other more frequently as the population grows and housing developments encroach on mountain lion territory. Mountain lions often wander into human populated areas when in search of new territory, a mate, or food when it has become scarce within their territory. This raises the question of how or in what ways should the state of California further manage the population of mountain lions as urban and suburban areas grow? Currently, California is the only western state that does not allow hunting of mountain lions. The current management practices that are allowed include eliminating problem animals either by euthanasia or relocating the animal if it comes into contact with people. Minnesota's experience dealing with the decline, recovery, and the stabilization of the wolves, can perhaps provide lessons in impactful predator management that could be implemented in California with the mountain lions to ease the tensions between homeowner and resident mountain lions.

Korey O'Donnell (Jean Lavigne, Environmental Studies) Family Friendly Locations at CSB/SJU

For my project I will be using ArcGIS to construct two separate maps for the campuses of CSB and SJU. On each map, I will label the locations of lactation rooms, baby changing stations, and other family friendly locations on the campuses. The purpose of these maps will be to provide assistance to any visiting families who may have small children and need access to such locations. By implementing my previously gained experience with ArcGIS software I will be able to use digitizing and labeling, among other techniques, as a way of indicating these locations around the campuses. Throughout the project I will be working in collaboration with the Family Friendly Policies committee at CSB/SJU to ensure the maps will achieve their desired outcomes.

Ilyse Putz (Jean Lavigne, Environmental Studies) Cartographic Analysis of Local Foods Movement in the Midwest

The local foods movement has become a focus because it reconnects people with the story of food. In any culture, food is a sacred experience, and by bringing back this connection, inspiration and independence are sparked. It is important to identify and initiate growth of local foods in all communities. By mapping the local foods movement, I hope to determine if local foods are more accessible to certain communities and to locate hubs for the movement. Through the use of data on community-supported agricultures, food cooperatives, farmer's markets, and vendors of farmer's markets, I will create an index ranking counties by local food activity. This index can then be displayed in contrast to demographics of each county. This will provide information on impacts and magnitude of the local foods movement.

Martha Rausch (Corrie Grosse, Environmental Studies) To Green or Not to Green

This study investigates how the availability, affordability, knowledge base, and aesthetics plays into homeowners' willingness to purchase energy-efficient products for their homes. This includes the behavior of consumer culture as well as neighborhood dynamics and the role they play in the decision-making process. To explore these themes, a survey was conducted to assess participants' knowledge of energy-efficient solutions prior to the survey. Then, after providing information on the energy solutions, the survey assessed their willingness to implement the various solutions in their homes. Results showed that while money and knowledge are common factors in homeowners not implementing solutions into their homes, the largest factor in the study showed that homeowners are unwilling to make the drastic, and high energy efficient, changes to their homes because of aesthetics, curb appeal, or resale value. Continued research is suggested to investigate ways to create more homeowner awareness of energy-efficient solutions and to ensure that solutions match homeowners' aesthetic ideals.

Olivia Rengo (Jean Lavigne, Environmental Studies) Counties with Potential for Wildfire-Related Human Safety Risks

Wildfires are increasing in size and intensity across the Western United States. Factors contributing to growing wildfire danger include climate change, overuse of suppression practices, and the expansion of human populations into fire-prone areas. The purpose of this map is to display

which counties in the United States that have the most potential for human death or injury associated with wildfires. The counties are ranked based on a combination of population density and the number of wildfires per county since 1980 that burned more than 15,000 acres. Wildfire data was retrieved from the USGS Federal Fire Occurrence website.

Justina Sorensen (Jean Lavigne, Environmental Studies) Fine Arts Programming Audiences

This project will show the audience for Fine Arts Programming the last three performance seasons (September to May). Using data from ticket sales as well as demographic information on counties/cities the location of the bulk of ticket buyers will be shown. This will also show where ticket sales are doing well and where they should be doing better. To prevent an offset of the data students and OSB will be omitted from the data. The data then can show Fine Arts Programming where their target demographic is and areas that more advertising is needed. Data from ticket sales as well as the demographic data on counties will be joined together to create a map showing the density of ticket buyers. Each season will be on its own map, which will highlight areas where the most ticket activity occurs. Minnesota and Stearns County are the main focal points, but Iowa, North Dakota, South Dakota and Wisconsin will also be included in the maps. The three seasons will also be compared to each other. This project may be continued into the future to contain more years or even a ticket breakdown for the types of shows specific areas are attending more, making advertising better fit both the needs of Fine Arts Programming and patrons.

Quincy Taylor (Jean Lavigne, Environmental Studies) The Impact of Dams on the Salmon Population

Dams are one of the most popular ways to produce low-carbon energy. However, while dams can be beneficial in producing energy, they can also be detrimental to salmon populations. Dams block off important salmon runs that they use to migrate between spawning habitats and their permanent homes. This not only makes it harder for salmon to breed, but makes travel much more dangerous for juvenile salmon that have just hatched. Through this map, I had the goal of displaying salmon populations in relation to major dams in the United States. By finding data on different species of salmon in the northwest and southwest regions of the United States, along with major dams currently constructed on rivers in the area, I was able to illustrate the argument that the salmon population is negatively affected by large dams.

Quincy Taylor (Corrie Grosse, Environmental Studies) Hydropower Dams: Their Environmental Implications

Dams are one of the most popular ways to produce low-carbon energy. Since they are so abundant, societies need to ask the question: How do dams affect the river ecosystems that they are built upon? I conducted my research through scholarly articles and through case studies of three specific dams: The Three Gorges Dam (China), The Hoover Dam (Nevada) and the Grand Coulee Dam (Washington). Through my research, I found that dams have negative effects on most parts of river ecosystems, including the migration patterns of salmon and other species, the water quality within the rivers, and even the people living near the rivers that these dams are built upon. I argue that finding alternatives to dams, or ways to make dams more environmentally friendly, should be a top priority for today's society.

Jayson Valek (Jean Lavigne, Environmental Studies) Future Mining in Minnesota: Effects on Communities and Environment

Future Mining in Minnesota: Effects on Communities and Environment Abstract

This study explores and describes the potential risks of the proposed PolyMet copper-nickel mine near Hoyt Lakes, Minnesota. The goals of the research were: 1) identify vulnerable communities and environmental features, 2) determine the mine's potential damage, and 3) create maps to illustrate the vicinity of the mine to vulnerable areas. The interest of this project is to determine whether the mine's economic benefit outweighs the environmental risks. This research is an observational study that involves analysis of maps compiled with environmental, population, and vulnerability data as well as non-spatial data. The majority of data were found at MN Geospatial Commons. The major findings of this research are that the proposed mine has great potential to pollute the water table and nearby streams, rivers, and lakes. The mine's risks may not have been fully reviewed since the potential pollution will have great impact on communities in St. Louis County, Minnesota, recreation in the BWCA, and terrestrial and aquatic ecosystems. It can be assumed that the risks outweigh the benefits, since the mine has potential to pollute the mine for many years after it ceases operation. It can be interpreted that local communities and environmental features will take a toll if this mine is implemented.

Cynthia Vu (Corrie Grosse, Environmental Studies) Incorporating Traditional Hmong Farming Practices into Sustainable Agriculture

Advocates for environmental sustainability highlights the importance of multiple factors for integrating sustainable agriculture into farming practices. The practice of sustainable agriculture is used to increase agriculture productivity and conserve energy and natural resources. These practices are beneficial for the environment and farmer. However, in implementing these practices into communities of different ethnic backgrounds, the cultural knowledge and practices that are already embedded within particular farming communities are not always acknowledged and valued. Drawing on interviews with Hmong farmers, I argue that incorporating cultural knowledge and practices into efforts to promote sustainable agriculture practices is critical to a well-rounded idea of sustainable agriculture, one where diverse cultures inclusivity within farming communities can flourish. Sustainable agriculture calls for sustainability of economic, social, cultural, and political dimensions of community. Therefore, when promoting sustainable agriculture, it is important to recognize the knowledge and farming techniques within communities of different ethnic backgrounds and incorporate these practices into the dominant ideology of sustainable agriculture.

Benjamin West (Jean Lavigne, Environmental Studies) Study Abroad in Beibei, China

The CSBSJU study abroad program in Beibei, China is an extraordinary experience, but can be a disorienting for students and visitors. Not only are people entering an unfamiliar environment, they're having to deal with a major language barrier. This especially is difficult when students and visitors need to orient themselves using a map. My project aims to create a customized map, translated into English, that highlights the most noteworthy features (e.g. laundromat, hiking trails, the best noodle restaurant on campus, etc.) for students and visitors of the CSBSJU community. I have met with past students and staff members to gain input on what should be featured on the map, as well as Professor Yan, who has helped translate several Chinese maps. This was accomplished by using ArcGIS software to make and edit maps that are based off of ESRI world Imagery online, and copies of actual maps brought back by past program participants. In turn, this map will help students and visitors to be much more engaged during their time in Beibei.

Art

Nathan Saunders (Samuel Johnson, Art) Cone 3 Soda Firing

Over the course of the year I worked to create and explore forms of my functional pottery but instead of firing in my typical Cone 10 reduction salt/soda firing I will shift to Cone 3 Oxidation soda. I chose this based on the work of Tom Jaszczak, Matthew Kelleher and Patrick Rademaker, the only three potters I know of working with this firing method. My intent with this is to create and test many flashing slips out of simple ceramic materials such as clays and frits to create subtle, simple, and engaging surfaces that will encourage use in everyday life. I worked towards further sustainability by using local materials as well as firing at this much lower temperature, which reduces the amount of natural gas needed for the firing.

Psychology

Erik Balder (Michael Livingston, Psychology) Social Media: How Social Media Affects Levels of Individual Depression

I conducted a study as part of a class project. Focused on the causal effects social media use might have on depression. The study did not reveal significant results but could be improved in the future so that it may find important data as many previous studies have shown.

John Beckius (Stephen Stelzner, Psychology) Creativity and Performance: The Effects of Working in Groups versus Working Individually

Industrial-Organizational Psychologists are interested in factors that can affect work productivity and performance among an organization's employees. Some professionals argue that two heads are better than one when it comes to being innovative and coming up with creative solutions. However, others feel that group settings tend to result in many hindering factors, such as conformity and production blocking. In the present study, I attempted to determine whether or not there is a differential impact of working in groups and working as individuals on creativity and performance. This was measured through a divergent thinking task based on Guilford's Alternative Uses Task (1967) and a convergent thinking task based on Mednick's Remote Association Task (1962). Introduction to Psychology students were asked to complete both tasks, once as a group and once as individuals. The alternative uses task asks participants to list as many possible uses for a single common household item within a span of three minutes, while the remote association task asks participants to answer

a number of questions made up of three words and list the one word that associates the other three together. I hypothesized that participants working in an individual setting will have a higher total mean score on the divergent and convergent thinking tasks than the same participants working on these tasks in a group setting.

Johanna Dykhoff (Michael Livingston, Psychology) Laptop Use on Lecture Attention

This experiment examined the effect that laptop use has on the lecture attention of college students. 20 undergraduate students at a small liberal arts college were asked to listen to a short lecture about the life of a historical figure and then take a quiz about the content of the lecture that was out of 14 points. In addition, the experimental group had to type out a predetermined email while listening to the lecture in order to test their ability to pay attention and retain information while on their laptop. Of the 20 participants, there was 1 participant which had to be thrown out because they were an outlier. The study had significance of $p=0.002$ when comparing the scores of the two conditions. The experimental group had a mean of 3.44 and the control group had a mean of 7.8. For the scores, $t=-2.999$, $df=17$, and there were 95% confidence intervals with an upper bound of -1.29 and a lower bound of -7.42. This proves that there was a significant relationship between the condition and the scores. Participants who had to multitask and split their attention had significantly lower scores on the quiz. Future research should look at different types of laptop use and the difference which that makes, as well as how taking notes affects scores and attention.

Kori Friedges (Michael Livingston, Psychology) Multi-tasking: The Relationship between Watching a Video and Memory

This study investigates the relationship between media multitasking and memory among undergraduate students at a small, liberal arts college in Minnesota. The participants ($N=20$) were randomly assigned using block randomization to either the experimental group which was asked to study a list of 20 words while watching a video clip or the control group which only studied the set of 20 words. All of the participants were given 2 minutes to study the list of 20 words and 2 minutes to write as many words as they could recall from their memory. The participants who watched the video clip were asked to answer questions about the video to ensure the independent variable was manipulated correctly. I found that participants who media multitasked by watching a video had a more difficult time

recalling words from the list compared to those in the control group ($t(18) = -2.427$, $p\text{-value} = .026$, mean difference = -4.20 , and standard error difference = 2.79). These results suggest that people who media multitask while they study may have a more difficult time recalling information from their memory compared to those who do not multitask while they study information.

Gladys Galvez (Michael Livingston, Psychology) Social media impact on memory

This study investigates whether social media affects memory recall. Undergraduates ($N=20$) were divided into two groups one being the control group and the other one the experimental group (social media). The study's results suggested that there is no significance on word recall whether they are exposed to social media or not during their 2-minute break after given a 15-word list to memorize for 1 minute. Social media tends to have no influence on memory recall.

Claire Gammon-Deering (Michael Livingston, Psychology) The Effects of Social Media on Self-Esteem

Because social media is so prevalent in today's society, it is important to look at the ways in which it affects people's lives. One way in which social media affects lives is by a person's self-esteem. Adolescents in particular are a vulnerable group with changes in self-esteem due to social media use. The experiment I conducted with 20 CSB/SJU students found that there was no significance in the effects of social media on self-esteem. I predicted that students who used social media before taking the two question quiz would have a lower sense of self-esteem than those who didn't. Likewise, I predicted that the students who relaxed before taking the quiz would have a higher sense of self-esteem. The first of the two questions asked after conducting the experiment were both asking about the participant's self-esteem or how they feel about themselves. The fact that there was no significance between the effects of social media on self-esteem can still tell us information about the effects (or lack of).

Sadie George (Michael Livingston, Psychology) Effects of Typing and Handwriting on memory

This experiment investigated whether handwriting information leads to an individual remembering the information better than if they were to type it on a computer. It was hypothesized that participants who were tasked to handwrite a list of words would remember a larger number of words than

the participants who were tasked with typing out the list of words. 20 participants on a private college campus participated in this experiment. 10 of the participants were assigned to handwrite a list of 20 words, while the other 10 participants were assigned to type the list of words. It was found that the relationship between numbers of words remembered after typing the list on a laptop versus handwriting the list was not statistically significant with the mean difference being -1.900. There was not found to be an association between the number of words remembered and whether the participant handwrote or typed out the list. There is no evidence from this experiment that handwriting information will result in remembering that same information better than if it were to be typed on a computer. The power of this study was very low since there were only 20 participants. There is a possibility of acquiring significant results if the experiment were conducted another time with a greater number of participants.

Nicholas Gonzales, Brayden Ellis, Julian Martin (Robert Kachelski, Psychology)
The Effect of Music on Mood and Interpretation of Ambiguous Stimuli

The purpose of our experiment was to determine if listening to different types of music affects people's moods and their interpretation of ambiguous stimuli. In order to test this, we created three different groups. One group did not listen to any music, and they served as the control group. A second group listened to classical music, and a third group listened to heavy metal music. We then gave the participants two ambiguous pictures and asked them to describe what was happening in the pictures and to rate a number of characteristics, such as what emotions the people in the pictures were experiencing. Next, we gave participants a mood inventory to measure their own moods and the emotions they were experiencing. We hypothesized that the type of music participants listened to would affect their mood, with the classical music resulting in more positive emotions and the heavy metal music resulting in more negative emotions. In turn, we predicted that these emotional reactions would affect participants' interpretations of the pictures, such that those in the classical music condition would give more positive descriptions and attributions, whereas those in the heavy metal music condition would give more negative descriptions and attributions.

Ella Grote (Linda Tennison, Psychology) The Effectiveness Mindfulness-Based Meditation on College Students' Wellbeing

Research has shown that mindfulness can improve the quality of college students' lives both physiologically and cognitively. The present study focuses on whether mindfulness meditation can improve college student'

overall wellbeing by reducing the stress through mindfulness meditation. Participants went through a six-week Modified KORU Mindfulness Meditation program and completed the Five Facet Mindfulness Questionnaire (FFMQ). Complementing prior research on mindfulness training initiatives, there was a difference in the FFMQ before and after the manipulation for Observing, Describe, and Act Awareness. Overall, there was a significant difference before and after the manipulation.
Keywords: mindfulness, college students, wellbeing, FFMQ, stress

James Hasselbrink (Stephen Stelzner, Psychology) Autism Stigma: A Potential Tactic for Improving Attitudes Toward Autism Spectrum Disorder

This study investigated four different ways of describing individuals with autism spectrum disorder (ASD). The biogenetic description focuses on a biological explanation of the disorder, the symptom description emphasizes the symptoms of the disorder, the personified description highlights humanizing elements such as hobbies, and the public figure description discusses the life of a successful public figure with ASD. A variety of stigma measures (dangerousness, social distance, empathy, and attributions) were used to analyze the impact each description had on the stigma that participants expressed toward the individual portrayed. Significant differences were found between the groups on perceptions of social distance and empathy. There were also differences on dangerousness and social distance in relation to participants' familiarity with someone on the autism spectrum.

Meghan Keaveny, Emily Berg, Thomas Baker, Cassidy Smith, Jamie McCarthy, Erin Titus (Abraham Immelman, Psychology) The Political Personality of Donald Trump in Office as President

Psychodiagnostically relevant data regarding U.S. president Donald Trump were collected from media reports published since his inauguration on January 20, 2017, and synthesized into a personality profile using the Millon Inventory of Diagnostic Criteria (MIDC). The poster summarizes the results of the at-a-distance psychological assessment.

Drew Lodermeier (Michael Livingston, Psychology) Multitasking Social Media and Studying Effects on Retainment

Previous research suggests that there is an association between multitasking social media and studying on academic performance in students. The purpose of this research is to determine participant's levels of retainment on

academic performance. To test this, a simple experiment was done with a post-test only design using block randomization. Ten students were placed into a treatment group that read an article, used social media for two minutes after completing the reading, and took an assessment regarding the article after the two minutes expired. The control group consisted of ten participants that sat with no distractions upon finishing the article before taking the assessment. Based on previous research a hypothesis can be made that those who use social media after reading the article will perform worse than those who sat with no distractions after reading the article.

Drew Lodermeier, Kayla Gardner, Sara Goranowski, Kailee Young (Linda Tennison, Psychology) Effects of Mindful Meditation and Loving Kindness Meditation on College Student Stress Levels

Previous research suggests that there is a relationship between mindfulness meditation and loving kindness meditation on the effect on students' stress levels. The purpose of our research will be to determine participants' levels of stress and anxiety in relation to their heart rate and different meditation techniques. To test this, we will have participants take a survey called the College Student Stress Scale composed of questions related to different stressors of college students. The second part of the study will include participants listening to a mindfulness meditation audio for 5 minutes while having their heart rate variability (HRV) measured with a Biopac machine. Participants will then rest for 5 minutes while having their HRV measured and lastly they will listen to a loving kindness audio for 5 minutes while having their HRV measured. There will be no control group or experimental group, rather participants' scores on their surveys will be compared to their heart rate variability in the different conditions. Based on previous research, we hypothesized that a participant that had higher levels of stress, would have a lower heart rate variability whereas a person with lower levels of stress, will have a higher heart rate variability. We also hypothesized that mindfulness meditation and loving kindness meditation will help reduce this stress and we are looking to see if one of these types of meditation reduces stress level more for students.

Maly Lor (Michael Livingston, Psychology) The Influence of Social Media on Body Satisfaction

Social media network systems such as Facebook, Instagram, Snapchat, and Pinterest are used by 81 percent of adolescents. During adolescence and early adulthood, especially in the western culture, body dissatisfaction is very prevalent. It is a time when females aspire to be thinner all because of

society's unrealistic standards of the thin ideal. Because of the thin ideal, females engage in two of the many processes known as social comparison and visual adaptation, which in turn, lower self-esteem, lower body satisfaction, heighten appearance focus, and increases the internalization of society's unrealistic standard. Due to the great amount of research conducted on female body dissatisfaction, this experimental study aimed to determine if female body satisfaction is affected by social comparison and visual adaptation. The post-test only design hypothesized that the group exposed to Victoria Secret model photos would report lower body satisfaction compared to the female participants who viewed photos of foreign countries. Results from this study indicated that female participants who were exposed to photos of Victoria Secret models and foreign countries had significant differences in body satisfaction levels, $t(1,18) = -2.599$, $p < .018$. Regardless of the results, this study contained limitations as the sample size was conveniently chosen and was small. In order to obtain more accurate findings that can be generalized, future studies should contain a bigger sample and incorporate a pre-posttest design to compare body satisfaction levels.

Nathaniel Lutmer (Michael Livingston, Psychology) The Impact of Music on Studying Ability in College Students

This study investigates the relationship between listening to music and studying ability in college students. This study was conducted by utilizing a convenience sampling technique to have participants partake in the study. Each participant was randomly assigned to either a control or a research group based on block-random assignment. The individuals in the research group listened to a brief segment of a hit song while studying a list of uncommon words and definitions before being tested on their ability to recall this information. The individuals in the control group studied the same list of uncommon words and definitions without the music stimulus and were then tested on their ability to recall the information. The data for each participant was kept anonymous as it was analyzed. Each participant was a student at a small, midwestern university. The null hypothesis for this study is that there is no relationship between listening to music and studying ability. Following a statistical analysis, I fail to reject the null hypothesis as there was not a significant difference in the posttest scores for the participants in each group. Due to the convenience sampling technique utilized, the results cannot be generalized to a larger population. Further research needs to be performed to determine if there is a relationship between listening to music and effective studying ability in college students. Keywords: music, studying, multitasking

Sarah McGoldrick, Hannah Chisholm, Kallie Kuehn (Robert Kachelski, Psychology) The Effects of Auditory and Visual Learning on Recall

The purpose of our research was to determine how presentation modality affects memory recall for words, and if the type of practice participants engage in matters. Each participant was given two lists of 20 words to try to remember, with the words presented one at a time. Participants were randomly assigned to receive both lists through either visual presentation or auditory presentation. Regardless of which presentation mode group they were in, all participants used visual practice for one list and auditory practice for the other list. In the visual practice condition, participants wrote down each word three times after it was presented, whereas in the auditory practice condition, participants said each word aloud three times after it was presented. After the combined presentation and practice for each list, participants were asked to recall as many words as they could. We then analyzed the data to see if there were any differences in the number of words correctly recalled based on the presentation modality or the type of practice used.

Andrea Molus (Michael Livingston, Psychology) Does listening to Music while studying effect recall?

In the modern world, music is readily available all day long, whether it be on the radio, TV, or public places. During adolescence, teenagers tend to listen to approximately three hours of music a day (Kotsopoulou & Hallam, 2010). Researchers have undertaken experiments that look at the effects of background music on cognitive activities. This study examines the relationship between studying with music and recall memory. To examine this relationship, the researcher used block randomization to put participants into groups, then had the participants study a list of twenty-five words either listening to music or not listening to music, then had the participants write down as many words he/she could remember. The researcher hypothesized that participants who did not listen to music while studying the list of words would have a higher number of words they were able to recall. The relationship between the ability to recall words after studying a list of words while listening to music ($M = 13.1$; $SD = 5.28$) and studying a list of words while not listening to music ($M = 14.3$; $SD = 5.17$) was not statistically significant. This suggests that listening to music while studying does not have effect on immediate recall memory, further studies would have to be done to rule out other variables.

Andrea Molus, Suntina Spehar, Katarina Sulzle, Elizabeth Walter (Linda Tennison, Psychology) Relationship between Heart Rate Variability and Empathy

This study sought to determine if there is a correlation between an individual's heart rate variability (HRV) and their score on the Empathy Quotient test. This experiment was designed as an ABAB model, where a baseline experiment is run, and then an experimental run follows. A baseline measurement was taken for each participant. Then participants were instructed to either read an emotionally triggering excerpt from Browning's Reflection on a Massacre first or a neutral excerpt from The Constitution of Liberty by Friedrich Hayek. The participants were then be instructed to stop reading the excerpt to have them return to baseline HRV. A baseline measure was taken again. Then participants were then instructed to read the second article. Researchers observed and calculated any differences between a participants HRV during the baseline testing and the manipulation period of the two readings, then correlated those with their scores on the Empathy Quotient Test. The design of our study is a two by three factorial design. We measured participants on whether they score high or low of the Empathy Quotient and how much HRV was observed during both the neutral reading and emotionally triggering reading. Our hypothesis is: the higher a participant scores on the Empathy Scale, the higher their HRV will be.

Sharon Moranga (Michael Livingston, Psychology) Social Media Usage & Dating

This study investigates whether social media influences the online dating culture today. Specifically, I looked at whether or not being presented with images that are commonly found on online dating sites would affect if people are more likely to want to date as a result of it. Undergraduates (N= 20) were asked to answer several questions corresponding to how often they would like to date, and if they are active on social media dating cites. The study did not find any statistical significance between whether participants active on social media and whether that influenced how often they would like to date ($p = .676$, $r = 0.100$). Furthermore, the results suggest that seeing images presented on social media dating cites influence participants to want to date.

Mariah Ogden-Kellington (Michael Livingston, Psychology) Alcohol Advertisements Influence on Alcohol Consumption

Abstract

This simple experiment investigated whether alcohol advertisements influence college student's alcohol consumption. More specifically, I looked at how alcohol advertisements influence college student's satisfaction with their drinking habits or if they feel pressured to consume alcohol. College students at CSB/SJU (N=20) were assigned through block randomization to complete a survey after watching a PowerPoint for 30 seconds. In the experimental group (N=10) they viewed a PowerPoint showing images of alcohol advertisements, while in the control group (N=10) they view a different PowerPoint containing images of puppies. After viewing the PowerPoint, the experimental and control group answered the same survey. After analyzing the data, the results showed there is no correlation between alcohol advertisements and college students feeling unsatisfied with their alcohol consumption or feeling pressured to consume alcohol. The results then indicate that alcohol advertisements don't have as great of an influence on college students drinking habits as alcohol advertisements are intended to.

Keywords: alcohol advertisements, alcohol consumption, college students

Juan Perez (Michael Livingston, Psychology) Short Term Memory and Color

This study tried to see if there was any difference in memory retention whether the individual was exposed to color or black ink. We looked at how students from College of Saint Benedict and Saint John's University (N=20) were able to memorize a list of words. Participants were given list of words in either black ink or a mix of colors. They were then asked to repeat back what they remembered from those lists. We found that the students who had the list of words averaged a higher number of words memorized (10.33) vs those students who had the words in black ink (8.11). The results show significance between the two scores ($P < .028$). The results suggest that there is better retention of memory when participants are exposed to color than black ink.

Katlin Rice, Austen Luetmer, Hillary Rethlake, Suntina Spehar, Amanda Olson, Mariah Ogden-Kellington, Lucas Vetsch (Abraham Immelman, Psychology) The Personality Profile of North Korea's Kim Jong Un

Psychodiagnostically relevant data regarding North Korean supreme leader Kim Jong-un were collected from media reports and synthesized into a personality profile using the Millon Inventory of Diagnostic Criteria (MIDC). The poster summarizes the results of the at-a-distance psychological assessment.

Elizabeth Riitters (Michael Livingston, Psychology) "Body goals": Exposure to idealized, popular media images can effect body satisfaction ratings

College students are exposed to media many times throughout their day. Studies have shown that there are many negative correlations between students and the comparison of their bodies to others. In this study, it was tested to see if viewing mass media images for a while can affect the way people rate their body satisfaction and whether or not they would change their body. There were 20 people tested in this study. There were 10 people in the control group, and 10 people in the experimental group. The experimental group was required to watch a slideshow with 4 different pictures of health magazine covers then take a short body satisfaction survey, whereas the control group just completed the survey. It was found that there was no significance between the two groups and their group means were basically the same. Lack of significance could be caused by the small sample size or lack of time spent looking at the media images. This study can be built on in the future to add more people and expand to a more diverse sampling. In general, this study has not compared to other studies on the same topic but the method can be used to form a different study.

Gavin Schroeder, Hailey Valencour, Logan Spitzer (Robert Kachelski, Psychology)
The Effects of Taking Pictures on Memory for Experiences

The purpose of our research was to determine if taking pictures of an experience affects people's memory of that experience. In order to test this, participants were given a 15-minute guided tour of the St. John's Bible Exhibit and provided information about the different exhibits. They were under the impression that we were testing the effectiveness of different tour-giving methods. Actually, they were randomly assigned to three different groups designed to test the effects of taking pictures on memory for the exhibits. One group was not allowed to take any pictures, and they served as the control group. A second group was told that they should take pictures of three different exhibits of their choosing. The researchers recorded which exhibits each participant in this group photographed. A third group also took pictures of three exhibits, but they were told by the researcher which specific exhibits to photograph. Neither picture group was allowed to look at the pictures after taking them. After the tour was given, all participants were given a surprise memory test. The test included questions about visual details of what they saw in the exhibits as well as questions about facts they were told by the tour guide. We then analyzed

the test scores to determine if there were any differences among groups in terms of their memory accuracy.

Caiying Selmo (Michael Livingston, Psychology) A Picture is Worth 1,000 words: The Implication of Instagram on Feelings of Anxiety

This study investigates the causal relationship between social media use and anxiety. I conducted an experiment with an independent-groups design that examined the relationship between Instagram use and the severity of one's anxiety. This study consisted of 20 undergraduate students who attend the College of Saint Benedict (CSB) and Saint John's University (SJU). There were two conditions a participant could be assigned to; either the experimental group, where participants were directed to use the social media platform, Instagram, for three minutes or the control group, where participants were directed to work on a simple addition math worksheet that I created. After, participants' in both groups were directed to complete the Overall Anxiety Severity and Impairment Scale (OASIS). When I ran an independent groups t-test, I found there is not a causal relationship between Instagram use and the severity of someone's anxiety; $t(18)=-1.027$, $p=.318$. While this study's findings suggest that social media does not influence anxiety, more research may be necessary to refine these findings. Key Words: Instagram, Anxiety, Social media

Suntina Spehar (Michael Livingston, Psychology) Memory: The Use of Technology Versus Reading

This study examined the comparison in retention of information between watching a movie scene and reading a movie script from that scene. There have been controversies on how technology has impacted retention of information among students. The use of technologies can create distractions among those who use it, which may lead to a lower rate of remembered information. We looked at a sample of 20 students who either read a movie script or watched a movie scene. After the experiment, each participant was asked to complete a 5-question quiz assessing their knowledge on the scene. The relationship between retention of information after reading a movie script ($M = 4.200$; $SD = 1.135$) versus watching the film clip ($M = 3.600$; $SD = 1.264$) was not statistically significant.

Callie Stark (Amanda Jantzer, Psychology) The Effect of Creative Activity on Stress in College Students

Stress in college students has become an increasingly concerning topic. Research has shown that stress levels on college campuses have risen significantly over the last 10 years and that this stress can lead to more severe mental difficulties like depression and anxiety (Byrd & McKinney, 2012). This study evaluates how creative activity affects stress in college students through an experimental design with three conditions; guided creativity, non-guided creativity and non-creative. Participants included 30 students between the ages of 18 and 22 from the College of Saint Benedict and Saint John's University who were randomly assigned to the conditions. Results will be determined using a mixed model ANOVA and will be presented on Scholarship and Creativity Day.

Hailey Tanner, Jason Omann, Nathaniel Lutmer, John Beckius (Linda Tennison, Psychology) Effects of Social Isolation on Heart Rate Variability

The present study looked at the interaction and effects of social isolation on heart rate variability (HRV). Participants in this study included undergraduate (N=20) students from St. Johns University and the College of Saint Benedict. This study included an online survey that measured neuroticism as well as an online program participants played called CyberBall. After participants took the neuroticism survey they were attached to a BioPac machine using electrodes that monitored their heart rate variability while they played two rounds CyberBall. Heart rate variability was collected for a total of twenty minutes. We hypothesized that social isolation would decrease heart rate variability.

Keywords: Heart rate variability, social isolation, neuroticism

Sabrina Urick, Kaylee Egbers, Veronica Sinell (Robert Kachelski, Psychology) Does the Mere Presence of a Cell Phone Impair Task Performance?

The purpose of our study was to determine if the mere presence of a person's cell phone serves as a distraction that impairs task performance, even if the person does not use it. In order to test this, we had two groups of participants complete several tasks that require attention and accurate memory in order to perform well. The tasks used were a card matching game (sometimes known as Concentration), a sequential memory game (Simon), and the n-back task. One group was instructed to put their cell phones away before they were presented with the tasks and the other group was told to put their cell phones on the table near them while performing the tasks because they would need them later. Both groups had their phones turned completely off during the tasks, however. Participants completed two trials with each task, and their average performance was calculated. We

then compared the performance of the two groups to see if the presence of cell phones affected how quickly and accurately the participants were able to complete the tasks.

Xia Vang, Jack Her, Kristie Vang (Robert Kachelski, Psychology) Testing the Production Effect in Memory for Words

Previous research on the production effect shows that reading words aloud improves people's memory for those words compared to words read silently. The purpose of our study was to extend this research to see if reading words aloud would improve people's memory compared to hearing someone else say the words aloud. We also wanted to see if the production effect depends on the type of words (abstract or concrete words) and the type of memory test (recall or recognition). Participants were shown 30 words, one at a time, with each word presented for 4 seconds on a PowerPoint slide. Half of the words were abstract words (such as value and reason) and the other half were concrete words (such as table and paper). One group was instructed to read each word aloud as it appeared on the screen. A second group was instructed to read each word silently as it appeared. In the third group, as each word appeared on the screen, participants heard an audio recording of the word spoken aloud by one of the researchers. After all 30 words were presented, the participants were asked to recall the words by writing down as many as they could remember. Next, they completed a recognition memory test in which they were given a sheet containing the 30 presented words mixed together with 30 words that were not presented in the PowerPoint. They were asked to circle the words that they remembered being presented earlier. We then compared participants' memory performance to see if there were any significant differences among the groups, and whether the differences depended on the type of words or the type of memory test used.

Sophia Woods (Michael Livingston, Psychology) The Effects of Cell Phone Use in Class on Comprehension

This study investigated whether texting on cell phones has a negative effect on student's comprehension during class. An experimental design was used for this study in which half of the participants engaged in texting me while watching a video lecture on genetic engineering and the other half watched the video lecture with no distractions. After watching the video, all participants were given a short quiz on the knowledge presented during the video. The participants of this study were undergraduate students at the College of Saint Benedict and Saint John's University. Of these

participants, 13 were females and 7 were males, 7 were sophomores and 13 were juniors. I examined the quiz scores of the control group and compared them to the quiz scores of the experimental group by running an independent samples T-test. There was a significant difference between the scores of the control group and the scores of the experimental group, $t = 4.666$, $p < .000$. The 95% confidence interval ranged from .82465 (LL) to 2.17535 (UL). These results suggest that there is a causal relationship between cell phone use in class and a decrease in the participants comprehension of information presented to them.

Sociology

Olayemi Fadahunsi (Mary Block, Sociology) Faces of COP 21

Marginalized populations have the smallest carbon footprint but due to their socioeconomic status, geographic location, gender, and age they are affected the most from the impacts of climate change. Marginalized populations are unevenly impacted by climate change yet do not have enough influence on climate policies and negotiations. In order to find out how these populations are getting their voices heard, I interviewed and listened in on panels at the UNFCCC's COP 21 in order to understand how marginalized populations anticipate the future, solutions they have, and how they saw themselves being represented at the conference.

Arantxa Hernandez-Chaire, Julia Petron, Madelyn Konsor, Alexandra Castellanos (Mary Block, Sociology) Three, Two, One, Action: Incorporating Video Projects in Class Pedagogy

In what ways is anthropology taught? What assignments most impact student learning? What do students take away from anthropology courses? These posters explore how class assignments that use two strategies - participant observation and video-making - lead to durable learning through experience-based participation. Further, students will reflect on their experiences presenting their ideas at the Society for Applied Anthropology conference in Philadelphia in early April.

Laura Lanigan (Megan Sheehan, Sociology) Bridging the Gap: Bringing Anthropological Insight to 'Climate-Smart Agriculture'

This poster presents research conducted at the twenty-second United Nations Framework Convention on Climate Change. Collaborative efforts for climate-smart practices in the world's agricultural sector remain crucial, however an emphasis on dignified livelihoods for smallholders and the

utilization of Agroecology methods should be emphasized more than they currently are. Through the lens of anthropologist James C. Scott's research on state legibility and natural landscape manipulation, I argue that 'Climate-Smart Agriculture' programs will pose detrimental social implications for farmers who seek resiliency through the use of traditional knowledge and local resources. I explore how anthropological research can bridge the gap between United Nations policy-makers and on-the-ground farmers confronted by global climate change.

Mapy Mejia Florez (Megan Sheehan, Sociology) Observing the Chilean-Peruvian Border Dispute

The Chilean-Peruvian border dispute commenced during the War of the Pacific and continues to bear important political and identity implications. This presentation demonstrates how citizens of the territories of Tarapaca, Arica, and Tacna had to adapt to new political realities after the war. This presentation focuses on changes of nationalism and identity politics. Those citizens who were under Peruvian control and later Chilean had to re-socialize to become part of Chilean society. In short, the citizens underwent a chilenization process. This presentation employs an anthropological framework to explore current and historical policies promoting chilenization in the border region.

Undergraduate Research Program

Derek McLaughlin (Wendy Sterba, Undergraduate Research Program) An Ethical Approach to Pharmaceutical Price Increase in the United States

The topic of the pharmaceutical industries' common practice of increasing the prices of their products is a hot topic in today's world, especially with regard to the ethics and reasoning behind these pricing decisions. Such discussion has put the industry under scrutiny, as Americans pay more for their medication than anyone else in the world. This exploratory study investigates the ethical implications behind pricing decisions made by pharmaceutical companies in the United States, including viewpoints from the consumer, the government, medical professionals, and pharmaceutical executives.

Music Building 028 Choral Rehearsal, SJU

Music

Brady Buckentine, Olivia Busch, Daniel Butorac, Michael Carroll, Hannah Chisholm, Jesus Cortez, Camren Dehler, Patrick Ellingson, Jacob Fernholz, Taylor

Fourre, Tyler Haffner, Amanda Haley, Caitlin Harvey, Tomoko Hasegawa, Misa Hayashi, Madison Hurrle, Brandan Kalsow, Erin Kenney, Emily Knudson, Colten Maciej, Margaret Magnuson, Samuel Marshall, Alex Messner, Jacob Muehlenbein, Alexander Sais, Jack Schramel, Avery Stalboerger, Nicholas Tawil, Samuel Turner, Benjamin Ungar (Amy Grinsteiner, Music) A Music Exploration

Students from Music through History will analyze the music elements of songs from various genres and communicate their findings through interactive dialogue and listening sessions with attendees. Specific genres of music to be presented: Japanese Traditional Instruments in Rock, Athletes in Hip-Hop, Pop Love Songs, Classic Rock in Film, All Roads Lead to Music, Hip-Hop with a Message, Latin American Dance Music, Falling in Love: Modern Country, Vietnam War: A Message of Peace, and The Influence of Bob Dylan.

Peter Engel Science Center 269, SJU

Biology

Marissa Behounek (Stephen Saupe, Biology) The measurement of osmotic pressure in maple wood

Maple trees, unlike most other trees, are able to develop stem pressure in the spring (Cirelli 2008). The ability to produce pressure is required to exudate sap to make syrup. Two hypotheses to explain the source of pressure for sap exudation are the Milburn & O'Malley theory and the osmotic theory. Our experiment provides a critical test of the osmotic theory. We constructed osmometers to measure the movement of water across sugar maple or red oak wood "membranes". The osmometers were placed in water or a sugar solution and the movement of water across the wood barrier was recorded. We hypothesized that osmotic water movement would occur with the sugar maple membranes but not the red oak. Results will be presented.

Daniel Beyer (David Brown, Biology) Pollinator Richness and Diversity in Grasslands and Woodlands of the Saint John's Abbey Arboretum

Pollinator numbers and diversity are declining across the world for a variety of reasons including habitat loss, disease, introduction of invasive species, and climate change. These organisms pollinate crops, maintain diverse plant communities, and provide commodities like honey and beeswax. I wanted to provide the Saint John's Outdoor University with a baseline assessment of pollinator species richness and relative abundance. During the

spring and summer of 2017, I sampled pollinators in grassland and woodland habitats of the Saint John's Abbey Arboretum using cup traps of various colors filled with a sugar-water mixture. I identified pollinators in the laboratory to the lowest taxonomic level possible. I observed 30 different insect families and approximately 50 different species of pollinators. The most common pollinators were from the Halictidae family, also known as metallic bees. It is anticipated that this 2107 sample will be the first of a regular pollinator monitoring program, and that land managers and student naturalists will be able to consider any trends identified when making management decisions for lands in the Saint John's Abbey Arboretum.

Riley Blauvelt, Payton Lenz (Kristina Timmerman, Biology) Do Sally Lightfoot Crabs (*Grapsus grapsus*) segregate themselves to the inter-tidal splash zone?

In the Galápagos Islands, shorelines are home to many terrestrial/marine organisms like the Sally Lightfoot Crab (SLFC; *Grapsus grapsus*). This crab spends most of its life near or within the intertidal splash zone and feeds on organic matter. During a field-based biology course to these Ecuadorian islands, we investigated the spatial distribution of SLFC's. Specifically, we wanted to know if there was a difference in age category relative to their physical location within intertidal zones. We predicted that adults would be found more frequently within the splash zone (better food resources) and that juveniles would be further up shore from the splash zone. To explore this hypothesis, we collected data in a tidal pool near Baquerizo Moreno, San Cristóbal Island, between July 16 - 26, 2017. We separated the area into three sections; the splash zone, the wet zone, and the dry zone. Data was collected daily, two hours before and after low tide. We obtained a sample size of 1598 (number of adults = 739, and number of juveniles = 859). Adult crabs were most frequently found in the splash zone (= 12.8/m²) while juveniles were most frequently found in the wet or dry zones (= 16.0/m²). These significant results ($\chi^2 = 14.3, p = 0.013$) support our hypothesis; adult crabs were more prevalent in the splash zone, where food is more prevalent. Based on what is known about crab behavior, adults are larger, more aggressive and often cannibalize smaller individuals. Considering this information, it makes evolutionary sense that smaller, juvenile crabs will separate themselves from the larger adults. In this way, juvenile crabs have a higher probability to mature to the adult phase and potentially transmit their genes to the next generation. This study contributes to the sparse published information about this species.

Sophia Buysse, Brianna Westendorf (Kristina Timmerman, Biology) Impact of Wind and Salt Exposure on Seven Year Apple Tree Growth

The Seven Year Apple tree (*Casasia clusiifolia*) is found throughout the Caribbean Islands and Southern Florida. During a biology course on San Salvador, Bahamas (March 2018) the heights and trunk diameters of Seven Year Apple trees were measured in different ecological areas around the North End of the Island. We hypothesized that the Seven Year Apple height would be shorter at increased wind and salt exposure. We predicted that the trees with high wind and salt exposure would be shorter with larger trunk diameters while the trees with low wind and salt exposure would be tall with smaller trunk diameters. To test our hypothesis, we measured trees in three plots of Seven Year Apple trees in each of three different exposure areas: high wind, high salt (A); moderate wind, high salt (B); low wind, low salt (C). Our results showed a significant difference in tree height to diameter ratios between A and both B and C plots. These results suggest that wind exposure could play an important role in determining tree height of the Seven Year Apple tree. Analysis of trees beyond the North End of San Salvador, Bahamas would contribute more information to our results.

Allison Cwikla (Jennifer Schaefer, Biology) Activation of larval drosophila melanogaster muscle groups by different interneuron populations

Larval *Drosophila melanogaster* muscles are composed of motor neurons that receive commands from numerous populations of interneurons. Previous research in the Schaefer lab has indicated that various interneuron populations, such as cholinergic and serotonergic interneurons, may be required for producing normal order of muscle contraction during crawling. The sufficiency of these different interneuron populations for crawling is unknown. The goal of this experiment is to determine the sufficiency of various types of interneurons for initiating contraction in each larval *Drosophila* muscle group. Optogenetics and extracellular recordings are used to selectively stimulate interneuron types and then record action potentials in the different muscle groups involved in crawling.

Mark Ellman (Stephen Saupe, Biology) An Investigation into the Sugar Concentrations of Tree Sap

Tree sap can be collected from a variety of species in Minnesota, including sugar maple (*Acer saccharum*), box elder (*Acer negundo*), red maple (*Acer rubrum*), paper birch (*Betula papyrifera*), and ironwood (*Ostrya virginiana*). The sap of different species contain varying concentrations of

sugar, important for determining the amount of sap needed to boil down into a volume of syrup. In general, previous literature has shown that sugar maples have the highest concentration of sugar, followed by red maple, birch, and box elder. The sugar concentration of ironwood is as of yet unknown. The purpose of this study was to confirm the concentration of sugar in the sap of these five tree species and record the variation in sugar concentration over the tapping season (generally from early March to late April). Two trees of each species were tapped with 5/16 spiles starting on March 21 using standard procedures and the sap collected daily. The volume was measured and the sugar concentration measured using a digital refractometer. Results will be presented.

Michael Ellman (Stephen Saupe, Biology) Investigation into Sugar Sand Amounts in Tree Sap

Tree sap can be collected from a variety of species (sugar maple, birch, ironwood, box elder, red maple) in Minnesota. When the sap of sugar maple trees and others are cooked into syrup, a cloudy mixture of minerals precipitates out. This precipitate, called sugar sand, gives syrup an unpleasant taste and can clog up machinery if improperly managed. Sugar sand primarily consists primarily of calcium malate. Thus, calcium concentration can be a good indicator of how much sugar sand would precipitate out if sap is processed into syrup. In general, previous literature has shown that sugar maple sap has the highest calcium concentration, followed by box elder, red maple, and paper birch. The purpose of this study was to determine the possible variations in amount of sugar sand found in syrup produced from different species of trees by measuring the calcium concentration in the trees' sap. In addition, we aimed to determine the pattern of change in concentration of calcium over the course of the season (from March 21 to late April). Two trees each of the five following species were tapped: (*Acer saccharum*), box elder (*Acer negundo*), red maple (*Acer rubrum*), paper birch (*Betula papyrifera*), and ironwood (*Ostrya virginiana*). Trees were tapped with 5/16 spiles using standard procedures and the sap collected daily. The volume was measured and calcium concentration of the sap measured using a ion-selective calcium electrode. Results will be presented.

Kaitlin Geisenhof (David Mitchell, Ellen Jensen, Biology) Can *E. coli* adapt to changes in carbon source while growing in minimal media?

Escherichia coli (*E. coli*) is a model organism for experimental conditions that may impact bacterial growth. Additionally, *E. coli* is known to adapt

fairly rapidly to antibiotics or competition from other organisms. The experiment was inspired by Dr. Richard Lenski's findings that *E. coli* may evolve to grow in citrate supplemented media. This experiment utilized M9 media supplemented with different carbon sources from the citric acid cycle to test if *E. coli* was capable of adapting to grow on various carbon sources. *E. coli* grown in M9 minimal media supplemented with glucose repeatedly grew in a regular fashion, reaching stationary phase within 24 hours. Citrate and isocitrate did not produce any viable growth. Succinate and α -ketoglutarate repeatedly grew after a period of four to seven days. Various citric acid cycle intermediates may be able to provide carbon sources needed for growth of this particular strain of *E. coli*, and may provide a method for looking at rates of mutation in *E. coli*.

Toni Gohman (Michael Reagan, Biology) Analysis of potential archaeal NER endonuclease homologs using *Saccharomyces cerevisiae*

The nuclease proteins involved in eukaryotic nucleotide excision repair (NER) have been identified and are ubiquitous for most eukaryotes, including XPF (3' endonuclease) and XPG (5' endonuclease). Proteins with similar structures have been identified in archaeal genomes and have been shown to exhibit endonuclease activity, but their overall cellular functions have not been elucidated. The proteins Hef1 and Bax1 in archaea are two of such proteins that are candidates for homology with the XPF (Rad1 in *Saccharomyces cerevisiae*) nuclease. By inserting plasmids containing archaeal genes coding for these possible homologous nucleases into *Saccharomyces cerevisiae* without Rad1 gene (Δ Rad1) and then exposing the cells to Ultraviolet (UV) light, NER function can be analyzed using survival rates. These experiments aim to investigate the function of these potential homologous XPF nucleases present in archaea.

Toni Gohman (David Brown, Biology) Exploring norms of reaction using Wisconsin Fast Plants: a new investigative laboratory exercise

Phenotypic plasticity is the ability for a single genotype to produce multiple phenotypes in response to environmental variation. The phenotypic plasticity of a genotype is described by its norm of reaction, and norms of reaction for different genotypes might suggest that each is favored by a different environment. In this experiment, we established a fertility gradient and produced norms of reaction for a variety of measures of plant performance using two strains of Wisconsin Fast Plants ("Astro" and "Dwarf"). The Dwarf variety performed best at low fertility levels, while the Astro variety performed best at high fertility levels. Using these results, we

predicted that if Dwarf and Astro varieties were allowed to compete, their relative success would correspond to the differences in their norms of reaction. This prediction seemed to be supported when competition involved one plant of each variety, but when two plants of each variety competed, Astro generally performed best across the fertility gradient. With further improvement, this system can provide an opportunity for students to generate and test predictions regarding phenotypic plasticity in introductory biology laboratories.

Jacob Hauger (Stephen Saupe, Biology) Effects of Green LED Light on *Lentinula edodes* Respiration

Light has not traditionally been thought to influence the growth of fungi, however, recent evidence suggests that limited exposure to green light can cause an increase of biomass production in the hyphal cells of *Lentinula edodes* (Shiitake Mushrooms). The dry and fresh weight, volume and respiration rates of a control group and a light-treated group of commercially-grown shiitake mushrooms were measured. Results will be presented.

Austin Hingtgen, Morgan Kessler, William Gillach (Demelza Larson, Biology) Attack on HDAC: Pladienolide's role in HLHS

Hypoplastic Left Heart Syndrome is a congenital heart disease, occurring during embryonic heart development. This condition varies physiologically, yet consistently includes underdevelopment of the left ventricle. Recent findings have linked underdevelopment of cardiomyocytes to a homozygous splice site mutation in the gene that encodes Sin3A-associated protein 130 (SAP130), which is expressed in the embryonic heart (Liu et al., 2017).

It is likely that a mutation of SAP130 disrupts important protein-protein interactions of histone deacetylase complex (HDAC). HDAC is an enzyme complex that removes acetyl groups from histones, allowing for production of a closed chromatin structure. A SAP130-induced disruption would prevent HDAC deacetylation of histone tails. Open chromatin structure would be maintained, resulting in aberrant expression of genes and epigenetic variability. With said epigenetic overexpression, genes are transcribed and translated into proteins at an uncontrolled rate. This is particularly of interest in gametes. When parent cells replicate, epigenetically modified DNA is passed on to daughter cells, changing future expression of DNA. Uncontrolled genetic expression leads to altered stoichiometry of proteins, causing a disruption in cell development.

Scientific research has linked the inhibition of SAP130 to binding of pladienolide. Pladienolide is a naturally occurring compound that is used in antitumor therapeutics and antibiotic drugs. It is derived from the bacterium *Streptomyces platensis*, which is isolated from soil. Pladienolide has been shown to bind and inhibit SAP130, resulting in inhibition of Sin3A HDAC function (Kotake et al., 2007; Fleischer et al., 2003).

Nicolas Kramer (Manuel Campos, Biology) Variation in Physiological Response for Soccer Players Based on Training Day

Plenty of research has gone into studying intensity of work done by soccer players using their heart rates. In regards to training day and intensity, current literature suggests that intense training should occur two or three days before game day in order to allow time for adequate muscle and nervous system recovery before the game. However, the ability to measure this intensity and work done by the players is difficult without adequate heart measuring technology. For the 2016 fall season, 29 players from the Saint John's soccer team wore heart rate monitors during training sessions and games. Using this data, one can evaluate whether the Saint John's soccer team is following the recommended regimen in terms of their training intensity leading up to game day. The overall aim of this study is to evaluate the variation in work intensity, using heart rate response, based on training day for the Saint John's soccer team over the course of the 2016 fall season.

Payton Lenz, Riley Blauvelt (Kristina Timmerman, Biology) Do Sally lightfoot crabs (*Grapsus grapsus*) segregate themselves relative to the intertidal splash zone?

In the Galápagos Islands, shorelines are home to many terrestrial/marine organisms like the Sally Lightfoot Crab (SLFC; *Grapsus grapsus*). This crab spends most of its life near or within the intertidal splash zone and feeds on organic matter. During a field-based biology course to these Ecuadorian islands, we investigated the spatial distribution of SLFC's. Specifically, we wanted to know if there was a difference in age category relative to their physical location within intertidal zones. We predicted that adults would be found more frequently within the splash zone (better food resources) and that juveniles would be further up shore from the splash zone. To explore this hypothesis, we collected data in a tidal pool near Baquerizo Moreno, San Cristóbal Island, between July 16 - 26, 2017. We separated the area into three sections; the splash zone, the wet zone, and the dry zone. Data was collected daily, two hours before and after low tide. We obtained a sample size of 1598 (number of adults = 739, and number of juveniles =

859). Adult crabs were most frequently found in the splash zone (= 12.8/m²) while juveniles were most frequently found in the wet or dry zones (= 16.0/m²). These significant results ($\chi^2 = 14.3, p = 0.013$) support our hypothesis; adult crabs were more prevalent in the splash zone, where food is more prevalent. Based on what is known about crab behavior, adults are larger, more aggressive and often cannibalize smaller individuals. Considering this information, it makes evolutionary sense that smaller, juvenile crabs will separate themselves from the larger adults. In this way, juvenile crabs have a higher probability to mature to the adult phase and potentially transmit their genes to the next generation. This study contributes to the sparse published information about this species.

Yixuan Liu, Sierra Lammi (David Brown, Biology) Disturbance and fire affect trophic structure of soil invertebrate food webs

Soil is composite of living and non-living materials within which occur processes critical for the sustenance of terrestrial ecosystems. Soil invertebrates play a significant role in soil ecosystems through feeding activities, physical and chemical transformation of organic matter, and modification of the soil's physical structure. Fire and disturbance, through destruction of organic matter and selective mortality of invertebrates, can alter the structure of soil food webs. To examine the impact of fire season and disturbance on soil invertebrate food webs, during the summer of 2017 we set up a series pitfall traps in sections of the restored prairies in the Saint John's Abbey Arboretum that received controlled burns in different seasons (spring vs. fall) or which were disturbed to different extents. Throughout the summer, we collected trapped invertebrates twice weekly, identified them, and assigned them to the trophic groupings of predator, herbivore, omnivore, or detritivore. Our results revealed that disturbance tended to reduce the relative abundance of herbivores and fire increased that of predators, indicating that both processes can affect the taxonomic and trophic structure of soil invertebrate food webs.

Elise Miller (Stephen Saupe, Biology) Determining the Accuracy of the Saint John's Maple Syrup Operation Hydrometers

Maple syrup making is a long-standing tradition at St. John's. In order to meet standard maple syrup grades, the finished syrup must be between 66-68% sugar. To measure the sugar percentage, hydrometers can be used. These instruments measure the density of a solution. In order to test the accuracy of our hydrometers, I prepared sugar solutions and tested the

hydrometers at different temperatures. Our tests showed that on average the difference between the hydrometer-measured sugar concentration and the actual sugar concentration differed by only 0.152% - 4.39% for cold temperature tests and 0.152%-1.65% for hot tests. This means that the hydrometers should be adequate for measuring sugar concentration of maple syrup provided they are used appropriately. Results will be presented at the poster presentation.

Ellen Munshower, Brianna Westendorf (Kristina Timmerman, Biology) Lava Heron Fishing Success: The Impact of Water Depth

The Galápagos Lava Heron (*Butorides striata sundevalli*) is a small bird that is endemic to the Galápagos Islands, Ecuador. It is territorial and primarily preys on small fish. Currently, there is little research on these herons, so any information will be helpful in better understanding their ecological processes. During a biology course on the islands (July 2017), we observed the hunting patterns of herons specifically their strike patterns. We hypothesized that Lava Heron's fishing practices would differ depending on water depth. We predicted the successful strike rates would be higher in shallower water, and herons would more likely to hunt standing in the water in shallow water versus standing on rocks when hunting in deeper water. To test our hypothesis, we observed Lava Herons as they hunted in a tidal stream for ten days in Puerto Baqueriza Moreno, Isla San Cristóbal. The water depth, whether they were successful, time between strikes, and location of where the heron was when it struck was recorded for each strike attempt. Our results showed a significant difference between the success in shallow versus deep water strikes ($\chi^2 = 63.74$, $df = 2$, $p < 0.001$). Specifically, the strike success rate was higher in shallow water and more strikes into shallow water originated from water than land. These results suggest that shallow water is an important aspect in the Lava Heron's territory. Hunting territories that lacked the important component of shallow water could result in negative impacts on the heron's health. Continued observation of strike patterns across an extended period of time would contribute more information to our results.

Ilyse Putz (Stephen Saupe, Biology) Graphical Analysis of Max Partch's Phenological Data of Central Minnesota Flora

Over the course of 30 years, Max Partch, a professor, at the time, in the Department of Biological Sciences at St. Cloud State University, recorded phenological data at various locations throughout central Minnesota. By creating graphs of Partch's data, it will identify time frames of certain

phenophases for local species. Through a process of normalization, I processed his raw phenophase data for 75 species that are found mostly in prairie communities. After normalizing the data, I altered it to allow for clear patterns to be seen in the graphs. These patterns help identify general time frames of each phenophase for each species.

Ilyse Putz (Stephen Saupe, Biology) Lichens of Collegeville, Minnesota and Surroundings

The purpose of this project was to determine the lichens growing in the area from samples in the CSB|SJU Bailey Herbarium and from records available in online lichen databases (i.e., UM Bell Museum). In addition, the lichen collections in the Bailey Herbarium will be updated to recognize new nomenclature and taxonomy. The results of this work will be presented.

Benjamin Thompson, Tristen Zimmerman (Clark Cotton, Biology) The effects of low dissolved oxygen concentrations on diving behavior and lactate accumulation in *Lithobates pipiens*

Dissolved oxygen (DO) concentrations in bodies of water can differ based on geographic location, time of day, or even climate change. Because frogs acquire approximately 20% of their oxygen across the skin, decreases in DO could negatively affect diving behavior by increasing reliance on anaerobic metabolism and formation of lactate. To evaluate this possibility, we measured pulmonary and cutaneous oxygen exchange as well as blood lactate levels before and after a 30 minute dive period under both saturated DO (8.341 ± 0.042 mg/L) and low DO conditions (3.918 ± 0.597 mg/L). Although frogs diving in a low oxygen environment tended to accumulate slightly more lactate, which would indicate a shift toward anaerobic metabolism, the trend was not significant ($t(8) = 1.86$, $p = 0.525$). Furthermore, we did not observe compensatory responses such as increased pulmonary oxygen exchange or reduced dive times during recovery periods. In conclusion, low DO water does not appear to influence diving behavior or lactate accumulation in a biologically significant way for this species. However, we acknowledge the possibility that low DO water may have a more profound effect during dives of longer durations.

Tyler Urbanski, Jaden Hoffman (Kristina Timmerman, Biology) The effect of wave exposure on tide pool species differentiation on North Point, San Salvador Bahamas.

Species in tide pools are subject to various conditions such as salinity changes and different volumes of water being splashed in every minute. Through a calculation we are able to estimate the amount of water entering plots on each side of north point. In each of our plots we were able to count species and compare both sides.

Tristen Zimmerman (Manuel Campos, Biology) Individual Variation in Physiological Training Load During a Division III Soccer Season

This study was performed to evaluate the effect of soccer training during a DIII soccer season on the physiological response of training load. Training load was assessed by tracking individual player heart rates during all training sessions and games. Training load was scaled for each player throughout the season and average responses were characterized for individual positions.

Quadrangle 264, SJU

Communication

Megan Toninato, Breanna Gates, Madelyn Zinken, Kirk Harrington, Tanner Thiele, Sarah Manning, Kevin Duong (Emily Paup, Communication) *The Fifth*,
Written by Megan Toninato

This will be the performance of a creative short story depicting many of the people involved in a school shooting, written by CSB Senior Megan Toninato. "The Fifth" follows characters representing a variety of experiences and highlights each individual's unique perspective. This creative exploration of a polarizing and devastating issue will provide a different way to process these types of events and discuss the underlying issues. This will be a performance, followed by a panel discussion on one of the most controversial issues facing our nation.

Performed by: Breanna Gates, Madelyn Zinken, Kirk Harrington, Tanner Thiele, Sarah Manning, and Kevin Duong

Quadrangle 339, SJU

Communication

Emily Dosch (Aric Putnam, Communication) *Frederick Douglass as a Black Cosmopolitan*

Frederick Douglass was an activist in the 19th century whose story of enslavement to freedom is referenced as one of the most powerful rhetorical

pieces in the abolition of American slavery. Douglass' travels to Europe and position of ambassador to the Republic of Haiti gave him a global perspective on the definition of citizenship. He saw Civil Rights as human rights, and his post-nationalist ideology in relation to citizenship gave him a uniquely cosmopolitan viewpoint. In his Narrative of the life of Frederick Douglass, an American Slave, Douglass performs the persona of a black cosmopolitanist, which undermines how people thought of slaves in the 19th century. This essay uses the lens of rhetorical criticism to answer the question of why Frederick Douglass was considered a revolutionary and exceptional figure among the masses of enslaved peoples across centuries in the United States. In this essay, I introduce Douglass' persona as a black cosmopolitanist through the definition provided by Ifeoma Kiddoe Nwankwo in her work Black Cosmopolitanism. I then analyze the manifestation of this persona in his narrative, highlighting the importance of his cross-cultural ideologies that are largely ignored by the white understanding of his work. Through his performance of global citizenship, Douglass contradicts the common understanding of what it means to be a slave, and masters the perspective of cosmopolitanism through the lens of a black American.

Simons Hall 360, SJU

Peace Studies

Maya Hermerding (Jeffrey Anderson, Peace Studies) Where Have All the Women Gone?: Gender Diversification in Peace Keeping Operations

Undoubtedly, the United Nations offers beneficial resources to the global community that would be nearly impossible to provide without the support of the 193 member states. One of these services is the UN peacekeeping operations program which offers post-conflict assistance to war-torn countries. While peacekeeping operations are typically viewed in a positive light, history and recent reports demonstrate a harsher reality – inadequate female recruitment which leads to cultural barriers and increased sexual abuse instances between male peacekeepers and local women. In order for peacekeeping operations to reach their maximum level of efficiency and benefit for the receiving country, women must be included in peacekeeping operations at a significantly higher rate.

Historically a male dominated field, the inclusion of women in modern day peacekeeping missions is necessary to their effectiveness and ability to establish sustainable peace in conflict ridden and post-conflict areas around the world. Males and females approach war and peace with different

perspectives on how to resolve disputes between warring parties. Excluding either gender from the settlement process prevents peacekeepers from exploring all possible options of creating long-lasting peace.

While there has been noticeable improvement in the percentage of women in United Nations peacekeeping operations in recent years, there is still room for significant improvement. In 1993, only 1% of deployed uniformed UN personnel were women. In comparison, women comprised 3% of military personnel and 10% of police personnel in 2014. Given that UN member states provide the personnel for such missions, it is arguable that it is their duty to increase the amount of women coming from their state to improve the percentage of female participation in UN peacekeeping mission. Possibilities to incite such a change may include, monetary incentives, preferential choice as to where each individual is place to serve, or continuation of the “Global Effort,” intended to recruit female police officers for UN operations.

The vast majority of peacekeeping operations take place in male dominated communities, of which some are regions where it is unacceptable for men and women to interact in an informal setting. Because of this barrier created by social and cultural norms, the local women are generally estranged from the peacebuilding process. Excluding half of a conflict’s members from peacebuilding drastically decreases its chances of success. Therefore, it is necessary for the success of peacekeeping operations that women are included because they provide a bridge between the local women, men, and the rest of the peacekeeping team. Moreover, they serve as role models empowering the local women as their mentors and confidants. For example, women peacekeepers can effectively draw out personal testimonies of sexual misconduct by United Nations peacekeepers in order to improve the credibility of the world’s most powerful international organizations. Women are necessary agents in all ranks of the United Nations to ensure diversity of thought and practice.

Fine Arts Presentations:

Humanities Presentations:

Communication

Schedule

9:00 - 9:30 AM

Quad 341

Tanner Thiele, Rachel Ogren (Karyl Daughters, Communication) Let's Talk About Sex: Qualities of the Sex Talk and Comfortability of Peer Sexual Communication

9:45 - 10:00 AM

Quad 339

Kevin Duong (Emily Paup, Communication) More than Orientals, Gooks, and Chinks: Analyzing the Construction of the Asian American Identity through the publication *Gidra*

9:45 - 10:15 AM

Quad 341

Katelyn Hendrickson, Karina Mata (Karyl Daughters, Communication) The Heteronormative Culture at CSB/SJU

10:30 - 10:45 AM

Quad Quad 339

Emily Goerdt (Jeanmarie Cook, Communication) Computer Mediated Communication, Gender, and the Workplace

10:30 - 10:50 AM

Quad 341

Greta Schleif, Sarah Manning, Charles Morin, Patrick Daly (Jennifer Kramer, Communication) Examining Somali Health Beliefs and Practices

11:00 - 11:20 AM

Quad 341

Hanna Skjeveland, Daniel Christensen, Nolan Triden (Jennifer Kramer, Communication) Examining Hmong Health Beliefs and Practices

11:30 - 11:50 AM

Quad 341

Madelynne Lacy, Michael Wagner (Jennifer Kramer, Communication) Examining Latina Health Beliefs and Practices

11:55 - 12:10 PM

Quad 341

Mollee Girgen (Aric Putnam, Communication) Orange is the New Black: A False Rhetoric

Abstracts

Thiele, Ogren: Students in the Fall 2017 Love, Sex, and Commitment Capstone conducted research looking at the sex-talk and sexual communication among college peers from first year through fourth year. Specifically, the study looked at how many students had a sex talk with their parents and the quality of those conversations. The study also examined comfortability of sexual communication with peers, parents and siblings, as well desirability and acceptability of premarital sex. Year in school and gender differences were also explored.

Duong: This project helps us gain a fuller understanding of how Asians in the United States attempted to reclaim their history and construct a self-defined identity by analyzing the rhetorical strategies used in the pan-ethnic publication known as *Gidra*. This Asian American newspaper was utilized by activists to compare and contrast the outdated label Oriental with the newly coined identity Asian American. In order to reverse the consequences caused by racist legislation and distorted perceptions of their communities, Asians sought to establish their own place within American citizenship by means of self-definition.

Hendrickson, Mata: This paper summarizes analysis and conclusions about gender performance resulting from two studies incorporated into a gender class at a private and Catholic liberal arts university in the Midwest. The institution is made up of two gender segregated schools, one for men and one for women, that co-educate students on both campuses. Three main themes emerged from the analysis and are the focus of the paper. The first is that students facilitate the continuation of communication behavior that reinforces heteronormative expectations. The second is that the male sex conforms more to heteronormative beliefs than females. The final key theme is that women challenge heteronormative speech patterns more than men. The paper concludes with limitations and recommendations for future research.

Goerd: Computer Mediated Communication (CMC) is defined as any human communication that occurs through the use of two or more electronic devices. This research project focuses on gender differences in CMC and how those differences can affect communication in an office setting.

Schleif, Manning, Morin, Daly: This group from the 2018 Intercultural Health Communication Capstone students re-analyzed Somali interview transcripts from a

prior year of this course. The group identified major themes in the health beliefs and practices of the interviewees as well as communication difficulties within the Western/biomedical health system.

Skjeveland, Christensen, Triden: This group from the 2018 Intercultural Health Communication Capstone students re-analyzed CSB/SJU Hmong student interview and focus group transcripts from prior years of this course. The group identified major themes in the health beliefs and practices of the interviewees as well as communication difficulties within the Western/biomedical health system.

Lacy, Wagner: This group from the 2018 Intercultural Health Communication Capstone students re-analyzed CSB/SJU Latina student interview and focus group transcripts from prior years of this course. The group identified major themes in the health beliefs and practices of the interviewees as well as communication strategies used within the Western/biomedical health system.

Girgen: Pop-culture as an important facet of today's society shapes our perceptions on a variance of topics while utilizing the rhetoric of facets of popular culture such the media. This essay will look solely at the Netflix original series Orange is the New Black and its dramatization of prison culture. The show is centered around the stories of inmates sentenced to an all-woman prison and attempts to tackle several issues that the modern-day inmate. Through analyzing three facets of the show; the main/reoccurring characters, their "storylines", and the setting in which it all takes place, then created within OITNB's narrative, we can assume that there is a strong representation of the U.S. prison system is made. However, these facets come together to define just exactly how OITNB doesn't represent prison culture to the fullest. The narrative of Orange is the New Black glamorizes prison for the purpose of creating entertainment, which then creates this overarching idea of prison as something more accessible to the everyday American consuming this show.

English

Schedule

10:00 - 11:30 AM

HAB 118

Katrina Carney, Jayme Harlander, Camero Harris, Makenzie Horrigan, Madeline Kinney, Jennifer Kleason, Sara Kohl, Andrew Kolar, Megan Mahan, Sylvia Phandanouvong, Diamond Rover, Danielle Tamm, Belinda Vang, Xia Vang, Hailey Wanna (Madhuchhanda Mitra, English) *Disrupting Orientalism: Women Artists and Activists in the Middle East*

11:00 - 12:00 PM

Quad 347

Mulki Ali, Theodosia Bastian, Drew Coulombe, Katherine Gammon, Anna Garrison, Mollee Girgen, Grace Kilgore, Alexis Klatt, Michelle Lee, Margaret McMahon, Raymond Mulvey, Maggie Pomerence, Mikolaj Puszczka-Szydowski, Michael Reilly, Sydney Robinson (Jessica Harkins, English) English 313A
Advanced Poetry presentation

Abstracts

Carney, Harlander, Harris, Horrigan, Kinney, Kleason, Kohl, Kolar, Mahan, Phandanouvong, Rover, Tamm, Vang, Vang, Wanna: The presentations have a dual goal: 1) Each will shatter a pervasive orientalist stereotype about Arab/Muslim women, and 2) will celebrate the achievements of women in the Middle East.

Titles of presentations and names of presenters:

1. Katrina Carney. Topic: Women and Animation: Visual Storytelling in the Middle East
2. Jayme Harlander, Jenna Kleason, Diamond Rover. Topic: Voices Behind the Veil: Women Street Artists in Afghanistan.
3. Makenzie Horrigan, Danielle Tamm, Madeline Kinney. Topic: Disrupting Orientalism: Raqs al-Sharqi, or the Real "Belly" Dance
4. Sara Kohl, Andrew Kolar: Topic: Disrupting Orientalism: The Photography of Lalla Essaydi
5. Megan Mahan, Hailey Wanna, Camero Harris: Topic: Disrupting Orientalism: The Veil and High Fashion
6. Sylvia Phandanouvong, Belinda Vang, Xia Vang: Topic: Pakistani Women Resisting Fundamentalism

Ali, Bastian, Coulombe, Gammon, Garrison, Girgen, Kilgore, Klatt, Lee, McMahon, Mulvey, Pomerence, Puszczka-Szydowski, Reilly, Robinson: Hear oral presentations of the class poetry from this semester's course, English 313A.

History

Schedule

9:00 - 9:30 AM

Main TRC

Boardroom

Alanna Holmberg (Elisheva Perelman, History)
Protesting the Fair: The Response of African American

Activists to African American Representation in Society at
the 1893 Chicago and 1964 New York World's Fairs

9:30 - 10:00 AM

*Main TRC
Boardroom*

Jessica Davis (Elisheva Perelman, History) Armed Flapper
Moonshiners and Crusading Women: Public Personas of
Minnesota Women During the Early Twentieth Century

10:15 - 10:45 AM

*Main TRC
Boardroom*

Keegan Conrad (Elisheva Perelman, History) 'The Silent
Civil War': Unwinding the Civil Patrols' complex role in
acts of genocides during the Guatemalan Civil War

11:15 - 11:45 AM

*Main TRC
Boardroom*

Mathew Hobby (Elisheva Perelman, History) Al-Qaeda:
An Organization of Reactive Hate

Abstracts

Holmberg: The tradition of the World's Fair in the United States sought to promote a vision of progress through the advancement of technology, society, and international relations. Using the Fair as a platform to promote this vision of progress is what the United States government and Fair officials originally intended to do--until African American activists challenged this as the Fair. How can a country progressively advance if the rights and privileges of African Americans are unaccounted for? Through an analysis of the 1893 Chicago World's Fair and the 1964 New York World's Fair, one can see how African American activists responded to their representation in Anglo-American society, and how society responded back. Through acts of protests and stall-ins, African American activists used the given World's Fair as an opportunity to discuss how they believed that they were poorly represented as an equal part of society.

Davis: This paper examines how women's gender roles were reinforced in the Twin Cities of Minnesota during the late nineteenth and early twentieth centuries, through looking at the Women's Christian Temperance Union and women who were attached to illegal activities during the Prohibition era. Examining these women allows for a glimpse into how some women may have chosen to not follow society's expectations, but were still fulfilling those expectations in smaller actions. The gender role that was expected of was that they were to remain in the home and not touch the outside world without their husbands help. This is argued after viewing documents like newspapers and club journals that describe what the women were doing publicly in various fashions. This paper reveals that there were women

who did not fit the typical mold left for them by society, but that these women were still fulfilling gendered expectations through their public actions.

Conrad: This thesis examines the impact of the Guatemalan Civil War through an intersectional study of the Civil Patrols (PACs) from the late 1970s to the early 1980s. By examining the historic event, I explain the role of the Civil Patrols in the acts of genocide that were carried out by the Guatemalan Army. The time period in this study includes the testimony of Victor Montejo and his account in the massacre of Tz'alalá. By focusing on this event we can understand the PACs role in gendered violence against Mayan women and the violence against union leaders during the labor movement of the late 1970s. Data has been collected from testimonial novels, archives, a truth commission report, and anthropological studies. This thesis challenges the narrative of the Guatemalan Civil War as another proxy war in the global fight against capitalism and communism. While there is some truth to that, I argue that the Civil War was a conflict that was built upon racial fear and economic upheaval, which does not necessarily mean the rise and threat of communist subversion.

Hobby: This paper examines the constructive frame work of the terrorist organization started by Osama Bin Laden and Ayman Al-Zawahiri, Al-Qaeda. Following the European occupation of Middle Eastern countries, a hate-filled ideology derived from the manipulated Wahhabi denomination of Islam was created by a man named Sayyed Qutb. Men like Qutb set the grounds on building a populace of Muslims that resented Western culture and would commit acts of violence in order to prevent their occupational or domestic power. Bin Laden and Al-Zawahiri escalated it to the next level by creating a reactive and transnational movement for Muslims who hated the West to join and to train in the tactics of terror.

Languages & Cultures

Schedule

9:05 - 9:10 AM

HAB 101

Miguel Aguilar (Masami Limpert, Languages & Cultures)
Saitama

9:10 - 9:15 AM

HAB 101

Zachary Barwick (Masami Limpert, Languages & Cultures)
Takayama, Japan

9:15 - 9:20 AM

HAB 101 Viviana Gomes (Masami Limpert, Languages & Cultures)
Kyoto, Japan

9:25 - 9:30 AM
HAB 101 Jeremy Jahn (Masami Limpert, Languages & Cultures)
Nagoya, Japan

9:30 - 9:35 AM
HAB 101 Gabriel Lovejoy (Masami Limpert, Languages &
Cultures) Fukuoka, Japan Overview

9:35 - 9:40 AM
HAB 101 Robert Merthan (Masami Limpert, Languages &
Cultures) Interesting town, Hakodate

9:45 - 9:50 AM
HAB 101 Andrew Schoenbauer (Masami Limpert, Languages &
Cultures) Yokohama

9:50 - 9:55 AM
HAB 101 Jingwen Si (Masami Limpert, Languages & Cultures)
Interesting town, Osaka Japan

9:55 - 10:00 AM
HAB 101 Kongmeng Vang (Masami Limpert, Languages &
Cultures) A Brief Overview of Sobetsu

10:05 - 10:15 AM
HAB 101 Kou Yang (Masami Limpert, Languages & Cultures)
Morioka Japan

10:20 - 10:35 AM
HAB 101 Elise Bearrood (Jeffrey DuBois, Languages & Cultures)
The Importance of Rice in Japan

10:30 - 11:00 AM
HAB 121 Mary Steenberge (Ana Conboy, Languages & Cultures)
Une Identité ré-imaginée : Le régime de Vichy, la Shoah,
et la mémoire collective

10:35 - 10:50 AM

HAB 101 Jeremy Brever (Jeffrey DuBois, Languages & Cultures)
Oda Nobunaga

10:50 - 11:05 AM

HAB 101 Kendall Fujita (Jeffrey DuBois, Languages & Cultures)
Keigo: Japanese Polite Language

11:00 - 11:30 AM

HAB 121 Shannon Elstad (Ana Conboy, Languages & Cultures)
Un Patrimoine culturel : la production du fromage
français

Abstracts

Aguilar: I will be doing a presentation on the city of Saitama in Japan. All will be done in Japanese.

Barwick: This is a project about Takayama, Japan. It will be a brief history of the town, with some fun facts and things to do inside the town itself.

Gomes: I'm introducing Kyoto Japan for its history and places, etc. This presentation will be in Japanese.

Jahn: I will talk about Nagoya in Japanese. I will talk about food, interesting places to visit, and so on.

Lovejoy: I will be presenting an introduction to the Japanese city, Fukuoka. The presentation will be in Japanese.

Merthan: I will present about the town of Hakodate in Japanese.

Schoenbauer: I will be doing an overview of Yokohama city in Japanese.

Si: I will introduce Osaka in Japanese.

Vang: I'm going to present about a city in Japan. Here I will talk about the interesting things to do in Sobetsu as well as cultural aspects.

Yang: I will be talking about various things that are present in Morioka such as sightseeing, food, and etc in Japanese.

Bearrood: In Japan, it is very common for people to eat rice three times a day. There are many popular Japanese dishes that are made with rice. Even the flour they use and the alcohol they drink is often made from rice. Rice is very important to the daily lives of Japanese people, and it is definitely an important part of their culture and history. Japanese people are very aware of this importance, and they have developed a strong respect for rice. Rice is honored in Japan through various festivals and traditions. For example, sumo wrestling started as an offering to rice. Overall, this presentation will show how rice is important in various aspects of the Japanese culture, and how rice is a staple food that Japanese people cannot live without. Additionally, this presentation will be entirely in Japanese.

Steenberge: Pendant le régime de Vichy, le gouvernement français a collaboré avec les Nazis, menant des rafles afin de déporter des Juifs dans des camps d'extermination. Après la guerre, les Français ont blâmé les Nazis et les forces allemandes pour les atrocités commises en France, et on a refoulé la mémoire de la participation de la France dans la Shoah. Après la guerre, on a perçu le régime de Vichy comme une " pause " dans l'histoire française, croyant que celui-ci avait représenté une identité de la France complètement différente de celle de la République. Dans ce projet, il s'agit d'exposer les changements dans la mémoire collective en France juste après la guerre et jusqu'aux années 1960. Ce projet commence par une description de la mémoire collective ; puis, on mène une analyse de la collaboration du régime de Vichy avec les Nazis ; enfin, on suit la trace de la mémoire collective après la guerre en ce qui concerne Vichy, et les changements là-dessus pendant les années suivant la guerre, pour conclure que l'image d'une France héroïque et résistante était en partie une identité ré-imaginée, créée comme une méthode de gérer la culpabilité et la honte nationales.

During the Vichy Regime, the French government collaborated with the Nazi forces, carrying out round-ups and deporting Jews to concentration camps. After the war, the French blamed the Nazis and German forces for the atrocities committed in France, and the memory of France's participation in the Holocaust was largely repressed. After the war, the Vichy Regime was seen as a "pause" in the history of France, having an entirely separate identity from that of the French Republic. In this project, I demonstrate the changes that occurred in France's collective memory in the years following the war, through the 1960s. This project begins with an exploration of the concept of collective memory; then, I analyze the Vichy Regime's level of collaboration with the Nazis; and finally, I identify the changes in collective memory regarding Vichy in the years after the war. From this, it is possible to conclude that the image of France as a heroic and resistant country is in part that of a re-imagined identity, created as a method to manage the nation's guilt and shame.

Brever: I will be presenting on the historical exploits of Oda Nobunaga as one of the three people who unified Japan. I will be talking about the Sengoku Judai era of Japanese history covering from roughly the 15th century to half way through the 16th century

Fujita: A look into the complex and confusing world of Japanese Politeness and Language. My goal is to make it digestible for others.

Elstad: La France est bien connue pour ses fromages, ce qui est pour elle une source de fierté nationale. Le fromage français a été décrit comme étant « représentatif du patrimoine culturel de la France » (Blohorn 6). Il existe de centaines de types de fromages français. Des régions diverses fabriquent certains types de fromages spécialisés au « terroir, » c'est-à-dire, à l'ensemble de facteurs humains et de facteurs environnementaux et biologiques qui rendent un produit unique à une région. Quelques facteurs qui jouent un rôle dans le terroir sont la race de l'animal qui produit le lait, les différences dans la composition chimique du sol où les animaux broutent, la saison et la météo. L'Institut National de l'Origine et de la Qualité (l'INAO), un établissement public administratif qui fait partie du Ministère de l'Agriculture, de l'Agroalimentaire et de la Forêt, attribue des appellations d'origine contrôlée (AOCs) pour souligner la qualité de ces « fromages de terroir ». Pour recevoir la désignation AOC, il faut suivre les méthodes établies par la région et pour un type de fromage spécifique. Dans ce projet, il s'agit d'exposer ce processus de fabrication du fromage français. À cette fin, on examinera les étapes dans le processus de production de fromage et la science derrière le processus. Puis, on explorera la fabrication des différentes familles de fromages et des fromages uniques à une région et à un terroir. On présentera enfin la vie quotidienne dans une petite ferme fromagère au sud de la France à travers l'expérience du Professor Jean Lavigne, un professeur de Sciences Environnementales à CSBSJU qui y a fait du volontariat comme fromagère pendant trois étés. Malgré le fait que le fromage produit dans cette ferme n'a pas de label AOC, le terroir a un rapport direct avec le fromage y produit. Nous concluons avec quelques commentaires de la possibilité de fabriquer des « fromages de terroir » aux États-Unis.

France is renowned for its cheeses, which are a source of national pride. French cheese has been praised as representing French cultural heritage (Blohorn 6). Hundreds of different types of cheese are made across France. Various regions make types of cheese specific to their “terroir,” a French idea that links environmental, biological, and human factors. These factors then serve to develop a common production method and a cheese that is unique to that region. A few examples of factors that affect the terroir are the breed of animal that produces the milk, chemical differences in the soil where the animals graze, the season, and the weather.

The French government awards certain regional cheeses the label AOC, or controlled designation of origin. Cheeses that obtain this prestigious designation must be made following specific production processes that integrate the regional “terroir.” In this capstone project, I aim to shed light on the production methods of French cheeses, emphasizing the science behind the process and the daily life of cheesemakers in France: Firstly, I investigate the common steps in cheese production, and the steps that vary in developing different types of French cheeses; I also interview Professor Jean Lavigne, an Environmental Studies professor at CSB/SJU who has spent three summers working as a volunteer cheesemaker at a small farm in the south of France. I conclude with discussing the possibility of making cheeses of “terroir” in the United States.

Philosophy

Schedule

9:30 - 10:00 AM

Quad 360

William Harris (Anthony Cunningham, Philosophy)
Searching for Morality in Love & Hate: Why Religious
Values can Lead to a Better Life

10:00 - 10:30 AM

Quad 360

Dana Svensson (Anthony Cunningham, Philosophy) Is
the Force with Us? Moral Obligation and Universality

10:30 - 11:00 AM

Quad 360

Bridget Lenczewski (Anthony Cunningham, Philosophy)
Misunderstanding Kant

11:00 - 11:30 AM

Quad 360

Oscar Nieves Rubio (Anthony Cunningham, Philosophy)
Determinist Ethics

Abstracts

Harris: The purpose of my project is to pinpoint a central tenet of Christianity, and then to show why humankind should follow this value. Through examining historical acts where people willingly chose paths that many would call morally unacceptable, I will argue that something there, within their values, simply isn't right. For example, an analysis of genocidal acts will aid in the critique against those who committed them. One aspect of Christianity that many find at the core of the New Testament is “love thy neighbor.” While this religious belief might not be

accepted universally, those who live by it will flourish beyond those who do not. My project will begin with an analysis of aspects within the Christian faith, followed by an identification of a specific value that will lie as the cornerstone for my argument. I will then move to examples of atrocities where that value was rejected by the few or the many. Finally, I will argue that while religion may not directly produce a universal ethical code, it may guide those within or outside it towards a better life.

Svensson: One of the fundamental questions in the field of meta-ethics is the question of moral force. The debate, is not whether this force effectively motivates people to act, but whether it ought to and what that might mean. Is there some underlying reason that ethics is compelling and therefore that when people act unethically they are doing something wrong? If so, what is that reason? Many philosophers have developed ethical theories which try to answer these questions by looking for something concrete and universal to lend force to ethics, whether this is attributed to a principle value which guides ethical decision making or perhaps some innate aspect of human nature. Others, however, have argued that ethics cannot be simplified in this way. If there is not a universal principle or theory which can be applied to every person or situation, can we still claim that there is force behind ethics? In this project I explore the question of whether ethical theories that are not universal can still be said to have force behind their moral obligations.

Lenczewski: Practical reasoning forms the core of Kantian ethics. Immanuel Kant thinks that practical reason provides us with our duties and the sense of obligation we experience is simply the acknowledgement of the dictates of practical reasoning. Many critics of Kantian ethics find it inadequate because they believe that it does not adequately account for the nature and moral value of our emotions; for example, critics believe that Kantian ethics does not do justice to the importance of friendship and love. I will address this critique using the works of contemporary Neo-Kantians – including Marcia W. Baron, Christine M. Korsgaard, and Barbara Herman – to defend Kant. Ultimately, I will demonstrate how emotions have an important place in Kantian ethical theory.

Nieves Rubio: In philosophy, determinism is generally seen as inconsistent with the ethical/moral world because it jeopardizes the notion of responsibility. Furthermore the existence of free-will is often accepted, as Daniel Dennett puts it in "Elbow Room," for merely aesthetic interest. Most of the arguments that philosophers formulate for free-will lack adequate cohesion; they make an illegitimate philosophical jump. We should not be persuaded by these arguments for the sake of comfort in making sense of the ethical world. In fact, if we cannot find proper footing for free-will, we should reconsider the social infrastructures that depend on its existence, like our current justice system.

Theology

Schedule

9:00 - 9:30 AM

Gorec PDR

Hannah Schumacher-Renner (Vincent Smiles, Theology)
Married Love and Responsible Parenthood: Changing the
Discussion on the Ethics of Birth Control

10:15 - 10:45 AM

Gorec PDR

Leah Wakefield (Vincent Smiles, Theology) Marriage and
Cohabitation: A 21st Century Evaluation for the
Practicing Catholic

10:45 - 11:15 AM

Gorec PDR

Andrew Noah (Vincent Smiles, Theology) The
Craftsman Mirroring the Creator: Explorations in
Theatrical Theology

Abstracts

Schumacher-Renner: The current framework in which The Catholic Church discusses birth control originates within a sexual ethic based on rules Christians are obligated to follow. After a careful, internal critique of the encyclical, there needs to be a change in this framework so that Christian sexual ethics is less focused on the rules and more focused on the values which *Humanae Vitae* embodies. These values are presently described as the unitive and procreative ends of marriage. However, with a transition from a rule-based sex ethic to a value-based sex ethic, these ends of marriage can be redefined in terms of married love and responsible parenthood, which each carry a set of practices. Additionally, these values and their respective practices lead to a revised moral evaluation of all birth control methods including: fertility awareness methods, barrier methods, withdrawal, sterilization, hormonal methods, and abortion. Each method proves to be more or less ethical as each method is individually examined in how it upholds the values *Humane Vitae* embodies. By changing the framework in which we discuss the ethics of birth control, there can be more focus on the positive goods of marriage to encourage a happier and more fruitful living of married life.

Wakefield: This paper offers a contemporary/post-modern reflection on the Church's teachings about and views on marriage and cohabitation. Offering an evaluation and critique of Church teaching from several angles, this paper will

explore the necessity of alternate forms of marriage preparation and limitations of the current programs.

Using Scriptural bases for marriage, recognizing the evolution of marriage from ancient to modern times, the outdatedness of the USCCB's 1999 statement on cohabitation, and the different types of cohabitation (and premarital arrangements), and models such as those set by the RCIA process, I will propose how the Church can offer an alternative to secular cohabitation. This alternative will help the couple stay focused on their faith during the premarital phases of their relationship by mimicking processes the Church already has in place to ensure the couple has ample guidance and support from the community.

Noah: This will be my presentation given to theology faculty on Scholarship and Creativity Day required for the Theology Capstone course. I will be discussing the idea that when doing theology in a theatrical mode, it becomes a way to focus on God working in the world and our call as the audience to take part in the performance. Because God does not just exist in the abstract, but makes Godself known through the senses, theatre, as a sensual art, becomes the perfect mode to explore and make relevant God's divine revelation.

Natural Sciences Presentations:

Biochemistry

Schedule

8:40 - 9:00 AM

ASC 107

Elizabeth Brewers (Kate Graham, Biochemistry) Review of the enzyme Low Molecular Protein Tyrosine Phosphatase and its catalytic mechanism

8:40 - 9:00 AM

ASC 135

Lincoln Mullings (Alicia Peterson, Biochemistry) Biochemically, what does it mean to be a man?

9:00 - 9:20 AM

ASC 135

Griffin Schroeder (Kate Graham, Biochemistry) DNA Methylation and Links to Cancer

9:00 - 9:20 AM

ASC 107

Lauren Hennen (Kate Graham, Biochemistry) Using chloroplast genetic engineering to eliminate the need for atrazine use in agriculture

9:20 - 9:40 AM

ASC 107

Alyson Welle (Alicia Peterson, Biochemistry) Thyroid Dysfunction During Pregnancy: Effects on Mother and Fetus

9:20 - 9:40 AM

ASC 135

Riley Swenson (Kate Graham, Biochemistry) Pancreatic Cancer Stem Cells

9:40 - 10:00 AM

ASC 135

Michelle Peterson (Kate Graham, Biochemistry) Poly(Lactic Acid): a bioresorbable polymer

9:40 - 10:00 AM

ASC 107

Casey Palmer (Kate Graham, Biochemistry) Mechanisms of Conotoxins and their Therapeutic Potential

10:40 - 11:00 AM

- ASC 107* Grant Olsen (Kate Graham, Biochemistry) Pathogenesis of Contrast Induced Acute Kidney Injury
- 10:40 - 11:00 AM*
ASC 135 Kailey Meyer (Kate Graham, Biochemistry) Analysis of pediatric pharmacokinetics and drug dose development in context of maturational variations in acetaminophen metabolism
- 11:00 - 11:20 AM*
ASC 135 Nathan Libra (Kate Graham, Biochemistry) A Better Understanding of the Anti-Diabetic Capabilities of the Genus *Opuntia*
- 11:00 - 11:20 AM*
ASC 107 Annette Klomp (Kate Graham, Biochemistry) Mitochondrial Dysfunction in Huntington's Disease
- 11:20 - 11:40 AM*
ASC 107 Renae Otto (Kate Graham, Biochemistry) Study of Amyloid Beta Protein in Decreasing Alzheimer's Symptoms
- 11:20 - 11:40 AM*
ASC 135 Allie Pybas (Kate Graham, Biochemistry) Using biomimetic nanoparticles to treat rheumatoid arthritis
- 11:40 - 12:00 PM*
ASC 107 Omar Cano (Kate Graham, Biochemistry) Therapeutic use of Tubeimoside on Particulate matter induced inflammation
- 11:40 - 12:00 PM*
ASC 135 Tawnie Graff (Kate Graham, Biochemistry) Maintaining temperature homeostasis by the cell signaling of transient receptor potential (TRP) membrane proteins.

Abstracts

Brewers: The overall goal to this research is to better understand how Low molecular weight-protein tyrosine phosphatase (LMW-PTP) active site works and better understand its catalytic mechanism. Low molecular weight-protein tyrosine

phosphatases is an important enzyme used in many regulatory processes such as cell growth, signal transduction pathways and metabolism. Over-expression of the enzyme has been linked to many forms of cancer and other diseases such as diabetes. LMW-PTP is known for its signature catalytic site known as the P-loop and this active site shows a lot of promise for possible therapeutic agents. This enzyme also has two different Isoform, and recent studies have shown that each isoform acts regulates cell growth differently. Currently, we are examining the active and inactive sites of ISO form B – Wild Type in order to distinguish the experimental effects on both active sites. Studying this enzyme and better understanding the active site could lead to a possible treatment for some forms of cancer. Future research would include finding site specific inhibitors for each isoform by examining their variable loop.

Mullings: In a world that has become so divided by sex and gender one must wonder, “are men and women really as different as we think they are?” Men and women tend to experience the world differently because of a variety of social, and biological factors . The goal of this research is to better understand the genetics and biochemical mechanisms that mediate functions like spermatogenesis, penile erection, immunity, and emotion regulation that can shape men’s health and the way they live their lives. Men possess one X and Y chromosome. The Y chromosome regulates gene expression on the X chromosome, which makes men more susceptible to X-linked diseases. Studies have shown that the Y chromosome which contains the Sex Determining region does not only play a role in gonadal development and spermatogenesis but also in catecholamine synthesis and metabolism and dopamine disorders. Regulation of testosterone in the male sex hormone contributes to development of secondary characteristics and other sexually dimorphic traits. These have been linked to the regulation of other pathways because of widespread androgen receptors around the body that affect bodily functions like immunity. Men’s susceptibility to immunodeficiencies, X-linked mutations, and functional loss of genes on the Y chromosome are associated with men’s higher rate of cancer. Future research will explore how the loss of the TMS4BY gene on the Y chromosome has been noticed in male breast cancer patients. The gene’s potential as a cancer inhibitor will be tested using viral vectors to insert the gene into cancer cells in other types of cancers.

Schroeder: Cancer is one of the leading causes of death in the world. Accordingly, a variety of new treatment options are being explored. This presentation focuses on the potential of epigenetic treatments for cancer. Common epigenetic modifications and tools used for research are reviewed, with a focus on DNA methylation, DNA Methyltransferase 1, and Methyl CpG Binding proteins. Additionally, modified cancer epigenomes are briefly discussed in conjunction with both recent and future epigenetic pharmaceutical treatments, their respective mechanisms, and their

promising effects on a variety of cancer cell types. Finally, the design and mechanism of a novel DNA methyltransferase 1 inhibitor is discussed.

Hennen: Abstract

Atrazine is one of the most commonly used herbicides in the United States, but with over 80 million pounds used annually, there are many environmental concerns. Atrazine has been detected in increasing levels in ground and surface water because of its high leaching potential. Another concern is the herbicide degrades at an extremely slow rate, which means atrazine levels are increasing every year. Endocrine disruptors are chemicals that are able to mimic an organism's naturally produced hormones. The chemical is able to bind to specific hormone receptor sites in the organism and cause serious effects. Atrazine has been known to cause feminization and demasculinization in the amphibian population. This research outlines how atrazine is harming the environment on many different platforms and what has been done to eliminate the need for using atrazine. Chloroplast genetic engineering has been used on crops to alter their genome. Glyphosate resistance genes have been transformed into corn's chloroplast genome. This allows the crop to be tolerant to glyphosate, which is an herbicide that causes less harm to the environment than atrazine. Although this discovery has eliminated the need for using atrazine, there is still atrazine contaminating the environment. In order to degrade the herbicide, research needs to be conducted on a large-scale setting to see if a specific bacterial plasmid, *Pseudomonas* sp. Strain ADP, can be transformed into *E. coli* cells and spread on contaminated agricultural fields to reverse the atrazine contamination.

Welle: Thyroid dysfunction is the most common endocrine disorder present in reproductive age women. The goal of this research is to investigate the effects thyroid dysfunction has on pregnant women and their developing fetuses. Thyroid dysfunctions can be classified into hyperthyroidism and hypothyroidism. Each of these are then subdivided into overt or subclinical thyroid dysfunction. Each have unique effects on the mother and developing fetus. Hyperthyroidism during pregnancy can lead to hypertension, preeclampsia, and gestational diabetes whereas, hypothyroidism has a greater effect on fetal neural development. Specifically, the neural development of the fetus is directly linked to the lack of circulating maternal tetraiodothyronine (T₄). Further, this research can be applied to developing better methods for diagnosing and treating thyroid diseases during pregnancy. Information about this topic is also important for maternal health throughout pregnancy. Future work in this field should investigate the biochemical mechanism that leads to recurrent miscarriages in women suffering from hypothyroidism.

Swenson: Pancreatic adenocarcinoma is one of the deadliest forms of cancer. Patients with pancreatic adenocarcinoma often survive for three to six months after

diagnosis, as they are usually diagnosed in Stage 3 or Stage 4 and it is extremely difficult to diagnose. Physicians use CA 19-9 and CEA biomarkers, along with MRIs, CTs, and PETs to diagnose pancreatic cancer. The current treatments for pancreatic cancer involve chemotherapy, and radiation. In addition, palliative care is often offered to patients. Scientists have identified key gene mutations associated with pancreatic cancer. The most influential gene mutations involved in the formation of pancreatic cancer are KRAS and TP53 gene mutations. These genes influence key regulatory pathways and cell development. Recently, scientists discovered pancreatic cancer stem cells, which may be a potential target for pancreatic cancer treatment. With the discovery of cancer stem cells, it is possible to specifically target the deadliest cells which are promoting the growth of the tumors in the body. This study aims understand the pathology behind pancreatic cancer by specifically targeting pancreatic cancer stem cells. Additional pancreatic cancer stem cells will be identified using flow cytometry, targeting specific biomarkers of the most cancerous pancreatic cells. This will identify potentially more cancerous cells for physicians to target when treating pancreatic cancer.

Peterson: The goal of this research is to understand the mechanism of degradation and excretion of polylactic acid (PLA) within the human body when PLA is used for production of sutures, scaffold, stents and so on. PLA undergoes hydrolytic degradation via scission of the ester backbone. This process yields monomers of lactic acid (LA) that get excreted by either the kidneys or the liver depending on molecular size. LA converts to pyruvate via lactate dehydrogenase and can enter the tricarboxylic acid cycle (TCA) to react with the corresponding enzymes located in the inner walls of the mitochondria. Completion through the TCA cycle produces carbon dioxide and water which are the ultimate determinants of biodegradation. This is a novel idea because the repeated unit of PLA is a naturally occurring substrate involved in the human metabolic processes and can follow those pathways to be easily excreted from the body. A bioresorbable stent that can naturally degrade through hydrolytic degradation at a similar rate as vessel regrowth has been in development. These bioresorbable stents are believed to offer a change in standard health care by replacing the metallic drug eluting stent. Degradation rate of PLA is dependent upon chemical properties like hydrophilicity and crystallinity. Therefore, degradation time is variant and needs to be controlled to produce viable physical properties. Future research will explore the rate of degradation when LA is subjected to copolymerization with glycolic acid, a molecule that exhibits higher hydrophilicity and crystallinity.

Palmer: This paper is an overview of the current knowledge and challenges in the isolation, characterization, and use of conotoxins in the medical field. With only 0.1% of conotoxins currently characterized, they are a relatively untapped source of natural pharmaceutical probes with unknown therapeutic potential. Conotoxins are

toxic peptides isolated from the venom of cone snails. Each one must be individually isolated and characterized to fully understand the toxin's structure and function. So far, a few major categories of conotoxins have appeared including ω -conotoxins, μ -conotoxins and δ -conotoxins, each acting on different molecular targets ranging from ion channels to G-proteins. Characterization of these toxins are important as those conotoxins that have currently been isolated have already been found to have immense therapeutic potential. They have been utilized in the treatment of pain, as an antimycobacterial agent and as a potential cancer cell antagonist, with many other studies in progress. Yet, a significant amount of progress still needs to be made in order for conotoxins to be widely used clinically. This includes increases in structural stability, lower toxicity and optimization of drug delivery. Future research should focus on the potential of δ -conotoxin ImI as an immune system regulator of lupus positive cells through flow cytometry analysis, as conotoxins on immunity has been relatively unexplored.

Olsen: Acute kidney injury due to radio contrast accounts for a significant amount of acute kidney injuries however the mechanism behind this is not fully understood as of yet. This research seeks to outline all of the current hypotheses etiologies for contrast induced acute kidney injury (CI-AKI) and show how medical providers could help treat CI-AKI prophylactically and empirically given these etiologies. Currently there are 3 main theories on what causes CI-AKI; osmotic abnormalities of the contrast, hypoxia due to contrast interactions with cellular signaling and reactive oxygen species inducing apoptosis. The first theory, osmotic abnormalities, attributes the tissue injury to the hyperosmotic nature of the contrast inducing vascular flow changes, which cause tissue death. The second theory, hypoxia, states that tissue death is caused by contrast media disrupting vascular signaling molecules which thusly induce hypoxia and death. The third theory attributes tissue injury to the formation of reactive oxygen species and induction of apoptosis. Understanding the mechanism of CI-AKI will allow medical providers to better treat this condition and allow researchers to be more informed in how to develop possible treatments for this condition. Future work in this field may be needed to identify a possible pathway via which Ca^{2+} may induce hypoxia and reactive oxygen species thusly identifying a possible target for treatment.

Meyer: There is a dire need for improvement in the methodology behind pediatric drug dose development due to lack of clinical pediatric data; to exemplify this need, I have analyzed physiological and maturation variations between children and adults; I have utilized acetaminophen as an exemplary drug to depict variations in pharmacokinetics between various age groups. Absorption, distribution, metabolism, and elimination of a drug vary greatly among varying ages depending on a multitude of factors including: expression of phase I and II drug metabolizing enzymes, renal and hepatic maturation and function, intestinal motility, etc. While

copious differences have been noted, there is still minimal clinical pediatric data available causing the majority of inpatient hospitalizations under the age of 18 to utilize at least one drug off-label which leads to an increase in risk factors such as toxicity, lack of therapeutic effect, and adverse side effects. Through analysis of current pediatric drug dose development methods as well as physiological variances, is clear that there is a dire need for improvement in the methodology as well as a need for more pediatric clinical research.

Libra: Type 2 diabetes is a growing health concern across the world, and as a result researchers are studying plants like *Opuntia-ficus-indica* to develop treatments. Many studies have already proven that certain *Opuntia* species have anti-diabetic capabilities. The research compiled in this paper sought to understand the compounds found in *Opuntia* species that give them their anti-diabetic capabilities, and to learn what mechanisms are affected by these compounds. It is well documented that *Opuntia* species, like *Opuntia ficus indica*, are rich in polyphenols. The AMPK pathway is a known pathway that can be stimulated by insulin and promotes glucose transport into skeletal muscles from the blood, causing hypoglycemia. Polyphenol phytochemicals from *Vaccinium arctostaphylos*, and *Plantago ovata* have been proven to stimulate AMPK activity and may be used as an insulin substitute.

From this research it is possible to better understand how *Opuntia* species can stimulate AMPK activation which can further be researched to develop effective treatments for individuals with type 2 diabetes. This research can also help improve the current understanding of the AMPK pathway, and how plant phytochemicals influence its activation, which can be further researched to learn how other phytochemicals influence different metabolic pathways. Future research should first look into improving isolation methods of specific *Opuntia* phytochemicals and determining their individual impact on the AMPK pathway.

Klomp: Mitochondrial dysfunction may be the primary factor of neural death in Huntington's disease (HD). HD is caused by the expansion of the polyQ region of the huntingtin (*htt*) gene which results in a mutant *htt* protein. A larger expansion often leads to a faster disease progression and more severe symptoms. The presence of mutant *htt* leads to varied effects in striatal neurons, including but not limited to mitochondrial membrane depolarization, mitochondrial fragmentation, an increase in reactive oxygen species, dysregulated ATP buffering, hypothermia, aggregation of *htt*, and impairment of intracellular trafficking. Mutant *htt* protein interacts with many proteins including transcriptional regulators, mitochondrial proteins, and transport proteins. This variety of interactions has made it more difficult to design thorough research as HD models and research methods can focus on only one mechanism of HD pathology. Varied therapeutic drugs do exist for HD. However, they primarily target only one dysregulated protein or pathway of HD pathology.

Pursuit of this research is relevant as there is not currently a cure for Huntington's disease. Further research into the interactions of mutant htt with lead to more relevant and effective therapeutics. This paper suggests future research regarding the regulation of fission/fusion factors regarding the possible interaction of mutant htt protein with transcriptional regulators and ubiquitin degradation machinery.

Otto: Amyloid Beta Protein is known to be a sign of Alzheimer's disease in the human brain. This protein makes a plaque that dispenses onto the neurons of the brain which is thought to cause problems with the sending of electrical signals between the neurons. This plaque is derived from the Amyloid Beta Precursor Protein. The precursor protein is thought to be associated with physiological workings of the brain in the body, along with the lymphatic systems but it has not been confirmed. There has been much research on how to stop the deposit of these Amyloid Beta Protein plaques. It has shown that the oxidation of some Amyloid Beta Proteins can cause redox oxidation and radicals to go throughout the rest of the brain. It has also been shown that sortilin reduces the deposition of Amyloid Beta Proteins in the brain, which would prevent some of the problems. There has also been a drug, istradefylline shown in human amyloid precursor protein developing mice to improve their memories. This research can help with an improvement of life for those suffering from Alzheimer's. For further research into this topic, I propose to have the drug istradefylline tested for treatment in slowing Alzheimer's disease in association with release of dopamine decreasing symptoms.

Pybas: Rheumatoid arthritis (RA) is the most common systemic autoimmune disease (AD) in the world. Current treatments are non specific and tend to suppress total immune function have troublesome side effects that can be worse than disease symptoms. The onset of RA begins with inflammation in the synovial tissues that surround the joints and eventually leads to the destruction of bone and cartilage. The outlined research studies the potential use of biomimetic nanoparticles in the treatment of autoimmune rheumatoid arthritis. Biomimetic nanosponges are nanoparticles that have been coated in a biological tissue, most commonly red blood cells, plasma, or cancer cell membranes. They have shown success and efficacy in absorbing toxins and antibodies as well as drug delivery. Although biomimetic nanosponges have been studied for the treatment of tissue specific ADs such as thrombocytopenia, there are no current findings or publications that look to nanoparticles in the treatment of systemic AD in which more than one tissue is targeted. Future work would involve finding a biological membrane that plays a target role in the pathogenesis of RA. Ideally this tissue can be coated on a nanoparticle and will work to neutralize the detrimental succession of disease in patients with RA. If successful, such research and findings could lead to not only patients with RA by increasing their quality of life but the lives of 20% of the world that suffer from systemic autoimmune diseases.

Cano: If our population continues its dependence on fossil fuels, levels of particulate matter will inevitably increase. Particulate matter from fossil fuels has the possibility to cause detrimental effects to human health. Fossil fuels increase levels of non-bacterial inflammatory response in humans due to increase fragmentation of the extra cellular matrix. Fragmentation of hyaluronan leads to an inflammatory response that mimics the infection of invasive bacteria. New information suggests that anti-cancer drugs could be helpful in mitigating the effect of pollution on individuals living in areas with high levels of pollution. Tubeimoside-1 (TBMS1) acts by mediating the MAPK-JNK pathway, an important pathway in both macrophage activation and insulin response tissue. Regulating macrophage activation is important because of its role in producing and releasing cytokines that further stimulate anti-inflammatory response. Additionally, the MAPK-JNK pathway is an important step in insulin responsive tissue because of its interaction with the nucleus which ultimately affects insulin receptors and glucose uptake. Mediating processes in these two cells types can minimize the damage to lung cells in areas of higher pollution. In this study we will take pregnant rats and place them in highly polluted environments. After 8 weeks, respiratory levels and metabolic tissue weight will be assessed and compared to see if the administration of tubeimoside will decrease health effects caused by particulate matter.

Graff: The knowledge gained by studying and understanding the function of transient receptor potential (TRP) proteins in homeostasis can potentially be helpful for the treatment and prognosis of diseases. TRPs are calcium permeable membrane proteins that are polymodal sensors: activated by temperature, pH, osmolarity, cytokines, tissue injury, chemical compounds, and mechanical forces. TRPMs (melastatin) and TRPVs (vanilloid) specifically are activated by temperature; this is important to understand when putting the body into situations with extreme temperature ranges. TRPs are able to maintain homeostasis because of their close association with the ER/ mitochondria and their ability to affect the transcription of delayed response genes associated with homeostasis. This project is novel because of its use in the treatment and prognosis of diseases. In many diseases, the activity of TRPs are seen to be higher or lower than normal. It is important to further study known agonists and antagonists while still searching to find more agonists and antagonists because these can be used to bring the TRP activity found in diseases back to normal. Because these agonists and antagonists bring the TRP activity back to normal, they can be considered a treatment for the disease in which the TRP activity was not normal. One study done on cancer patients found an increased menthol sensitivity to TRPM8 in prostate cancer patients, which leads to the conclusion that TRPM8 activity is upregulated in these cancer patients. Another study found that Voacangine, an alkaloid found naturally in the rootbark of the *Voacanga africana* tree, was found to competitively inhibit the binding of menthol

to TRPM8 and therefore decrease the activity of TRPM8. The next step in research on TRPs should go into the possibility of using Voacangine as a treatment for prostate cancer.

Biology

Schedule

10:05 - 10:25 AM

PEngl 375

Wendy Richards, Ellen Munshower (William Lamberts, Biology) Hide and Go Seek: An Experiment Testing for the Fear Response of Hiding in *Daphnia magna*

10:25 - 10:55 AM

PEngl 375

Mitchell Muske, Paul Flanagan (William Lamberts, Biology) Amano Shrimp Evasion in Response to Predatory Stimulus

Abstracts

Richards, Munshower: The role fear plays in survival of organisms is a widely studied subject across various disciplines. It can be looked at anthropogenically, biochemically, or environmentally. *Daphnia*, a type of zooplankton, have been shown to have increased heart rates when exposed to infochemicals from predators. It is believed that the physical reaction to the smell of these predators is a fear response. In order to further this understanding, we looked at a possible behavioral reaction that could come from fear. The goal being to discover if, under the presence of certain predatory infochemicals from predators that are found in either the littoral or pelagic zone, *D. magna* would attempt to hide from the predator. A pilot study was conducted to determine whether *D. magna* reacted differently to plastic as compared to real *E. canadensis*, a common freshwater plant. A tank with no plants was used as a control. In concluding that there was no significant difference in how the *D. magna* behaved around plastic plants as they did to real plants, we used real *E. canadensis* for the remainder of this study. 3 replicates were tested in the primary study; each replicate had a set of 3 tanks: 1 tank was a control, filled with 3 liters of springwater, a second tank was filled with 3 liters of springwater prepared with infochemicals from *Chaoborus* sp. (a pelagic zone predator of *D. magna*), and a third tank filled with 3 liters of springwater prepared with infochemicals from *Lepomis macrochirus* (a littoral zone predator of *D. magna*). *D. magna* behavior was measured through the use of marked zones indicated distance from either the littoral or pelagic zone. The hypothesis of this study, that *D. magna* would attempt to hide in the presence of infochemicals from

predators was not supported. The trends observed in each treatment (springwater without infochemicals, springwater with *L. macrochirus* infochemicals, and springwater with *Chaoborus* infochemicals) were nearly identical with between 12-14 *D. magna* in Zone 1 at any given time. This suggests that the *D. magna* do not interact with their environment differently whether predator infochemicals are present or not. Furthermore, the source of infochemicals, whether from littoral zone predators or pelagic zone predators, does not appear to affect behavior. Fear is a part of all ecosystems and organisms so this study adds into the understanding of not only *D. magna* specifically, but also the adaptations of creatures at different trophic levels. From a human perspective, *D. magna* and other zooplankton are vital to the management of recreational lakes. Because of their role in the food web as predators of phytoplankton, the presence *D. magna* and other zooplankton are encouraged to keep lakes more oligotrophic.

Muske, Flanagan: Mitchell Muske and Paul Flanagan

Amano Shrimp Evasion in Response to Predatory Stimulus

This study observed the physical behavior of the crustacean *Caridina multidentata*, more commonly known as amano shrimp, and their response when introduced to a predation-like stimulus. This research sought to understand how amano shrimp are affected by the presence of fish and possible predation. This research carries significance as it could indicate whether the shrimp are affected by the water they're in, and if that affects their capabilities to carry out their main commercial purpose. This study specifically looks at the amano shrimp and its ability to evade predation when exposed to a stimulus similar to that of a fish's suction to obtain food. When amano shrimp are attacked by fish, the fish sucks water in rapidly to bring the shrimp into its mouth. The shrimp avoids the predation primarily through the use of their entire abdomen to push itself away from the suction. This motion is conducted with the use of leg-like extensions called pleopods and a uropod. Our research suggests there is a significant difference in evasion response when exposed to a predation stimulus while in fish contaminated water as opposed to clean water. The shrimp display a quicker response in fish contaminated water, and seem to be more cautious, as they display the response from further away.

Chemistry

Schedule

8:40 - 9:00 AM

ASC 104

Bridget Ebert (Thomas Jones, Kate Graham, Chemistry)
Synthesis of 2-(2-nitrophenyl)-1,3-dioxolane as a
Photolabile Protecting Group

- 8:40 - 9:00 AM*
ASC 105 James Votel (Stuart Winikoff, Chemistry) Computational Modeling of Thiourea Catalysts with Substrates
- 9:00 - 9:20 AM*
ASC 105 Jose Martinez (Christen Strollo Gordon, Chemistry) Ocean Acidification's Effect on Crustacean Shell Formation
- 9:00 - 9:20 AM*
ASC 104 Guangyao Gao (Chris Schaller, Chemistry) Catalysts For Ring-Opening Polymerization
- 9:20 - 9:40 AM*
ASC 105 Clayton Merritt (Christen Strollo Gordon, Chemistry) Deliquescence Relative Humidity of Inorganic Aerosols in the Presence of Soluble Organics
- 9:20 - 9:40 AM*
ASC 104 Zoua Pa Vang (Chris Schaller, Chemistry) Ring-Opening Polymerization
- 9:40 - 10:00 AM*
ASC 104 Davis Deanovic (Chris Schaller, Chemistry) Ring Opening Polymerization of Caprolactone by N-Heterocyclic Carbene-Supported Lewis Acid
- 9:40 - 10:00 AM*
ASC 105 Christopher Vidmar (Christen Strollo Gordon, Chemistry) Kinetic studies of hydroxyl radical reactions with aqueous phase methylglyoxal and glyoxal in atmospherically relevant conditions
- 10:40 - 11:00 AM*
ASC 104 Samantha Tinucci (Edward McIntee, Chemistry) Expression, Purification, and Kinetic Characterization of Human Low Molecular Weight Protein Tyrosine Phosphatase Isoforms A and B
- 10:40 - 11:00 AM*

- ASC 105* Talitha Burtis (Md Fazal, Chemistry) Detection of 2-Aminothiazoline-4-Carboxylic Acid Using Fluorescein Isothiocyanate
- 11:00 - 11:20 AM*
ASC 104 Hannah Holst (Edward McIntee, Chemistry) Synthesis of a DNA phosphate adduct, Ap(POB)A, as a potential biomarker for exposure to the tobacco specific nitrosamine NNK
- 11:00 - 11:20 AM*
ASC 105 Joseph Vorderbruggen (Md Fazal, Chemistry) Evaluation of the Effect of Nickle Oxide Nanospheres on Lipid Membranes
- 11:20 - 11:40 AM*
ASC 105 Brandon Thauwald (Annette Raigoza, Thomas Jones, Chemistry) Polymerization of Isothiocyanates on the Surface of Gold
- 11:20 - 11:40 AM*
ASC 104 Grace Lindquist (Alicia Peterson, Chemistry) Catalytic hydrodefluorination of pharmaceuticals
- 11:40 - 12:00 PM*
ASC 104 Susie Xiong (Alicia Peterson, Chemistry) Natural Healing Effects of Cymbopogon citratus (Lemon Grass)
- 11:40 - 12:00 PM*
ASC 105 Casey Palmer (Annette Raigoza, Chemistry) Absorption of Isothiocyanates on a Gold Surface

Abstracts

Ebert: Carbohydrates serve a critical role in human life and biological systems, as well as in synthetic chemistry. Many industrial methods utilize carbohydrates and depend on protecting groups to effectively synthesize new molecules. Oligosaccharide synthesis and synthesis of vitamin C, for example, are two major methods dependent upon carbohydrate protecting groups. Acetal formation is a versatile method of carbohydrate protection, and many of these acetal protecting groups are photolabile when exposed to UV radiation. This study examines the use of 2-(2-nitrophenyl)-1,3-dioxolane as a photolabile protecting group as a precursor

to photolabile protecting group synthesis using carbohydrates. In an undergraduate chemistry lab, 2-(2-nitrophenyl)-1,3-dioxolane was synthesized from 2-nitrobenzaldehyde and ethylene glycol on an acid catalyst, and spectral data was used to confirm the presence of the acetal protecting group. A photoreactor was built using UV light strips, and the compound was exposed to UV radiation to open the acetal ring and expose the previously protected sites. The study examines the effectiveness of this low-cost method and analyzes its application in future areas of study.

Votel: Computational chemistry is an important field in that it determines steps of reactions that may not be observable during an experiment. The ortho and para thiourea catalyst and the uncatalyzed simple reaction of nitromethane with benzaldehyde to form 2-nitro-1-phenylethanol were modeled to confirm the results of a previous experimental work, which indicated that the ortho-thiourea catalyst is most preferable, the currently available software used in this project was Turbomole, Cosmoprep, DFT, etc. The data collected indicated that the limiting step of this reaction is the deprotonation of the nitromethane. The thermodynamic data at room pressure in a water solvent was implemented to determine the reaction pathway that helps to clarify this finding. The calculations that have been completed and evaluated are the intermediate, starting, and final steps. The computationally generated data and structures conclude that the ortho-thiourea catalyst is more suited for this simple reaction than the para-thiourea catalyst due to the ortho-thiourea catalyst having a more stable proximity with the catalytic bases in the reaction steps.

Martinez: The goal of this research is to look into the chemical effect that ocean acidification has on crustaceans that rely on carbonate for shell formation. As the ocean absorbs more carbon dioxide it reacts with water to form carbonic acid. The fractional dissociation of carbonic acid leads to the creation of bicarbonate and an increase in hydrogen ion concentration. A large increase in hydrogen ions drives the dissociation in the reverse reaction decreasing carbonate levels. Shell formation depends on calcium binding to carbonate to form calcium carbonate. This research illustrates how crustaceans lose the ability to form strong shells as a direct result of ocean acidification. This knowledge broadens attention that carbon pollution is not just a problem of the atmosphere.

Gao: The goal of this project was to investigate alternative catalysts for ring-opening trans-esterification polymerization reactions. In the synthesis of a traditional metal-based catalyst, [(BDI)ZnN(TMS)₂], the BDI ligand was synthesized from the reaction of 2,6-diisopropylaniline and 2,4-pentanedione; four trials resulted in an average yield of 12.5%. The ligand formation was confirmed by ¹H NMR spectroscopy. The zinc complex was formed by treating Zn[N(TMS)₂] with BDI,

resulting in a yield of 14.7%. After the catalyst was made, the product was tested with two monomers for a ring opening polymerization reactions: Rac-lactide and ϵ -caprolactone. In addition to this metal catalyst, two organocatalysts DBU and proline were tested for ring-opening activity with decalactone and lactide. The decalactones do not form the polymer under any of these experimental conditions. L-Lactide works best with the DBU catalyst.

Merritt: The atmosphere contains primary organic aerosols (POA) and secondary organic aerosols (SOA). Primary aerosols are compounds that are directly emitted into the atmosphere while secondary organic aerosols are formed from reactions with other volatile organic compounds. SOAs are produced from both biogenic and anthropogenic sources and have implications for public health, the climate, cloud formation, air quality, visibility. Aerosols can affect global radiation patterns directly by absorbing and scattering radiation and indirectly by acting as cloud condensation nuclei (CCN). The CCN properties of inorganic particles in aerosols are well understood as CCN behavior can be predicted by chemical composition, solubility, surface tension, and size of dry particles. However, less is known about the ability of different organic aerosol concentrations and the impacts that those aerosols have on CCN particles which could impact cloud microphysics, formation and lifetime. To better understand the effect that different organics have on the CCN activity of salts, deliquescence and efflorescence relative humidity (DRH and ERH) was measured using a quartz crystal microbalance (QCM) that was equipped with a humidity chamber to measure phase changes by measuring the difference in oscillation frequency between the solid and liquid phases. DRH values of inorganic salts with a variety of soluble organic compounds will be presented. Ammonium sulfate shows a decrease in deliquescence relative humidity in the presence of organics and this trend appears to be concentration dependent.

Vang: Polymers, long-chain molecules made from building blocks called monomers, are inexpensive but useful as they are lightweight, durable, and easy to make. Sustainable polymers are beneficial as they place a lower burden on the environment, health but are still economical. Therefore, to make more sustainable polymers, this project relied on specific monomers (caprolactone, L-Lactide, DL-Lactide, delta-decalactone, and menthide) in a ring-opening polymerization reaction to obtain polymer chains. The polymers formed are biodegradable, and most of the monomers come from natural sources such as corn, coconut, and mint. Three compounds were considered as potential polymerizations catalysts: commercially-available diethylzinc, an aluminum catalyst containing a phenolic carbene ligand, and a titanium catalyst with the same ligand as the aluminum catalyst. The aluminum compound became the main focus of the project. Timing of the reaction varied from 2hrs, 6hrs, 24hrs, and 48hrs in order to assess the percent of monomer converted to polymer. Different monomer to initiator ratios were also used in order

to observe how well the average length of the polymer chain could be controlled. Overall, polymer chains were obtained from different monomers although control over chain length needs improvement.

Deanovic: The goal of the research discussed in this paper is to demonstrate that N-heterocyclic carbenes can be bonded to a transition metal center resulting in a complex that is able to effectively catalyze the ring opening polymerization of caprolactone. While N-Heterocyclic carbene ligands have been documented as effective catalysts for the ring opening polymerization (ROP) of lactones and lactides, less is known about the catalytic abilities of these ligands when bound to a labile metal center. This article focuses on examining the synthesis and reactivity of different transition metal complexes containing tin, zinc, aluminium and titanium metal centers. In addition to comparing metal centers, the performance of a uni-functional alcohol initiator, benzyl alcohol, was compared to a bifunctional alcohol initiator 1,4-butanediol. The aluminium based complex combined with the uni-functional initiator resulted in some of the highest degrees of polymerization and increased control over the polymer chain length. Lastly, a series of studies were performed to better understand the kinetics of this optimized system. The findings detailed in this paper indicate that transition metal complexes containing N-Heterocyclic carbene ligands are capable of polymerizing caprolactone monomers resulting in good product yields and the ability to grow chains ranging from 10-30 units in length by varying feed ratios. One of the most pertinent uses of these short chained polyesters is their ability to be grafted into other polymers providing an efficient method of manufacturing specialty polyurethanes.

Vidmar: Secondary organic aerosols (SOA) are small particles formed in the atmosphere from reactions of volatile organic compounds (VOCs). Atmospheric particles play a major role in the world. They are a potential issue for human health and can contribute to climate change. Currently, there is a discrepancy between the measured mass of SOA particles and the mass of SOA estimated by climate models. Methylglyoxal and glyoxal are two VOCs that are ubiquitous in the atmosphere and undergo photooxidation to form SOAs. Methylglyoxal and glyoxal can be used to further understand the mechanism of these VOCs. This project aims to find the rate at which methylglyoxal and glyoxal decay, and to determine any products that these VOCs form upon decomposition.

Tinucci: Protein tyrosine phosphatases (PTP) are enzymes that play a crucial role in the cell signal transduction process through dephosphorylation of select protein substrates. This communication and signaling within a cell can affect many cellular processes such as growth, migration, cell proliferation, gene transcription, and immune response. Low molecular weight protein tyrosine phosphatases (LMW-PTPs) are a group of 18 kDa soluble proteins containing a C12XXXXXR18

catalytic site and are expressed as two major isoforms. Of critical importance is LMW-PTP's link to increased cell invasivity, epithelial cell migration, and tumorigenesis. It has been suggested that the isoforms each have opposing roles in the formation process of tumors, with Isoform B being oncogenic. Previous work by our group has focused on LMW-PTP-glutathione S-transferase (GST) fusion protein of Isoform B and a His tag version of Isoform A. We will describe binding and kinetic studies comparing the His-tagged versions of both proteins. This will provide greater insight on the activity, inhibition, and function of these wild type isoforms.

Burtis: ATCA (2-aminothiazole-4-carboxylic acid), a common metabolite of cyanide, is used to detect the presence of cyanide in biological samples. This project is focused on development of a simple and selective method for ATCA detection. ATCA was derivatized with FITC (fluorescein isothiocyanate) for fluorescence induced detection. A 1:1 (v/v) mixture of ATCA and FITC solution (22mM phosphate buffer, pH =9.0) was prepared and incubated for 4 hours at 50°C. The derivatized ATCA will be detected using capillary electrophoresis with laser induced fluorescence under optimized conditions.

Holst: 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) is a nicotine-derived, tobacco-specific nitrosamine that is a vigorous lung carcinogen in rodents and is considered to be "carcinogenic to humans" by the International Agency for Research on Cancer. It is believed that the metabolism of NNK plays an important role in the induction of carcinogenesis by producing pro-mutagenic DNA adducts. Preliminary data suggests that quantitation of these adducts could indicate one's NNK exposure and cancer risk due to tobacco use. In this study, we offer a total synthesis of one potential DNA adduct, Ap(POB)A, that could result from NNK exposure. This biomarker could potentially be used for early detection of lung cancer.

Vorderbruggen: Engineered nanomaterials (ENM) have recently received interest due to their unique surface area and subsequent properties. Unfortunately many ENMs have been discovered to exhibit toxicity to cell membranes. To study the bioactivity of NiO-n's effect on cell membranes, we exposed two membrane models to various doses of NiO-n's. We used the well characterized ENM, titanium dioxide nanospheres (TiO₂-ns) as a positive control¹. We hypothesized that NiO-n's would have similar bioactivity as TiO₂-ns. A lysosomal membrane permeability²³ (LMP) assay was performed by incubating bone marrow derived macrophages from BALB/C mice for 16 hrs with both ENM at doses ranging from 12.5 to 50 µg/ml and measured levels of cytosolic cathepsin activity. Hemolysis assays and fluorescence lifetime imaging microscopy (FLIM) were performed on human red blood cells (RBC) as a surrogate for phagolysosome membranes. RBC were exposed

to ENM at doses from 25 to 200 $\mu\text{g/ml}$ for 4 hrs. FLIM was performed by using the fluorescence probe Di-4-ANEPPDHQ to determine ENM induced changes in lipid membrane structure. Intensity weighted average lifetimes were determined using a PicoQuant MT200 time-resolved confocal microscope. We concluded that nickel oxide is not as bioactive in lipid membranes as titanium dioxide, which may increase interest in the usability of the ENM.

Thauwald: Self-assembled monolayers (SAMs) have exploded in popularity in recent years due to their many practical applications in nanostructures, adhesion, sensors, and surface chemistry. In this research, SAMs were formed at ambient and elevated temperatures by the adsorption of alkyl-isothiocyanates (ATIC) on Au(111) substrates using a solution deposition method. Once formed, the surface was exposed to a strong basic initiator ($\text{C}_2\text{H}_5\text{ONa}$, NH_4OH) in solution to polymerize the ATIC surface. Scanning tunneling microscopy (STM) and Fourier transform infrared spectroscopy (FTIR) were used to characterize the SAM surface, pre- and post-exposure to initiator. FTIR analysis confirmed polymerization on the surface occurred following the addition of the initiator. STM shows a smooth, well-packed isothiocyanate surface, but due to the insulating properties of the polymerized surface, imaging proved to be difficult. These results advance our understanding of ATIC SAMs on gold surfaces as well as provide a basis for forming polymerized surfaces adsorbed to gold.

Lindquist: Organofluorine compounds are some of the most widespread pollutants in aqueous systems. It is therefore essential to develop an efficient dehalogenation method to combat groundwater contaminants. Baumgartner et. al. has shown rhodium on alumina to be effective in catalytic dehalogenation of aromatic compounds containing carbon-fluorine bonds. This study was then applied by our lab to environmentally persistent fluorinated substances, such as commercially available pharmaceutical drugs. These compounds were reacted with a hydrogen saturated rhodium on alumina catalyst and monitored using HPLC. Reaction products were also characterized using LC/MS. The catalyst was successful in the defluorination of the synthetic antibiotic, Flumequine, and the defluorinated analog appeared within 15 minutes of the start of the reaction. The catalyst also shows potential for further pharmaceutical applications.

1. Baumgartner, R.; Stieger, G. K.; McNeill, K., Complete Hydrodehalogenation of Polyfluorinated and Other Polyhalogenated Benzenes under Mild Catalytic Conditions. *Environ. Sci. Technol.* 2013, 47 (12), 6545-6553.
2. Baumgartner, R.; McNeill, K., Hydrodefluorination and Hydrogenation of Fluorobenzene under Mild Aqueous Conditions. *Environ. Sci. Technol.* 2012, 46 (18), 10199-10205.

3. Cobo, M.; Becerra, J.; Castelblanco, M.; Cifuentes, B.; Conesa, J. A., Catalytic hydrodechlorination of trichloroethylene in a novel NaOH/2-propanol/methanol/water system on ceria-supported Pd and Rh catalysts. *J. Environ. Manage.* 2015, 158, 1-10.

4. Feng, M.; Cizmas, L.; Wang, Z.; Sharma, V. K., Synergistic effect of aqueous removal of fluoroquinolones by a combined use of peroxymonosulfate and ferrate (VI). *Chemosphere* 2017, 177, 144-148.

Xiong: *Cymbopogon citratus*, stapf (Lemon grass) is a widely used herb in Southeast Asia and other tropical countries. The essential oil is used in aromatherapy and cosmeceuticals, whereas the plant is often used as a flavonoid. Research on *cymbopogon citratus* have shown to have many healing benefits such as that of skincare, anti-inflammation agents, and biological and pharmacologic activities like anti-tumor and chemopreventive drugs. *Cymbopogon citratus* also possesses a diverse range of usage in many different industries such as the pharmacology, cosmetics, and health. Compounds of *cymbopogon citratus* consist mainly of terpenes, alcohols, ketones, aldehyde and esters. Pharmacokinetic properties of *cymbopogon citratus* include absorption, distribution, metabolism, and excretion. Assumptions regarding absorption of *cymbopogon citratus* in the small intestine are that some phytochemicals can undergo oxidation, glucuronidation, sulfation and/or O-methylation, which have some health benefits. This research review intends to discuss the health benefits in order to exploit and bring awareness of the potential and many uses of *cymbopogon citratus*.

Palmer: Self-assembled monolayers (SAMs) are commonly used to alter the surface properties of metals. SAMs of alkyl isothiocyanates were formed on a gold surface using different surface functionalization techniques, such as exposing the gold to multiple molecules simultaneously or in sequence. Surfaces were characterized using a scanning tunneling microscope (STM) to observe differences in the surface structure (at high resolution) compared to SAMs formed using the well-known surface of octanethiol on gold. In samples prepared from a solution of two molecules, octanethiol has been found to have stronger interactions with the gold surface than the isothiocyanates. Through manipulating molecule concentration and exposure time, isothiocyanates can be shown to adsorb on the surface along with octanethiol. STM images of the alkyl isothiocyanates on gold show that they form relatively disordered SAMs compared to octanethiol. These studies show that isothiocyanates adsorb minimally on the gold surface and give insight to other adsorbates that could be explored in the future.

Schedule

8:20 - 8:40 AM

ASC 121

Justina Sorensen (Alicia Peterson, NATS) Algorithms: Weapons of Math Destruction or Weapons of Math Instruction

8:20 - 8:40 AM

ASC 127

Emily Christian (Alicia Peterson, NATS) Ecosystem Resource Analysis of Community Gardens

8:40 - 9:00 AM

ASC 121

Brennan Swan (Alicia Peterson, NATS) Determining the Most Effective Exercise Duration and Intensity of an Aquatic Therapy Intervention for Children with Cerebral Palsy

8:40 - 9:00 AM

ASC 127

Caitlin Rudd (Alicia Peterson, NATS) What causes fatigue during exercise?

9:00 - 9:20 AM

ASC 127

Natalie Rataczak (Alicia Peterson, NATS) Application of Attention Restoration Theory to Attention Deficit Hyperactivity Disorder: Effects of Environment on Attention in Children with ADHD

9:00 - 9:20 AM

ASC 121

Robert Quade (Alicia Peterson, NATS) Persisting Effects of Agent Orange

9:20 - 9:40 AM

ASC 121

Joshua Sitarz (Alicia Peterson, NATS) The Impact of Sulfonamides Administered to Livestock on Aquatic Systems

9:20 - 9:40 AM

ASC 127

Kyle Novak (Alicia Peterson, NATS) The Impacts of Global Warming on Atlantic Tropical Cyclones

9:40 - 10:00 AM

ASC 121 Anna Spanbauer (Alicia Peterson, NATS) The neuroendocrine mechanisms behind yoga as a stress regulator

9:40 - 10:00 AM
ASC 127 Isaac Rillo (Alicia Peterson, NATS) The Human Microbiome and its Role in Obesity and Diabete

10:40 - 11:00 AM
ASC 127 Kelsey Tatarek (Alicia Peterson, NATS) Nutritional and genetic influences on becoming a centenarian: Through the lens of Blue Zones

10:40 - 11:00 AM
ASC 121 Tyler Urbanski (Alicia Peterson, NATS) Understanding coral bleaching and the impact on coral reef ecosystems.

11:00 - 11:20 AM
ASC 127 Brian Obritsch (Alicia Peterson, NATS) An Overview of Space Medicine: The Physiology, Application, and Future

11:00 - 11:20 AM
ASC 121 Jack Fiecke (Alicia Peterson, NATS) Associating Methadone/Buprenorphine with a return in Synaptic Plasticity to argue for Medication-assisted Treatment for Opioid Addiction

11:20 - 11:40 AM
ASC 127 Kathryn Baumhover (Alicia Peterson, NATS) The Effects of Yoga Therapies in Patients with Neurological Disorders

11:20 - 11:40 AM
ASC 121 Bailey O'Hotto (Alicia Peterson, NATS) Astrocytes and Injury

11:40 - 12:00 PM
ASC 127 John Clark (Alicia Peterson, NATS) Depression and Sleep

11:40 - 12:00 PM

Abstracts

Sorensen: In this research paper, we define an algorithm and discuss its numerous applications. For example, algorithms are used in search engines and data mining. A growing concern, that has been known within the programming community for some time, is the abuse of algorithms. Specifically, we address how algorithms are being utilized to create detrimental situations for people, especially those who are non-white. While most people assume algorithms are impartial, the research evidence demonstrates that while some algorithms work as expected, others are either inappropriately used by corporations or courts, or they are designed to hack people's accounts through "bots". Bots illegally collect private information and use personal data to create nonfactual stories to entice readers. The "fake news" on Facebook during the 2017 election is a prime example of this activity, but certainly not the only case. Regardless of circumstances, it is impossible for corporations to recreate algorithms so that they are unbiased. There are programs designed to determine how biased a program is; however, while those programs may be used, it does not mean that the results of the program are implemented.

Christian: Community Gardening has been present in the United States for a long time. It isn't until recently that local and federal governments have begun regulating Community Gardens as Urban Green Spaces. Community Gardens have an ability to address many social justice issues, but they can also provide solutions to ecological problems in urban communities. Researchers are just beginning to scratch the surface on the ecological benefits of Community Gardens. Initial studies of Community Gardens focused on humanitarian research. This study will attempt to paint a well-rounded picture of a few of the ecological resources offered by Community Gardens. These resources will be plant diversity, microhabitats, water conservation, effects on soil composition, climate change mitigation and the impact community gardens have on human communities. Analyses of flora abundance and diversity, pin-pointing microhabitats, evaluation of soil composition and microbiome, temperature recording and recording of flood-water levels are some of the ways researchers have studied the ecological components of Community Gardens. Further research needs to be done on Community Gardens, specifically, in regards to their effect on soil quality. The diversity and unity of life displayed within Community Gardens can be used to advocate for their importance by city planners, governmental officials and engaged citizens.

Swan: Aquatic therapy is a relatively new treatment option for children with cerebral palsy. Preliminary evidence has shown that aquatic therapy is an effective alternative to land-based therapy to treat symptoms of cerebral palsy. However, there is a gap in the research regarding the most effective exercise intensity and duration for an aquatic therapy program to produce long-term effects for children with cerebral palsy. Therefore, the goal of my research is to propose an experiment that can determine the most effective exercise intensity and duration of an aquatic therapy intervention that would produce long-term effects for children with cerebral palsy. The research design would include a randomized controlled trial in which eighty children with cerebral palsy of Gross Motor Functional Classification System Levels IV or V aged 4-10 would participate. Each participant would be randomly assigned to an experimental or control group. The experimental aquatic therapy program would last for 5 months, and participants would perform 60 minutes of moderate intensity exercise two times per week. The control aquatic therapy program would last for 2 months, and participants would perform thirty minutes of high-intensity exercise two times per week. Findings from this experiment could help to determine the most effective duration and intensity for an aquatic therapy program. Additionally, individuals with other neurological deficits may also benefit from this proposed research experiment. Future research should be conducted on a post-intervention program that allows children with cerebral palsy to maintain the gains they have made from participating in an aquatic therapy program.

Rudd: The relationship between physical exercise and fatigue has been the scope of interest of many researchers for more than a century and is very complex. Identifying a cause of fatigue is not simple and the study of fatigue has spurred three different theories of fatigue: Catastrophe Theory, Central Governor Theory, and Psychobiological Theory. Determining what theory or combination of theories accurately describe how exercise fatigue occurs is crucial to understand why people are unable to continue muscle work and may lead to research as to how to improve exercise performance and time to fatigue. Each of these theories have been examined by measuring metabolic and psychological responses to intense exercise tasks to examine the cause of fatigue. The Catastrophe Theory explains fatigue as the depletion of metabolic substrates and the accumulation of metabolic byproducts. The central governor theory is based around the premise that the brain will override your physical ability to run and stop exercising before you're able to do serious or permanent damage to yourself. The Psychobiological model gives greater attention to perceptual and motivational factors, and their respective influence on the conscious process of decision-making and behavioral regulation. In recent years the Catastrophe Theory has been discredited in its contribution to fatigue, but there is still a debate as to whether the Central Governor Theory or the Psychobiological Theory accurately explains exercise fatigue. Further research is needed to determine why fatigue occurs during exercise causing the disengagement of effortful tasks. To

further research this topic it would be valuable to investigate the psychological interventions aiming to modulate potential motivation during endurance. If factors such as increased arousal and subliminal stimulation allow an athlete to continue to run beyond what the Central Governor Theory would say the brain would prohibit, that would be strong evidence for the Psychobiological Theory. Discovering which theory accurately describes the mechanism of fatigue and how these mechanisms work together will lead to discoveries about exercise fatigue and may help to improve athletic performance.

Rataczak: This study investigates the effects of environment on attention capacity and restoration of mental fatigue, specifically in those individuals diagnosed with Attention Deficit Hyperactivity Disorder (ADHD). Much of the research focuses on the pathophysiology and current treatment of ADHD, including neurotransmitters (specifically dopamine and norepinephrine), neuroanatomical structures (prefrontal cortex), and stimulant treatments as a basis for understanding how exposure to the outdoors may affect brain chemistry. Then, the research focuses on the Attention Restoration Theory (ART) that suggests environment may play a role in attention abilities, and that attention relies on two mechanisms: a more directed, effortful type, as well as an indirect, involuntary, and effortless type. This study investigates if time spent out of doors in natural or “green” spaces can act as an effective adjunct therapy for those suffering from symptoms of ADHD by examining scientific studies that have observed the attention capacity, mental fatigue, and attention restoration of children suffering from ADHD in different environments; mainly outdoor environments compared to indoor environments. In conclusion, while research in applying ART to those experiencing symptoms of ADHD is still in its infancy, studies show promising implications that environment plays a significant role in the ability to focus and recover from mental fatigue. The results suggest “doses of nature” may provide an inexpensive, effective, safe, accessible and novel adjunct therapy to those managing ADHD symptoms, especially those unsuited to current stimulant treatments. Future studies may want to investigate neurotransmitter activity within the prefrontal cortex after exposure to the outdoors.

Quade: The goal of this research is to determine if there are new cases of cancers and/or diseases arising post-exposure to the herbicide agent orange. Three areas will be examined when determining the rise of new cases; the environment, chemical make-up of agent orange, and how humans react to exposure. The environment is a good place to start since the main point of agent orange was to kill off the foliage of the forests in Vietnam to expose the Vietcong. Finding out how a chemical like agent orange (a dioxin) is able to proliferate tumor growth and change genetic make-up will also be examined. This project is novel because it will show the prevalence of new genetic problems arising from the offspring of the vets that were exposed to agent orange. This project could be used to show which cancers (if any)

have the chances to produce lasting effects (like passing on of dysfunctional genes) to their offspring. One proposal for future work would be to see how other chemicals used in warfare, affected veterans post-exposure to them.

Sitarz: Veterinary antibiotics are widely used to promote growth and protect health of livestock. Sulfonamides, a class of veterinary antibiotic, are used to combat bacterial growth in both humans and animals. Due to livestock's poor metabolism of sulfonamides, the majority of these antibiotics end up excreted into the environment, driving many harmful side effects. The goal of this research is to discuss the transport of sulfonamides from excretion to aquatic environments, and examine the negative effects of increased sulfonamide levels on aquatic systems. Surface ground water surrounding livestock pastures has been widely studied by researchers for the presence and biodegradation rate of sulfonamides. Sulfonamides negatively impact microorganisms responsible for the denitrification of water, resulting in harmful nitrate concentrations within human drinking water. Furthermore, sulfonamides inhibit the growth of algae strains, which may result in harmful impacts to local aquatic ecosystems. This project uniquely investigates sulfonamide impact on aquatic systems within the scope of its environmental mobility. The results of this study may be used to induce changes in use of manure as fertilizer and in implementing effective antibiotic removal methods within wastewater treatment plants. Changing agriculture practices that commonly lead to sulfonamide exposure, and improving antibiotic removal will reduce water contamination and increase drinking water safety. In order to determine the true impact of sulfonamides on human health, further research is needed that examines whether drinking well water contaminated by sulfonamides may lead to the development of antibiotic resistance genes and cross-resistance to sulfonamides used in human medicine.

Novak: The purpose of this paper is to analyze and discuss techniques used to research the relationship between climate and tropical cyclones in the Atlantic Ocean and use this data to identify a conclusion that summarizes the relationship and predict a future of tropical cyclones in the Atlantic. Global climate change has the potential to alter characteristics that affect the intensity and frequency of tropical cyclones. Increasing sea surface temperatures and sea levels due to climate change may produce more intense tropical cyclones. As the intensity of tropical cyclones increase, extreme precipitation and flooding events become more likely. By determining the effects of climate variability on tropical cyclones, scientists will be able to more accurately forecast tropical cyclones in the Atlantic. More accurate predictions will lead to earlier warnings enabling Atlantic island nations and coastal lying areas in the United States to prepare for severe wind, precipitation, and flooding. A proposed direction to continue research on this topic is the creation of a

range of tropical cyclones intensities and frequencies as a function of global temperature and sea surface temperature.

Spanbauer: For two years in a row, the annual stress survey commissioned by the American Psychological Association has found that about 25% of Americans are experiencing high levels of stress, while another 50% report moderate levels of stress. Several people pursuing a healthy lifestyle have adopted the practice of yoga for its various health benefits, one of the most prominent being stress management. Due to the wide array of physiologic and potentially pathogenic effects of our body's response to stress, a number of neuronal and endocrine systems function to tightly regulate this adaptive process. The purpose of this thesis is to examine the neuroendocrine mechanisms behind yoga as a stress regulator. The benefits of yoga in comparison to regular exercise will be presented, along with a summary of current literature on yoga's effects on the neuroendocrine stress response. Experimental results on this subject are difficult to interpret due to inconsistent methodologies, specifically yoga style intervention. Nearly all yoga styles have been found to produce positive outcomes, but the aspects of each yoga style that contribute to these positive outcomes are yet to be determined. It also remains unclear whether one variable of yoga contributes more to positive outcomes over another. Included in this thesis will be a research proposal to potentially bridge this gap in literature. As yoga participation rates continue to rise, it is important for us to be informed about the nature of yoga and the specific mechanisms behind its many therapeutic effects.

Rillo: The purpose of this research was to compare and contrast studies that explore the composition of the microbiome, specifically Firmicutes and Bacteroidetes as a correlation to obesity and types 1 and 2 diabetes. The microbiota in the human body (the human microbiome) contains a vast, and genetically diverse set of bacteria. In fact, the cells of the bacteria outnumber that of its host 10 to 1, meaning that 90% of the cells in human bodies are foreign! Therefore, the microbiome has broad physiologic capabilities relating to metabolism and disease. Thus far there is an abundance of studies performed in mice, and several studies performed on humans that address the composition of the microbiome as it relates to diabetes and obesity. The growing prevalence of obesity and type 2 diabetes specifically in conjunction with the increasing amount of treatments that add up over the years for diabetics has made the microbiome an area of particular interest. Research has defined the importance of Firmicutes and Bacteroidetes fermenting short chain fatty acids (SCFA) in the pathophysiology of obesity, a known precursor diabetes. Understanding which bacteria are present in individuals can help serve as a biomarker or possible therapeutic target for treatment of these conditions. However, primary research has yet to address the specific mechanisms for the bacteria in these phyla that lead to the correlations present in the primary literature and reviews.

Therefore the next studies should aim to be globally applicable and seek to better understand the mechanisms of the microbiota.

Tatarek: This research project examines effects and interactions of genetics and nutrition on the human aging process and determines which factors are most impactful on longevity to the centenarian milestone. Research indicates statistically strong relationships between the increased likelihood of an individual's longevity based on sibling and parent lifespans, nutritional intake, and caloric restriction. Overall, the Nicoyan, Okinawan, and Mediterranean diets, consumed by five populations of statistically significant centenarian populations per capita, have been associated with increased longevity and decreased or delayed onset of age-related diseases. Also, one important genetic component is telomere length, which is associated with a slower aging process, and has been found to be significantly longer in centenarians. This project critically examines the interaction of a controllable lifestyle factor and a noncontrollable genetic factor to further understand longevity and correlation of an individual's daily life choices to attain healthier longevity. Thus, consuming a diet with specific components can create positive interactions between nutrients and an individual's genes, potentially resulting in a delayed aging process and a reduction in the development and onset of age-related diseases. This is beneficial because it can result in a decreased need for medications and further an individual's understanding of nutrition as a natural way to impact health. Ultimately, further work is needed in determining if a low daily intake of dairy, common among all three diets, acts as a protective mechanism against the shortening of telomeres, which occurs with cellular division.

Urbanski: Environmental stressors cause coral to lose its symbionts through a process called coral bleaching. Coral is dependent on its symbiotic relationship with zooxanthellae to help provide its energy for growth. It is also important to understand the delicate water chemistry that can impact the symbiotic relationship between the coral and zooxanthellae. Stress induced by increased water temperatures, ocean acidification, and over exposure to sunlight are the most common factors that can induce coral bleaching events. Coral reefs are important in many different ways, from protecting coastal lands to diverse habitats they fill a unique and diverse set of niches. One must understand that coral bleaching is killing reefs and how to prevent and correct these issues to save many species. The coral provides a foundation, significantly important for the preservation of a large biodiverse ecosystem. Looking at a broader spectrum of affects could reveal different ways to prevent or reverse coral bleaching events. Water chemistry of marine environments has multiple factors that can be changed or influenced. By understanding the natural balances within the water chemistry, it can allow us to manipulate the environment to greatly benefit the reef. The manipulation of water chemistry would increase the adaptation of coral species allowing for rapid

adjustment to a new, harsher environment. Most current action is being done to reduce carbon output while; however, it is important to determine appropriate chemicals that would increase pH with minimal side effects for drastic and temporary solutions.

Obritsch: Space medicine is a vital element of the exploration of space and includes the prevention, diagnosing and treatment of the astronaut's health during all phases of the training, launch, mission and return to earth. It is a unique and progressive branch of medicine that faces the challenging environment of space and the inherent physiological problems associated with space. The purpose of this research is to provide an overview of the field of space medicine, its applications to civilian life, and propose effective countermeasures for prolonged flight. The most prevalent problem of space flight is microgravity or the near weightlessness experienced by astronauts. The pathophysiological implications of microgravity, such as muscle and bone deterioration, will be discussed as well as the countermeasures and operational medical concerns. Due to its unique challenges, space medicine requires the input of numerous fields in addition to the health sciences integrating physics and engineering. It has pioneered radical innovation, representing the cutting edge of medical research with vast applications to civilian clinical medicine and technology. Most notably among these are enhanced diagnosing capability of MRI and CAT scan imaging as well as healthcare to remote populations via telemedicine. Future research should be focused on finding effective countermeasures to mitigate the effects of microgravity on bone and muscle during prolonged missions such as the exploration of Mars. A mission to Mars will require significant advances in our knowledge in the areas of microgravity, radiation, and medical engineering adaptations, but is well within the near future.

Fiecke: Abstract

Opioid misuse and dependency is one of the greatest public health challenges of the twenty-first century. This paper examines the effectiveness of Medication-Assisted Therapy (MAT) for treating Opioid Use Disorder (OUD) and its role in addressing the Opioid Crisis. Opioid medications exert their many effects on the body by binding to receptors on nervous tissue. These include receptors found in the Central dopamine-reward pathway. Furthermore, chronic opiate exposure has been implicated with long-term depression of inhibitory synapses and a general loss of plasticity. These two facts account for the development of dependency and tolerance in opioid users. Therefore, treating OUD will require therapies that considers these key features of opioids. In the United States today, most addiction treatments fail to address the physiological nature of addiction. MATs, in contrast, are based in a strong pharmacological rationale. However, MAT programs are few, highly centralized, and do not receive proper institutional support. Further research should be done to associate medication-assisted treatments with a return in neural

plasticity to argue in favor of using drugs like methadone and buprenorphine as aids in treating opioid dependence.

Baumhover: The purpose of this thesis is to examine whether yoga therapies are an effective form of treatment for patients with various neurological disorders, specifically Alzheimer's disease, Parkinson's disease, cerebral palsy, multiple sclerosis, and spinal cord injuries. Research on yoga therapies have found yoga to be an effective mode of treatment for improving musculoskeletal function and overall well-being. Yoga directly impacts cardiac adaptations while inducing neurochemical and anatomical changes. In addition to reducing sympathetic nervous system activity, the practice of yoga as a therapy helps manage stress, improve blood flow, and maintain a healthy blood pressure and BMI. Although specific parameters measuring the effectiveness of yoga therapies are not all statically significant, there is strong evidence to suggest that positive outcomes of yoga therapies are evident. These positive outcomes have implications for specific neurological disorders through improvements in memory, cognition, and overall muscular skeletal function. The practice of yoga as a therapy may reduce symptoms associated with neurological disorders and prevent them long term. Yoga therapies have the capacity to be an alternative method over traditional physical therapies and memory enhancement training. Future work is needed to assess the outcomes of yoga therapies on specific neurobiological, hormonal, and musculoskeletal factors in patients from all age groups. This information would help determine the long-term effects of yoga therapies on disorders such as cerebral palsy in children and Alzheimer's disease in older adults.

O'Hotto: The goal of this review is to further understand how astrocytes respond after brain and spinal cord injuries. In this review, the roles of astrocytes after a brain or spinal cord injury will be looked at. In addition, therapeutic interventions involving astrocytes for brain or spinal cord injuries will be explored. Today, research has focused on astrocytes maintaining the BBB after a brain injury-this helps lead to recovery and survival of neurons. Research has focused on mice and other small rodents however, there are no techniques which can successfully, non-invasively, test with human subjects. Astrocytes have been known to withstand toxic conditions better than other cells, making them a valuable cell to consider for therapeutic interventions. Therefore, this idea is novel because there is still no treatment today for brain or spinal cord injuries. A better understanding of astrocytes' role in brain and spinal cord injuries could potentially contribute to further advancement of therapeutic intervention, helping millions of lives. In addition, further research in this area may enhance our understanding of the complex interaction of the central nervous system. I propose the next step in research should look into how astrocytes can lead to neuroglial proliferation

following a spinal cord injury, which could lead to recovery, and potential therapeutic treatments for brain and spinal cord injuries.

Clark: The goal of this research is to figure out whether the relationship between sleep disorder and depression is one defined by frequent comorbid symptoms or if the same biological dysfunction in the brain causes both abnormalities in mood and behavior.

Depression is associated with a functional decrease in serotonin-based neurotransmission in the brain. Sleep research has demonstrated that besides disturbances in sleep continuity, depression is also associated with a change in sleep make up. Electroencephalogram (EEG) testing provide biomarkers that show changes in short wave sleep and rapid eye movement sleep periods that usually make up healthy sleep.

Possible applications of this research have potential impact on an entire community of depressed individuals who are trying to manage the symptoms of this widespread illness as best they can. If the biological mechanisms behind depression and/or sleep abnormalities could be better understood then perhaps novel treatment for both of these problems could be found.

If I were in control of a study into this field of research I would like to see a study monitoring the sleep of depressed patients to narrow down the neurobiological mechanisms behind sleep disorder and whether or not there are any easily attainable behavioral changes that could lead to an overall increase in quality of life for depressed individuals.

Stoner: The impacts of climate change are both broad and multifaceted, influencing global temperature, arboreal systems, and the methods that we use to acquire food. It is anthropogenic activities such as deforestation and agricultural practices, along with their negative effects on carbon management, that has resulted in changes, eventually impacting food availability and security. Deforestation and conventional agricultural practices contribute to a positive feedback loop which increases both greenhouse gas emissions and temperatures. The goal of this research was to understand how food security and nutrition change when tree and soil ecosystems are impacted by climate change. This was done through analyzing the relationship between forests and soil, the impact of climate change on soil health such as soil respiration, and how these compounded effects influence nutrition and overall human health. Further research concerning the relationship between forests and food should focus on the effects of increased carbon sequestration and its impact on the nourishment that comes from plants and trees.

Nursing

Schedule

9:00 - 9:30 AM

Main 322

Rose Berg-Arnold, Stacy Hurrle, Mitchell Messman, Cassandra Miedema, Gabrielle Narvaez (Jennifer Peterson, Nursing) Prevention of Pressure Ulcers through Staff Development at a Long Term Care Facility.

9:00 - 9:30 AM

Main 324

Alexandria Khoury, Taylor Emly, Anne Ruelle, Hannah Uphoff (Luann Reif, Nursing) Title: Non-Pharmacological Management of Behavioral Symptoms in Dementia Residents

9:00 - 9:30 AM

Main 323

Elleni Oberle, Madelyne Zilka, Kendra Sukke, Anne Bjelland, Kelsey O'Malley, Dana Stanton (Rachelle Larsen, Nursing) Mock Code To Improve Knowledge, Confidence, and Proficiency of Nursing Home Staff

9:30 - 10:00 AM

Main 320

Mary Esker, Touria Techam, Kaitlyn Miller (Nicole Lang, Nursing) The Effects of Light on Sleep Quality in Long-Term Care

9:30 - 10:00 AM

Main 323

Michaela Connolly, Matthew Silbernack, Chloe Richey, Sarah Bokinskie (Rachelle Larsen, Nursing) Best Practice for Nurses at the Bedside Regarding Antibiotic Stewardship

9:30 - 10:00 AM

Main 324

Maria Rother, Rachel Lavigne, Kathryn Traynor, Caitlin Terres (Luann Reif, Nursing) Post Fall Assessment Nursing Student Quality improvement project

10:00 - 10:30 AM

Main 320

Samantha Athmann, Hunter Huntoon, Skyler Winning, Ashley Ernst, Rachel Busse (Nicole Lang, Nursing) Decreasing UTIs in Long-Term Care Residents

10:00 - 10:30 AM

- Main 322* Alexis Flaherty, David Franta, Rebecca Gigstad, Shayna Lahr, Alexandra Wolf (Jennifer Peterson, Nursing) Decreasing Falls in a Long Term Care Facility Using Fitkicks
- 10:00 - 10:30 AM*
Main 324 Ellen Marvin, Kayla Brattensborg, Kaitlyn Kerns, Allison Hirschberg (Luann Reif, Nursing) Pain Assessment in Geriatric Care
- 10:30 - 11:00 AM*
Main 320 Eliza Zugg, Kali Frederickson, Abby Mitchell (Nicole Lang, Nursing) Restorative Sleep Vitality Program: Noise
- 10:30 - 11:00 AM*
Main 323 Molly Kopp, Natalie TerEick, Allison Kirk, Shannon Downes (Rachelle Larsen, Nursing) Increased Education and Policy Development to Decrease the Incidence of Pressure Ulcers in a Long Term Care Facility
- 10:30 - 11:00 AM*
Main 324 Elizabeth Day, Rebecca Dykhoff, Andrew Russek, Emily Dinsmore (Luann Reif, Nursing) New Violence Risk Assessment for the St. Cloud Hospital

Abstracts

Berg-Arnold, Hurrle, Messman, Miedema, Narvaez: Pressure ulcers are diligently tracked at long term care facilities due to correlation with quality of care measures and outcomes. This project addresses an increased prevalence in pressure ulcers at a long term care facility in Central Minnesota. The increase in prevalence with pressure ulcers was evidenced by data demonstrating an overall rate of facility reported pressures ulcers trending upward at 42%. This 42% rate of prevalence goes on the MDS (minimum data set) and reflects negatively upon the institution. After speaking with staff at the facility, we identified that the problem lies with healthcare staff not identifying potential skin breakdown during admission, while also failing to implement skin-breakdown prevention measures when a resident's health status changed from baseline or the patient received a new diagnosis. The data was collected by observing the certified nursing assistants and determining how they identified a concern for skin integrity. A trend observed during data collection was the lack of communication by the certified nursing assistants with reporting new skin concerns to the licensed nursing staff. The lack of communication contributed

to the development of new pressure ulcers due to inability to initiate skin protective interventions. A questionnaire was completed by the certified nursing assistants to obtain their baseline knowledge of pressure ulcers. Education of staff was performed by creating a voice-over PowerPoint that was distributed to the certified nursing assistants to watch during their staff training and development. Education was aimed at common pressure ulcer sites, risk factors for developing pressure ulcers, and methods for preventing them. The same questionnaire was given to staff upon completion of education to assess retention of this knowledge. The proposed outcome of this study was that the surveys would show an increase in knowledge about pressure ulcers and skin integrity. The data from these surveys was collected and analyzed in order to determine if the implementation of education was successful.

Khoury, Emly, Ruelle, Uphoff: The World Health Organization explains that 50 million people are diagnosed with dementia globally. Agitation is a the most common neuropsychiatric symptom in individuals with dementia. Interventions for agitation are crucial in promoting quality of life, providing a safe environment, and reducing caregiver burden. Many residents within long-term care facilities display forgetfulness and many have a diagnosis of dementia. Nursing Assistant certification programs provide little to no education on non-pharmacological techniques to de-escalate agitated residents. The goal of this presentation is to provide an education tool for CNA's within long-term care facilities to obtain knowledge on how to note verbal and nonverbal signs of agitation, find the root cause of the agitation, and being able to implement de-escalation techniques such as music therapy, massage, and reducing environmental stimulation etc. A survey tool was used to evaluate the receptiveness of an educational PowerPoint and a case study that provided an opportunity to work through a real clinical scenario of an agitated resident diagnosed with dementia. The goal of this project was to better equip unlicensed nursing personnel at long-term care facilities with a knowledge base and educational tools on techniques for staff to implement in provision of care for agitated dementia residents.

Oberle, Zilka, Sukke, Bjelland, O'Malley, Stanton: For this project, there was an identified lack of proficiency and confidence in running a code blue at local long-term care facility. A questionnaire was distributed to registered nurses, licensed practical nurses and nursing assistants in the facility to determine primary concerns related to initiating and running a code blue. In addition, code blue policies and procedures as well as current practices of the facility were reviewed. Combining data collected from the questionnaires, results from the policy/procedure review and review of evidence-based research, it was determined there is an importance and benefit to running a mock code to improve proficiency and confidence. The mock code took place during the regular workday and included registered nurses, licensed

practical nurses and nursing assistants from both the day and evening shift. The group will compare participant data collected prior to and following the mock code blue experience to determine effectiveness of this experience on participant knowledge, confidence and proficiency in performing a code blue.

Esker, Techam, Miller: Through observation at our capstone long-term care facility, we have identified sleep quality as an area of concern. A good night's sleep is essential for everyone, especially the aging population. Lack of quality sleep can lead to increased risk for falls, decreased daytime activity, poor nutrition due to sleeping during the day, and decreased mood. Sleep quality can be affected by a variety of factors, including light, noise, repositioning needs, napping, diet/fluids, incontinence, and pain. In working with nursing management at this facility, our group chose to focus on the effects of light on sleep quality. Our goal was to focus on reduction of light during nighttime hours. The facility lighting does not accommodate a quality sleeping environment, as the staff needs to utilize light so they can see and provide safe and quality care for the residents. We will complete an analysis of the environment in the facility to determine where lighting is bright, including direct observation, and develop potential solutions to reducing this light. Our data collection will also involve surveying staff and residents to get their feedback on how they feel light disrupts sleep quality. We will develop potential solutions to decrease the amount of light disruption during the night time. Following implementation, our group will determine the effects of decreased lighting on sleep quality for the residents of this long-term care facility.

Connolly, Silbernack, Richey, Bokinskie: Best Practice for Nurses at the Bedside Regarding Antibiotic Stewardship

BACKGROUND: Antibiotic Stewardship has become a priority in healthcare settings due to the overuse of antibiotic therapies, causing increased healthcare costs, increased length of stay and duration of therapy, and an increase in antibiotic-resistant organisms. One local hospital has designated Antibiotic Stewardship as one of their standards for all healthcare professionals, and nurses (RN) are the last line of defense for the patient regarding antibiotic therapy.

METHODS: Based on review of the literature, a survey was created to assess the RN's general knowledge of antibiotics, confidence in communication with providers and the interdisciplinary team, comfort level in recording allergy history, and knowledge of promotion of antibiotic stewardship and patient complications. Forty nurses on the medical/surgical, telemetry, and cardiac care units completed the survey.

RESULTS: RN's assessed their comfort level with knowledge of antibiotics, allergy history and patient complications as very confident/comfortable. Their assessment of confidence in communication with providers and the interdisciplinary team and

promotion of antibiotic stewardship was ranked as somewhat confident/comfortable.

DISCUSSION: Based on the survey results and review of best practice literature on antibiotic stewardship education, a combination of educational tools was created including a PowerPoint presentation and an educational video. RN completion of these educational opportunities will continue to improve antibiotic stewardship practices and enhance patient safety.

Rother, Lavigne, Traynor, Terres: Falls are prevalent in nursing facilities; of the 1.6 million residents in U.S. nursing facilities, approximately half fall each year. There are a myriad of reasons for this: reduced bone and muscle strength, chronic medical conditions, and use of polypharmacy. This nursing student-led quality improvement project sought to decrease the prevalence of falls at the Monticello-Big Lake Care Center. During our time at the facility, it became apparent that falls, more specifically repeat-falls, were an ongoing issue among the residents. After collecting fall data from the Director of Nursing at the facility, learning about current fall precautions, and current post-fall evaluation methods, we modified a post-fall evaluation tool in attempt to reduce repeat-falls. This tool encompasses more data related to the fall in comparison to the current post-fall evaluation, with the intent to obtain a better analysis of the root cause of the fall. This should allow for effective interventions that are tailored to the individual resident. We have combined the facility's current online tool with our revised tool to create one detailed post-fall evaluation. Prior to implementing this tool, we first need to educate the staff on the new assessment. We will provide education to the facility staff during a presentation on April 9th during this time we will also be educating the floor staff, as they will be the ones performing the assessments. After educating the staff on the revised assessment, we will evaluate their understanding, acceptance, and willingness to use the new post-fall assessment using surveys.

Athmann, Huntoon, Winning, Ernst, Busse: Our main objective for this project is to decrease the prevalence and frequency of urinary tract infections at a long-term care facility in central Minnesota. In working with nursing management at this facility, it was identified that urinary tract infections (UTIs) are a significant concern with the residents. It is not uncommon to transport a resident to the hospital for a number of different reasons, and have residents return with a diagnosis of a urinary tract infection. Our plan is to collect data related to the UTI rate and compare the statistics to the specific units and common medications between residents. We will educate the staff at this facility in two different groups. One group will consist of nursing assistants and caregivers, and their education will focus on pericare techniques, catheter care, toileting schedules and observation of residents during urination to look for common signs and symptoms of UTIs. The other group will be nurse managers and other staff members who may not give direct care to the

residents. Their education will focus on the relationships between polypharmacy, prevalence of UTIs in residents, and common signs and symptoms. We will evaluate the effectiveness of our project by assessing the prevalence of UTIs after the education seminars and reviewing feedback from the staff related to their understanding of the education provided.

Flaherty, Franta, Gigstad, Lahr, Wolf: Fall prevention is a priority in long term care facilities because when older adults fall they can sustain injuries including bone fractures, lacerations, and hematomas resulting in decreased quality of life. Not only do falls jeopardize safety, but they also have a negative impact on the facility, through reduced financial reimbursement from federal and state agencies. These funds are greatly needed to safely staff and supply these facilities. There have been countless interventions implemented to try to decrease the number of falls within these facilities. Currently, finding the root cause and determining specific interventions for the resident that fell is being practiced. At the assigned facility, the fall rates were consistently high between the months of October 2017 through January 2018 with an average rate of 33.5 falls per month. This average monthly rate was higher when compared to the national average. Data collected from the facility regarding the residents personal fall rates helped to determine the ten residents who fell more frequently throughout a one month period. Since the facility had not been able to achieve their goal regarding fall rates, data collection focused around what could be contributing to the increased number of falls, especially within the “frequent faller” population. Staff at the facility were concerned that resident footwear could be a contributing factor for increased falls, and after further investigation, it was observed that many of the frequent faller residents were wearing non-slip socks or bulky tennis shoes on a regular basis. Literature demonstrated that a lightweight, non-slip choice of footwear reduced the prevalence of falls in healthcare facilities and was chosen as the intervention for fall reduction at this facility. The residents were given new shoes, Fitkicks, which were similar to traditional non-slip socks; however, they have more material including a microfiber toe patch and elastic straps. The identified frequent fallers were chosen to wear the Fitkicks daily in replace of other footwear during this project. Following the implementation of the shoes, data was collected to investigate the compliance of wearing the shoes as well as the fall rate with Fitkicks in comparison to the fall rate prior to use. Data was also analyzed regarding the cost of investment to purchase the shoes compared to the impact on the rate of falls in the facility. The data showed that the use of Fitkicks did not aide the facility in meeting their desired outcome of 8 falls per 1,000 resident days. Although the intervention did not have a significant impact on the reduction of fall rates, the information from the project identified strengths and weaknesses of the process for implementation of the intervention, cost versus benefit of the product, factors that impacted resident compliance, and

identification of other factors that could contribute to fall reduction in this resident population.

Marvin, Brattensborg, Kerns, Hirschberg: Pain is a very common complaint among the elderly. As the number of individuals over the age of 65 continues to rise, reports of pain are only expected to increase. According to Current Pain and Headache Reports, published in 2016, “66% of people over the age of 65 report chronic pain of some type.” This rate is even higher for those living in nursing homes (Jones et al., 2016). Currently, Monticello Care Center uses a 0-10 numeric pain rating scale. When nurses use this pain scale in practice, they tend to use different descriptors for the ratings of zero and ten, providing more subjectivity to an already subjective scale. Each patient may perceive the numbers in another way, resulting in an inaccurate, biased, nonrepresentative pain rating. Inaccurate pain ratings only magnify the challenge of treating pain in the elderly population. This issue also proves to be a safety concern. By overrating rating pain, patients are at a greater risk for overdose, dependence on pain medications, and adverse side effects. By underrating pain, patients may be restricted by effects of chronic pain and may become at risk for anxiety, falls and increased discomfort. Our Quality Improvement group will be implementing a descriptive phrase pain scale to be used to assess a patient’s pain. The goal is that this scale will be used to eliminate subjectivity and provide a more accurate pain rating, and to more effectively treat pain.

Source:

Jones, M. R., Ehrhardt, K. P., Ripoll, J. G., Sharma, B., Padnos, I. W., Kaye, R. J., & Kaye, A. D. (2016). Pain in the Elderly. *Current Pain & Headache Reports*, 20(3), 23. doi:10.1007/s11916-016-0551-2

Zugg, Frederickson, Mitchell: Sleep hygiene is a prevalent, consistent problem in healthcare facilities. There are various factors affecting continuity of sleep such as light, noise, repositioning, incontinence, and pain management. The barrier we chose to explore was noise pollution during evening and overnight hours. We have identified a variety of environmental, clinical, and operational factors in our selected long-term care facility that contribute to noise disruptions during the night. Being woken from noise disturbances results in sleep deprivation, which increases irritability, cognitive impairment, memory loss, impaired immune system functioning, falls, aches, tremors, and risk of obesity, among other detrimental consequences. Poor sleep hygiene can cause poor resident behaviors, declination in physical and mental health, and increased falls threatening the safety of both resident and staff. By decreasing excess noise during the evening and night shift, we aim to improve the holistic well-being of the residents, facilitate high quality care, and provide optimal, safe working conditions for staff.

Kopp, TerEick, Kirk, Downes: A quality improvement capstone project was completed at a local long-term care agency. The facility had a steady increase in the prevalence of pressure ulcer formation since October 2017. The focus of this project was pressure ulcer prevention through education and policy development. Evidence based research was used to support development of nursing assistant education, a documentation form for skin reporting, and pressure ulcer policy development. Increased frequency of repositioning and early detection were priority areas of focus for the education and policy. Nursing assistants completed a 1-hour training, which consisted of education and pre and post education assessment forms to highlight the importance of repositioning and adherence to institutional policies on repositioning. The results of the project include increased pressure ulcer knowledge scores for CNA's from pre to post presentation. Additionally, the group continues to monitor changes in pressure ulcer incidence at the facility.

Day, Dykhoff, Russek, Dinsmore: Physical and verbal aggression and violence are commonly seen with patients who suffer from mental illness that are treated in the pediatric and adult mental health units within the St. Cloud Hospital. The hospital has seen increased rates of aggression and violence on the Mental Health Units, as well as the Emergency Trauma Center, Neurology/Spine, Surgical Unit, Medical 1 and 2, and Pediatric Mental Health. The St. Cloud Hospital has also seen increasing aggression and violence in the CentraCare Plaza and Imaging facilities.

Currently, the St. Cloud Hospital uses the Broset Violence Risk Assessment with mild modification, and they have found that their current violence risk assessment does not accurately predict the occurrence of violent events across all age populations, inpatient units, and partnering facilities. In order to ensure the safety of their staff and patients, the St. Cloud Hospital has asked our group to conduct a review of literature to find a more current Violence Risk Assessment that can be utilized by the entire hospital and partnering facilities for all ages. They also request to have an assessment that can be used quickly by the nurses on the floor. This update should decrease the variability of nurse interpretation for responses as well.

After conducting an extensive review of literature, we found two Violence Risk Assessment tools: The East London Modified-Broset and the Structured Assessment of Violence Risk in Youth, or SAVRY. The East London Modified-Broset has increased specificity and sensitivity due to adding two components to the Broset Assessment: response to de-escalation techniques and PRN medication compliance. The SAVRY tool has been proven to predict the increase risk of reoccurring violence in youth. We suggest that the St. Cloud Hospital implement these two violence risk assessment tools.

Nutrition

Schedule

8:30 - 8:50 AM

ASC 142

Holly Kidrowski (Emily Heying, Nutrition) Factors that Influence Food Choice and Perceptions Of GMOs in an Undergraduate Student Population.

8:55 - 9:15 AM

ASC 142

Kendall Johnson (Emily Heying, Nutrition) Investigation of text message and social media support on daily steps and health risks of CSB/SJU staff and faculty members

9:20 - 9:40 AM

ASC 142

Madison Holm (Emily Heying, Nutrition) THE INFLUENCE OF VARIOUS TYPES OF PRE-PAID MEAL PLANS ON THE NUTRITIONAL STATUS AND BODY COMPOSITION OF UNDERGRADUATE STUDENTS

9:50 - 10:10 AM

ASC 142

Brianna Johnson (Emily Heying, Nutrition) NUTRIENT INTAKE AND NUTRITION KNOWLEDGE IN LACTOSE INTOLERANT AND NON-LACTOSE INTOLERANT COLLEGE-AGED FEMALES

10:15 - 10:35 AM

ASC 142

Audrey Kristufek (Emily Heying, Nutrition) Hydration status, performance, and nutrition knowledge of CSB/SJU musicians

10:50 - 11:10 AM

ASC 142

Zoe Boehmer (Emily Heying, Nutrition) Investigating dietary habits and health risk factors of vegetarian and omnivorous college-aged students

11:15 - 11:35 AM

ASC 142

Madeline Simonet (Emily Heying, Nutrition) Impact of Nutrition Knowledge and BMI Assessment in College-Aged Men and Women

Abstracts

Kidrowski: There is a lot of controversy surrounding GMOs due to the advances in biotechnology and the lack of biotechnology knowledge among the general public. While GMOs propose solutions to common agricultural problems, many consumers avoid purchasing GMOs. The objectives of this study were to compare undergraduate students' biotechnology knowledge to their overall perception of GMOs and determine if these influence food purchases. A questionnaire asking about biotechnology knowledge, biotechnology perception, GMO influences, and factors influencing food choices was sent out to the undergraduate population at the College of St. Benedict and St. John's University. A total of 173 participants completed the questionnaire. Participants ranked cost, healthiness, and taste as the greatest influences when purchasing food products. Natural science division majors were less concerned about cost than other major divisions (humanities, social science, etc.). Biotechnology knowledge did not differ between natural science division majors (score = 8.8 + 1.7 out of 11) and other division majors (score = 8.3 + 1.8 out of 11). Self-reported nutrition knowledge and the number of nutrition courses taken by student significantly impacted how important students ranked having a Non-GMO label when choosing food ($p = 0.011$). Some participants expressed fears about companies designing GMOs and most participants indicated wanting to learn more about GMOs and the potential risks or benefits associated with them. This indicates that the scientific community should take the initiative to educate the general public on GMOs.

Johnson: **INTRO:** Almost a third of the world's population are not active enough for ideal health. Promoting varying approaches to increase physical activity and encourage an active lifestyle is a public health priority.. Evidence suggests community walking programs and technology applications can promote physical activity, potentially lowering the risk for chronic disease risk. **PURPOSE:** To assess and compare the impact of pedometers, text message, and Facebook group support on daily step completion and health risk factors in College of Saint Benedict and Saint John's University staff and faculty members. **METHODS:** Participants ($n=30$; 25 female and 5 male) tracked daily step count for one week before being randomized into three groups for a 6 week pedometer intervention: "Pedometer Only" group ($n=10$), a "Pedometer + Text Message" group ($n=10$), and a "Pedometer + Secret Facebook Group" group ($n=10$). Daily steps were tracked via an online form throughout the intervention. Blood pressure, fasting blood glucose, body mass index and a physical activity survey were assessed before and after the intervention period. **RESULTS:** Daily step count did not differ between groups during the baseline week prior to intervention ($p=0.98$). There was no difference between groups both pre and post intervention for systolic and diastolic blood

pressure, BMI, and fasting blood glucose. About 63% of participants spent 6+ hours sitting per work day at baseline. 63% of participants indicated they participated in moderate intensity physical activity at least two to three times per week. Steps did not significantly increase from baseline throughout the intervention ($p = 0.477$), and there was no interaction between treatment group and time ($p = 0.553$). Participants completing the post-intervention survey ($n=27$) indicated the program was “helpful” ($n=19$) and accountability arose as a theme for motivation ($n=7$).
CONCLUSION: The effectiveness, feasibility, and nature of text message and social media support using Facebook needs further investigation in order to effectively use technology in future health promotion. Results indicate the need for longer, more personalized programs but provide an encouraging starting point for community interventions involving technology.

Holm: Introduction

Most colleges offer different pre-paid on-campus meal plan options allowing students to dine on campus at varying frequencies. Campus meal plans may make it easier to obtain healthy food but also unhealthy food. In relation, college students are gaining weight at a rate that is six times higher than the general-public. Overall, campus food and pre-paid meal plan options may influence college student’s nutrient intake and weight gain. This study examines the differences in nutrient intake and anthropometric measurements between various campus meal plans in undergraduate students attending a rural, private college.

Methods

A total of 84 male ($n=25$) and female ($n=59$) undergraduate students having various campus meal plans were recruited. Participants completed one, three-day food record and had anthropometric measurements (weight, height, waist/hip circumference, body fat percentage) taken during an individual meeting. Food records were entered into ESHA nutrient data software and analyzed. Average BMI, body fat percentage, and nutrient intake were assessed for each meal plan group and then compared.

Results

There were no significant differences in nutrient intake, BMI (p value= 0.45), and body fat percentage (p value= 0.501) between the meal plan groups. Fruit (cups) (p value= 0.087), fat (g) (p value= 0.088), and iron (mg) (p value= 0.093) intake were all trending towards significance.

Conclusion

Having a prepaid campus meal plan may not influence nutrient intake and anthropometric measurements in students who attend a rural, private college. Future research should assess specific student demographics, amount of nutrition

education, and time spent participating in physical activity to better determine the significance of college meal plans on the health of students.

Johnson: Background: Lactose intolerant individuals often exclude dairy food sources from the diet, increasing risk for nutrient deficiencies. Lactose intolerance correlates with health conditions such as osteoporosis, type II diabetes mellitus, and hypertension. However, lactose intolerant individuals can consume adequate amounts of calcium and vitamin D without the aid of dairy products. Nutrition education is one effective way of teaching lactose intolerant individuals prone to nutrient deficiencies how to combat health problems.

Objective: The goal of this study was to analyze how a one-time education presentation impacts nutrient intake and general nutrition knowledge between lactose intolerant and non-lactose intolerant college-aged women.

Methods: Nutrient intake was analyzed in participants (n = 24; 12 lactose intolerant, 12 non-lactose intolerant; 24 females) through three separate 3-day dietary food records taken before the intervention (one-time education presentation on importance of calcium and vitamin D intake), one week post intervention, and one month post intervention.

Results: Body mass index (BMI) and blood pressure were similar between lactose intolerant (n=12) and non-lactose intolerant (n=12) participants. Supplementation with vitamin D and calcium was more common among lactose intolerant participants than non-lactose intolerant participants. There was a significant difference in saturated fat intake between lactose intolerant and non-lactose intolerant participants (p=0.01). There was no significant difference in calcium and vitamin D intake (with and without supplementation) between lactose intolerant and non-lactose intolerant participants. There was a significant difference in total caloric intake (p=0.006), dairy intake (p=0.002), and vegetable intake (p=0.047) between lactose intolerant and non-lactose intolerant participants. There were no significant differences in participants' nutrient intake over time. The education intervention was not effective.

Conclusion: The one-time education presentation had no effect on nutrition knowledge or nutrient intake one week and one month post intervention. Both lactose intolerant and non-lactose intolerant participants were deficient in calcium and vitamin D. College students should focus on eating more nutrient-dense foods.

Kristufek: Background

College-aged musicians are a population that suffers from poor hydration status and nutrition knowledge, yet there have been very few studies with this population.

Objective

The goals of this study were to assess the nutrition knowledge of college-aged musicians and determine whether there was a relationship between hydration status and self-reported performance assessments.

Methods

Wind instrumentalists and vocalists from the College of Saint Benedict and Saint John's University (n=34) completed three tasks after four randomly chosen rehearsals during practice and concert weeks. The participants completed the General Nutrition Knowledge Questionnaire (GNKQ), provided urine samples, and filled out hydration status and performance questionnaires in which they assessed their performance and provided information about their fluid consumption. The specific gravities of the urine samples were measured to determine hydration status.

Results

A large majority of the participants were at least minimally dehydrated (82% on rehearsal days, 68% on concert days). The average score on the GNKQ was 62% ($\bar{x} = 0.62 + 0.09$). Females scored significantly higher than males on the GNKQ ($\bar{x} = 0.66 + 0.09$, $\bar{x} = 0.58 + 0.08$ respectively, $p = 0.03$). Participants were significantly better hydrated on the concert collection days compared to the rehearsal collection days ($p = 0.027$). There was no correlation between the hydration status, performance score, or GNKQ score variables.

Conclusions

The poor hydration status and low level of nutrition knowledge of the participants provides evidence that may support the implementation of a nutrition education program for the college-aged musician population.

Boehmer: Background – Previous research on vegetarian diets have shown improvement in cardiovascular health, body composition, and dietary habits. College-aged students are a unique population group to study if the same perceived health benefits of following vegetarian diets exist.

Objective – The objective of this study was to compare the cardiovascular health, body composition, and dietary habits between college students consuming vegetarian diets and non-vegetarian (omnivorous) diets.

Methods – One time measurement with 46 participants (25 non-vegetarians and 21 vegetarians) where height, weight, BMI, body fat percentage, blood pressure, and Hemoglobin A1C were collected. A General Nutrition Knowledge Questionnaire and a 24-hour dietary recall (using ASA-24 software) was also administered. Independent sample T-tests were used to statistically analyze data.

Results – No significant difference existed for anthropometric measures, BMI, body fat percentage, blood pressure, Hemoglobin A1C, or the General Nutrition Knowledge Questionnaire between the two groups. Analysis of the 24-hour dietary recall found no significance for iron, calcium, sodium, monounsaturated fat, polyunsaturated fat, saturated fat, and vitamin D between vegetarians and non-vegetarians. Potassium intake was higher in vegetarians (1573.69 + 540.38) than non-vegetarians (1224.59 + 322.95 mg) ($p = 0.0086$). Dietary fiber intake was also higher in vegetarians (30.23 + 8.09 g) than non-vegetarians (10.41 + 3.35 g) ($p = 0.0019$) and sugar intakes were significantly higher in vegetarians (56.38 + 16.69 g) than omnivores (42.53 + 16.56 g) ($p = 0.0059$). Protein was significantly higher in non-vegetarians (43.58 + 10.39 g) than vegetarians (32.74 + 10.09 g) ($p = 0.00064$).

Conclusion – Vegetarian diets provide no evident improvement in weight, BMI, body fat percentage, blood pressure, or Hemoglobin A1C in college-aged students in comparison to college-aged students who consumed an omnivorous diet. Increased intake of potassium and dietary fiber may result from following a vegetarian diet, which may improve health as potassium and dietary fiber are important nutrients that are often low in a typical American diet.

Simonet: Background

A majority of the population struggles with body image everyday. However, college students/young adults seem to struggle the most. In a recent Psychology Today Body Image Survey, 56% of college-aged women and 43% of college-aged men were dissatisfied with their overall appearance.

Objective

To assess how accurate college-aged males and females are in estimating own body images by measuring perceived vs. actual BMI and to analyze if a participant's nutritional background knowledge affects the accuracy of BMI prediction.

Methods

One time data collection was used. Participants (n=23 female, n=17 male) estimated BMI via silhouette choice. After BMI estimation, participant height and weight were collected to determine actual BMI and compare to perceived BMI to determine accuracy. Participants also completed two body image assessment surveys and a nutrition knowledge questionnaire. Results of survey and questionnaire were used to investigate influences on BMI estimation accuracy.

Results

Females were more accurate in predicting actual BMI (-0.7+2.6) than males (1.6 + 3.6) ($p=0.014$). A total of 12 females underestimated BMI, while 11 female overestimated BMI ($n=23$). A total of 12 males underestimated BMI, while 5 overestimated BMI ($n=16$). Males had significantly higher average actual BMI ($25.5 + 5.1 \text{ kg/m}^2$) than females ($22.4 + 2.8 \text{ kg/m}^2$) ($p=0.018$). Fourth years significantly underestimated BMI (-0.71 + 2.1) while third years (1.9 + 4.8), second years (0.6 + 2.6), and first years (1.9 + 3.4) significantly overestimated BMI ($p=0.047$). Body Shape Questionnaire scores and Body Appreciation Scale scores did not differ by General Nutrition Knowledge Questionnaire performance.

Conclusions

Some recognized themes from the data suggest that undergraduate females were more accurate in predicting their BMI than undergraduate males. Fourth years significantly underestimated BMI while third years, second years, and first years significantly overestimated BMI. BSQ scores and BAS scores did not differ by GNKQ performance. These results provide an opportunity of awareness to enforce positive body image in young adults.

Physics

Schedule

8:00 - 8:30 AM

PEngl 167

Steven Bezdichek Pfahning (Todd Johnson, Physics) The Physics of Rowing

8:30 - 9:00 AM

PEngl 167

Louis Pennings (Dean Langley, Physics) Energy Transfer in a Coil Gun

9:00 - 9:30 AM

PEngl 167

Stephanie Zabinski (Dean Langley, Physics) Analysis of Couch Attenuation on Trilogy and TrueBeam Linear Accelerators with the Eclipse 13 Modeling System and a Basic Excel Model

10:00 - 10:30 AM

PEngl 167

Gino Delmont (John Adam Whitten, Physics) Direct v Diffuse Sunlight in Solar Panel Energy Generation

10:30 - 11:00 AM

PEngl 167

Leo Moraczewski (Thomas Kirkman, Physics) Seeing an Exoplanet

11:00 - 11:30 AM

PEngl 167

Christina Geiser (Dean Langley, Physics) The Effect of Reflector Materials on Acoustic Levitation

11:30 - 12:00 PM

PEngl 167

Marcus Langley (James Crumley, Physics) Development of Android App for Tracking Rocket Flight Statistics

Abstracts

Bezdichek Pfahning: The sport of rowing, or crew, is a balance of strength, endurance, and skill. In rowing, all pieces of a performance athlete tie together to create a complex mechanical question of how to create the most efficient stroke. This study investigates different recovery rates and the effect of the recovery on the overall movement of the shell.

Pennings: A presentation examining the physics behind a coil gun, including electromagnetic theory, device construction, circuit design, and data analysis.

Zabinski: Because of the nature of radiation treatments, there is a very small threshold for error. One of these sources of error is a decrease in radiation intensity, or attenuation, through different materials. One of these materials might be a couchtop on a linear accelerator. A great amount of attenuation through this couchtop could require that a couch model be inserted into treatment planning. The couch attenuation for both the Trilogy and TrueBeam linear accelerators was found to average about 2%, with increases at more oblique angles. Therefore, both Varian's Eclipse model and the author's Excel-based model were explored for both machines, with the IGRT thin couch in the Eclipse treatment planning system found to be the best fit for both linear accelerators, with an average percent difference in experimental versus modeled of 0.29% for the Trilogy and 0.43% for the TrueBeam.

Delmont: In 2014, The Saint John's Abbey added a 35-degree tilt, fixed solar farm rated at 182 kilowatts annually. Some of the photons from the sun make their way directly to the solar panel, others scatter throughout the atmosphere before reaching the panels. By taking irradiance measurements with a solar spectrometer

corresponding to the panel orientation, direct, and indirect sunlight, it is possible to determine the percentage of energy produced by direct sunlight vs diffuse sunlight.

Moraczewski: In my experiment, I used the telescopes at the Saint John's Observatory to measure the brightness of three stars that were expected to have exoplanets orbiting them. I was unable to take enough data on two of the stars, but was able to confirm the existence of an exoplanet around the third, HD189733.

Geiser: Acoustic levitation occurs by reflecting sound waves back on themselves to create standing waves. The purpose of this experiment was to see if the material of the reflector has an affect on acoustic levitation. Different reflectors were 3D printed using different types of plastics. Then the levitation of each reflector was analyzed using a schlieren optical system.

Langley: This study highlights the unique intersection of technology and hands-on experimentation. The goal of this project was to develop and calibrate an Android app capable of accurately tracking various flight data of a rocket launch (specifically, the time and relative angles at the rocket's apex). Using data acquired from a device's internal sensors, these angles can be computed. Experimental testing and laboratory calibration were conducted to analyze the accuracy of these results.

Social Sciences Presentations:

Accounting & Finance

Schedule

9:00 - 9:15 AM

Simms 340

Meghan Hayden (Warren Bostrom, Accounting & Finance) Fortune 500 CEO Profiles and Compensation

9:00 - 9:15 AM

Simms 330

Devon Deanovic (Warren Bostrom, Accounting & Finance) Profiles of the Fortune 500 CEOs and CFOs

9:00 - 9:15 AM

Simms 310

Hannah Manley (Warren Bostrom, Accounting & Finance) What trends exist among CEO and CFOs in the Fortune 500?

9:15 - 9:30 AM

Simms 310

Mohamed Johar (Warren Bostrom, Accounting & Finance) Would an advanced degree be worth the time and money to a CPA?

9:15 - 9:30 AM

Simms 330

Samuel Broman (Warren Bostrom, Accounting & Finance) What trends are there between Fortune 500 companies, Audit Firms, and Audit Fees?

9:15 - 9:30 AM

Simms 340

Samuel Goetsch (Warren Bostrom, Accounting & Finance) CPA's and Advanced Degrees

9:30 - 9:45 AM

Simms 310

Nathan Hansen (Warren Bostrom, Accounting & Finance) How College GPA and Other Factors Impact Career Earnings

9:30 - 9:45 AM

Simms 340

Michaela Peplinski (Warren Bostrom, Accounting & Finance) What 'Big 4' Firms dominate the Fortune 500?

9:30 - 9:45 AM

Simms 330

De'Seria Demeritte (Warren Bostrom, Accounting & Finance) Should a CPA obtain an advanced degree?

9:45 - 10:00 AM

Simms 340

Stephany Polipnick (Warren Bostrom, Accounting & Finance) Is There A Noticeable Difference in Turnover and Satisfaction in Various Firm Sizes?

9:45 - 10:00 AM

Simms 310

Pedro Chavez Morejon (Warren Bostrom, Accounting & Finance) What type of scandal affects a company stock price most significantly?

9:45 - 10:00 AM

Simms 330

Chancie Hanson (Warren Bostrom, Accounting & Finance) IPOs from 2016- Are there certain industries with higher returns than others? If so, what factors contribute to higher returns?

10:00 - 10:15 AM

Simms 340

Cody Wald (Warren Bostrom, Accounting & Finance) What Fundamentals Of A Company Indicate How It Will Be Valued On The Market?

10:00 - 10:15 AM

Simms G30

Ashley Gengler (Warren Bostrom, Accounting & Finance) What are the common characteristics of a Fortune 500 CEO?

10:00 - 10:15 AM

Simms 310

Treyton Neuharth (Warren Bostrom, Accounting & Finance) What is the impact of Mergers and Acquisitions

10:00 - 10:15 AM

Simms 330

Kylee Carr (Warren Bostrom, Accounting & Finance) Is there a difference in turnover and job satisfaction in firms of various sizes?

10:15 - 10:30 AM

Simms G30

Thomas Bresnahan (Warren Bostrom, Accounting & Finance) The Big 4 and the Fortune 500

10:15 - 10:30 AM

Simns 330

Lauren Noel (Warren Bostrom, Accounting & Finance)
Male vs. Female Fortune 500 CEO Profiles

10:15 - 10:30 AM

Simns 340

Maria Paulsen (Warren Bostrom, Accounting & Finance)
What are the common characteristics of the Fortune 500 CFO's?

10:15 - 10:30 AM

Simns 310

Andrew Renier (Warren Bostrom, Accounting & Finance) CEO/CFO Attributes and Profiles

10:30 - 10:45 AM

Simns G30

Mckinnon Short (Warren Bostrom, Accounting & Finance) Impact of Firm Size on Satisfaction and Turnover

10:45 - 11:00 AM

Simns G30

Michael Waters (Warren Bostrom, Accounting & Finance) Does GPA and other factors directly correlate to career success and earnings?

11:00 - 11:15 AM

Simns G30

My Tran (Warren Bostrom, Accounting & Finance)
Fortune 500 CEO/CFO Profiles Analysis

11:00 - 11:15 AM

Simns 340

Stephanie Kellner (Warren Bostrom, Accounting & Finance) What factors contribute to Fortune 500 total compensation

11:00 - 11:15 AM

Simns 330

Emma Baker (Warren Bostrom, Accounting & Finance)
What does a typical profile for a Fortune 500 CEO look like?

11:15 - 11:30 AM

Simns 330

Joshua Dutcher (Warren Bostrom, Accounting & Finance) Impact of Firm Size on Job Satisfaction

11:15 - 11:30 AM

Simns 340 Jonathan First (Warren Bostrom, Accounting & Finance)
Firm Size and Overall Job Satisfaction and Turnover

11:30 - 11:45 AM

Simns 340 Ryan Souza (Warren Bostrom, Accounting & Finance)
Success of auditors in the Fortune 500

11:30 - 11:45 AM

Simns 330 Treyton Borchardt (Warren Bostrom, Accounting & Finance) What Audit Firms have Control on Certain Industries and Regions within the Fortune 500

11:45 - 12:00 PM

Simns 340 Schyler Wood (Warren Bostrom, Accounting & Finance)
What's behind the booming biotech market?

11:45 - 12:00 PM

Simns 330 James Foltz (Warren Bostrom, Accounting & Finance)
GPA and Career Success

Abstracts

Hayden: In my presentation I research the typical characteristics of a Fortune 500 CEO and how this correlates to their compensation. I look into factors such as gender, race, company sector, company size, age, undergraduate education, degrees earned, and whether the CEO was hired internally or externally.

Deanovic: This presentation will analyze profile trends among CEO and CFOs of Fortune 500 companies.

Manley: My presentation focuses on trends amongst the CEOs and CFOs of the 2017 Fortune 500 list. I further narrowed my results to concentrate on the gender gap that exists in top leadership positions.

Johar: My presentation is based on a survey of over 40 responses by CPA's regarding my topic. I analyze earnings and job prospects of advanced degrees by a cost benefit analysis basis.

Broman: A total of nine CSB/SJU senior accounting majors pulled together data regarding Fortune 500 companies, their audit fees and auditor. I then analyzed the data to find trends within the Fortune 500 and audit fees. In attempt to answer my questions, I look into audit fees by sector, revenue in correlation with audit fees,

relationships impact on audit fees, and audit fees in regions around the United States.

Goetsch: The project analyzes the effects of an advanced degree beyond the CPA.

Hansen: Hundreds of Minnesota CPAs submitted a survey that I used to analyze what students can do in college to positively influence how much they make after graduation.

Peplinski: My presentation will focus on audit fees between Big 4 Accounting Firms who audit the Fortune 500. I will analyze these fees between business sector, company headquarters, and how long the firm has audited the company.

Demeritte: This presentation will report the findings of a survey sent out to Minnesota CPAs. The survey's goal was to gather various information like satisfaction, salary, promotions, etc. That information was then used to compare elements between CPAs with and without an advanced degree to help determine if an advanced degree is worthwhile.

Polipnick: In the accounting world there are a variety of firm sizes that a person can choose to work in. This project looks at the impact that the size of a firm has on its turnover and its employees' job satisfaction.

Chavez Morejon: During a corporate scandal, how are company's stock price affected the day of, three-months after and did the scandal affect them significantly.

Hanson: My project examines 121 Initial Public Offerings (IPOs) from 2016 and identifies certain industries with the highest returns. I also attempt to identify contributing factors that influence stock performance for those companies.

Wald: This project utilizes the financial data gathered from 120 different companies who had an Initial Public Offering (IPO) in 2015-2016, and analyzes that data in order to understand what quantitative fundamentals of the companies may have led to how they were valued on the market.

Gengler: Examining common themes of compensation, demographics, and education of Fortune 500 CEO's.

Neuharth: The impact of a merger or acquisition on companies and their respective geographic markets.

Carr: After sending out a survey to approximately 6,000 CPAs asking questions about their job history, details, and satisfaction, I analyzed the data to determine whether or not there were differences in responses based on the size of the firm they worked at.

Bresnahan: My goal from this presentation is to determine if one Big 4 firm dominates over its competitors when it comes to auditing Fortune 500 companies. There are many different angles to determine dominance including high audit fees, number of clients, and regional control.

Noel: This research project analyzes data about the Fortune 500 CEOs and presents differences among the male and females CEOs.

Paulsen: This project dives into what the Fortune 500 CFO profiles are. I looked into statistics such as gender, compensation, education, and previous employment titles. I compiled the data and created, on average, what the typical career path of a CFO is.

Renier: My presentation speaks to Fortune 500 CEO/CFO attributes and profiles. Basically explaining what mold many CEO/CFO folk "take-on" in the Fortune 500 companies, and what might one (like a college student) do to achieve a dream of becoming a CEO/CFO.

Short: Among CPA accountants, does the firm size affect job satisfaction and job turnover rates.

Waters: I will be discussing whether or not GPA and other factors such as participation in clubs or varsity sports, type of school or internship experience correlates to future career success and earnings.

Tran: Research on Fortune 500 CEO/CFO profiles, compensations, stock prices to explore common characteristics among them.

Kellner: An analysis of Fortune 500 companies to see what contributes to total compensation for CEO and CFO.

Baker: This research study looks at the CEO profiles of the Fortune 500 companies. It includes demographic information on the CEOs and CFOs of the companies as well as compensation, revenue and net income information which were used to find trends among the 500 companies.

Dutcher: Research Question:

How does a firm's size impact an individual's job satisfaction and how do turnover rates vary among firm size.

If I change my question, or alter my information, I will keep ya updated

First: My presentation is on the results from a survey sent out to MN CPAs. The results are used to make conclusions about the impact of the size of the firm.

Souza: This presentation looks at the auditors of the Fortune 500 companies at evaluates their success in auditing these companies.

Borhardt: A group of nine students looked into audit firms within the Fortune 500 companies. I looked at what regions and industries particular audit firms do better in than others.

Wood: An analytical look at IPOs in 2016-17 and the most important factors influencing their pricing. Specifically looks at successfulness of biotechnology index.

Foltz: My research examines survey results from current and former CPAs to see whether there is a link between their college GPA and their success in the real world.

Education

Schedule

10:00 - 10:30 AM

HAB 117

Sarah Lauer (Brian Mumma, Education) Technology
Integration in the Elementary Classroom

Abstracts

Lauer: Technology usage is becoming increasingly common in academic environments. Technology is being implemented faster than the best practices for instruction can be incorporated widespread. Technology integration is made meaningful when the technology is being used to enrich and enhance learning. Over the course of this academic year, I have learned how technology integration can be meaningful to the learning process. A primary goal of my project was to learn how 3D printing and robotics can be used as instructional tools in the elementary classroom. I also discovered that using robotics paves the way for teaching computational thinking principles and the engineering design process in a way that provides interdisciplinary learning. During this presentation, I will share

my learning about meaningful technology integration and discuss the presentations I have given on these topics.

Global Business Leadership

Schedule

10:00 - 5:00 PM

Simms G40

Darrian Borboa, Rachel Broos, Marisa Brunner, Lucia Cervino, Rory Cummings, Mark Hanowski, Alexander Hinrichs, Ashley Lee, Isabella McKeown, Alexander Meeker, Alisia Moreno, Jenna Pettit, Conrad Sampair, Jared Scherping, Huba Sekesi, Monica Sevenich, Poorna Tennakoon, Emily Thompson, Anthony Townsend, Padong Vue, Robert Waldon, Nathan Zweber (Kingshuk Mukherjee, Global Business Leadership) TBD - GBUS 381 Section 03A

10:00 - 5:00 PM

Simms G40

Alexander Bailey, Andrew Bertrand, Matthew Bins, Elizabeth Bosiacki, Theodore Christian, Jack Edberg, Mitchell Engel, Samuel Illgen, Janet Jimenez-Olivo, Nathan Johnson, James Joyce, Benjamin McBeain, Morgan Merritt, Margaret Ogren, Andrew Perry, Grant Poole, Andrew Schneider, Garrett Skinner, Dylan Standafer, Hunter Thompson, Mariana Urbina, Samuel Valerius (Kingshuk Mukherjee, Global Business Leadership) TBD - GBUS 381 Section 04A

Abstracts

Borboa, Broos, Brunner, Cervino, Cummings, Hanowski, Hinrichs, Lee, McKeown, Meeker, Moreno, Pettit, Sampair, Scherping, Sekesi, Sevenich, Tennakoon, Thompson, Townsend, Vue, Waldon, Zweber: TBD

Bailey, Bertrand, Bins, Bosiacki, Christian, Edberg, Engel, Illgen, Jimenez-Olivo, Johnson, Joyce, McBeain, Merritt, Ogren, Perry, Poole, Schneider, Skinner, Standafer, Thompson, Urbina, Valerius: TBD

Peace Studies

Schedule

9:00 - 11:30 AM

Simms 360

Kaylie Bednarczyk, Lauren Brutger, Katrina Carney, Abdirizak Jama, Allison Kanyetzny, Sydney McDevitt, Oscar Nieves Rubio, KeAvae Taylor, Annie White (Kelly Kraemer, Peace Studies) How We Made Peace by 2048

Abstracts

Bednarczyk, Brutger, Carney, Jama, Kanyetzny, McDevitt, Nieves Rubio, Taylor, White: Nine Peace Studies seniors will present their "Reports to the CSB/SJU Peace Studies Department from 30 Years in the Future". They developed these reports using futures studies research methodologies to help them envision and explain how they used what they learned at CSB/SJU to achieve various peace and social justice goals after graduating.

Political Science

Schedule

9:00 - 9:45 AM

Quad 346

Zachary Eichten (Gaynor Haeg, Political Science) Poison Pills: How Subtle Differences in Processes, Public Opinion, and Leadership Doomed the American Health Care Act and Passed the Affordable Care Act

9:45 - 10:30 AM

Quad 346

Meredith Jarchow (Whitney Court, Political Science) Logged on for Democracy: The Relationship between Digital Media and Offline Political Participation over Time

10:30 - 11:15 AM

Quad 346

Daniel Gillis (Gaynor Haeg, Political Science) The Voting Behavior of Labor Union Members in the 2016 Presidential Election

11:15 - 12:00 PM

Quad 346

Meghan Mullon (Gaynor Haeg, Political Science) Nevertheless, She Legislated: A Study of Women Representing Women in Congress

Abstracts

Eichten: In 2009, the Patient Protection and Affordable Care Act became law. This was possible due to a majority in both branches of Congress and control in the executive branch by Democrats. In 2017, the American Health Care Act failed to become law, despite a similar structure in place for Republicans. What differences existed between the two attempts that explain why one was able to pass, but not the other? This study will present a framework for examination by exploring the impact of unorthodox lawmaking, the role of public opinion, and conditional party government as factors that influenced both legislative outcomes. To examine this, process tracing will occur to examine the impact of unorthodox lawmaking, public opinion data on healthcare will be examined, and DW-Nominate scores will be analyzed to explore the impact of conditional party government. The results show that a combination of factors impact legislative outcome on major bills. The findings suggest that a holistic approach to examining factors should occur when looking at why a piece of major legislation is passed or failed.

Jarchow: Over the years Internet use has become ingrained in Americans' daily lives. In turn, those running for office have begun to utilize the internet for campaigning at all levels of government. How did internet use in the 2012 and 2016 elections impact political participation? This honors thesis will examine how Internet use affects six different modes of political participation, and compare it to Bimber and Copeland's (2013) original study that examined the 12 years prior. In addition, I will also analyze the participation in protest marches and signing petitions as two additional acts of political participation. American national Election Study data concerning Internet use and traditional political participation will be used. My findings support the original authors' expectation that while those who use Internet are more likely to participate, it is not a consistent relationship with all of the different acts of political participation, nor is it consistent over time.

Gillis: The conventional wisdom surrounding the 2016 United States presidential election suggests that Donald Trump, the Republican candidate, received significant support from labor union members. This has drawn attention, as labor union members have long been considered a crucial Democratic voting bloc. Previous studies have shown that Democratic support from organized labor groups has been declining over time. The stereotypical labor union member has long been a white working class male with a high school level of education in a private sector union, and recent work has primarily focused solely on these individuals. However, those traditional labor union members have been found to make up a declining share of labor union members. Therefore, there is a considerable gap in the understanding of who labor union members in the United States are. This paper will consider the changing characteristics of the standard labor union member, and analyze ANES data to consider their behavior in the 2016 U.S. presidential election.

Mullon: Though women make up only a small fraction of the United States Congress, they are often stronger legislators than their male colleagues. Scholars have also found that, over time, these women often pay more attention to issues considered more women salient than their male counterparts do. But do women legislators provide better substantive representation to women in the electorate in comparison to their male counterparts? This study utilizes methodology outlined by Frisch and Kelly (2003) to determine patterns in Congresswomen's committee assignments and methodology utilized by Michele Swers (2002b) to determine whether women serving in the 111th, 113th, and 114th Congresses were more likely to sponsor women salient legislation than their male counterparts. From there, I aim to discover whether women serving in Congress have a greater representative responsibility than their male colleagues. I hypothesize that on the whole, men are more likely than women to achieve assignments to prestigious committees while women are more likely to be assigned to committees whose issue jurisdictions are more women salient. I also hypothesize that women are more likely to sponsor women salient legislation than their male counterparts are. These hypotheses are generally supported by the data gathered, but the results also show that party control and issue saliency have a great influence over how women choose to provide substantive representation and what structural obstacles stand in the way of them doing so. The data generally points to the conclusion that women serving in Congress, because they often view themselves as representatives of both their constituencies and their entire gender, have a greater representative responsibility than their male colleagues and provide better representation to women in the electorate than male legislators do.

Psychology

Schedule

9:45 - 10:15 AM

NewSc 140

Wyndham Chalmers (Laura Sinville, Psychology) Arousal Reappraisal and Interoceptive Awareness: How Awareness of Bodily Changes Facilitates Heightened Performance & Ability to Reappraise.

10:20 - 10:50 AM

NewSc 140

Alexa Ronayne (Rodger Narloch, Psychology) The Influence of a Positive or Negative Mindset on Affect and Heart Rate Variability

10:55 - 11:25 AM

NewSc 140

Jacob Wankel (Abraham Immelman, Psychology)
Personality Profile and Threat Assessment of North
Korea's Kim Jong Un

11:30 - 12:00 PM

NewSc 140

Catherine Lundstrom (Benjamin Faber, Psychology)
Narrative minds: An investigation of reading and
cognition

Abstracts

Chalmers: The physiological arousal induced by a stressful situation has historically been viewed as bad; however, recent research has challenged this perspective, arguing that stress-related arousal can be beneficial. Arousal reappraisal is a coping technique that encourages individuals to reinterpret their physiological stress response as a means to help improve performance. Conversely, suppression, a common, yet ineffective coping technique, involves the active effort to stop oneself from expressing an emotional behavior. The current project examined the relationship between coping techniques and interoceptive awareness (IA), the degree to which individuals are aware of their own physiological changes. Comparing arousal reappraisal to both suppression and a control condition, the current research measured physiological changes as well as performance on tasks intended to induce stress, including a timed math subtraction task and a karaoke singing task to determine whether individuals with high IA would benefit more from arousal reappraisal techniques.

Hypothesis One predicted an interaction between performance scores, with high IA individuals in the control and suppression conditions performing worse than their low IA counterparts, and Hypothesis Two predicted a main effect of coping condition for physiological changes. The results of the study did not fully support either hypothesis. Our results suggest that arousal reappraisal did not have a significant effect on performance during a stressful task and found IA to have no significant impact on participants' ability to benefit from reappraisal. However, our results did show a non-significant trend towards an interaction between IA and coping condition for performance on the mathematical stress task. This trend supports our prediction that suppression would hinder performance ability and continues to support the importance of the role of IA. Finally, there was a significant difference between baseline physiology and physiology during the two stress tasks, suggesting the tasks were an effective manipulation. However, physiology did not vary between the coping conditions. The results suggest the need for continued research on this topic.

Ronayne: The purpose of this study was to see whether the induction of a positive or negative mindset could influence measures of health and happiness, specifically heart rate variability and affect. Participants completed two short writing exercises intended to place them in either a positive or a negative mindset. During the entirety of the study, their heart rate was being measured and the variability between beats was calculated. Their affect was measured by self-report before and after the manipulation. The results showed a clear relationship between mindset condition and heart rate variability and a possible link between mindset and affect. The positive mindset condition seemed to evoke more positive affect, less negative affect and higher heart rate variability, with the negative mindset condition having the opposite effect. The study also looked at the relationship between trait optimism and resting heart rate variability and found that, contrary to expectation, pessimists had higher resting heart rate variability. Overall, the results indicate that there is evidence for a link between mindset and measures of health and happiness.

Wankel: The purpose of this study was to construct a personality profile as a basis for conducting a threat assessment of Kim Jong-un, supreme leader of the Democratic People's Republic of Korea (DPRK). The study was conducted from the conceptual perspective of Theodore Millon, as adapted by Aubrey Immelman for at-a-distance assessment of personality in politics. Psychodiagnostically relevant data regarding Kim were collected from a multitude of open-source media reports and expert analyses. These data were then compiled, categorized, and coded using Immelman's Millon Inventory of Diagnostic Criteria (MIDC), which yields 34 normal and maladaptive personality classifications largely congruent with the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). The personality patterns yielded by the MIDC were analyzed in accordance with interpretive guidelines in the MIDC manual. Kim's primary personality patterns were found to be Dominant/controlling and Outgoing/gregarious. Secondary personality patterns were found to be Ambitious/confident, Dauntless/adventurous, and Accommodating/cooperative. Based on his primary Outgoing-Dominant personality composite, Kim was classified as a high-dominance extravert. The psychological profile provides a basis for inferring the influence of Kim's personality on DPRK regime behavior and the threat posed by North Korea with respect to U.S. national security.

Lundstrom: Narrative experience guides organization of concepts across psychological domains. Existing research suggests narrative engagement from reading fictional literature increases empathy. The current experiment examines a new framework for investigating narrative experience and subsequent cognition by analyzing the effects of literary structure and genre on narrative engagement, mood, and creativity.

Sociology

Schedule

11:00 - 11:30 AM

Simms G10

Francesco Hanson (Theodor Strollo Gordon, Sociology)
The Sun Shines for Everyone: Creating Community Solar
Business Models That Include Culturally and
Geographically Diverse Low-Income Americans.

11:00 - 11:30 AM

Simms G10

Alexandria Daggett, Riley Swenson, Anna Rahrick,
Khadara Ahmed (Mary Block, Sociology) Language
Matters: Use of Interpreters in Clinical Settings

Abstracts

Hanson: This paper explores the creation of new ownership strategies that allow low-income communities in the United States to access the benefits of solar energy. Through interviews with two new non-profits working in the emergent field of low-income community solar, this paper compares the practical applications of two ownership models- cooperative and community trust- serving low-income communities in Arizona and Minnesota. Furthermore, this paper examines the potential of expanding cooperative and community-trust-owned solar energy to a Somali community in central Minnesota.

Daggett, Swenson, Rahrick, Ahmed: This project focuses on the use of interpreters for patients with Limited English Proficiency. The purpose of this study is to understand when and how interpreters are used when working with Limited English Proficient patients. It is designed to understand the efficiency and efficacy of the current interpreter system as well as potential differences in use of interpreters by profession and by culturally varied groups.

Interdisciplinary Presentations:

First Year Seminar (FYS)

Schedule

10:00 - 11:15 AM

BAC 107

MacLean Berglove, Michael Bloss, Meghan Breen, Edward Cavello, Ravon Chambers, Raven Dames, Laura DiMarco, Nathan Drees, Maija Eickhoff, Derica Ferguson, Briana Garcia-Saldana, Madison Hurrle, Steve Morales, Thomas Russett, Christopher Stanek, Madeleine Weegman, Frances Weyrauch (Mary Jane Berger, First Year Seminar (FYS)) Life and Miracles of St. Benedict in Rap (Section 18A)

10:00 - 11:15 AM

BAC 107

Zoe Allyson, Elias Andrzejek, Madison Brown, Shelby Burg, Nicholas Christian, Brendan Conway, Cole Dutko, Bria Ferns, Aunna Halloran, Isabella Johnson, Dominic Odden, Joseph Pieschel, Riley Schneider, Paige Tanaka, Jena Wachowiak, Alexander Wiczek (Mary Jane Berger, First Year Seminar (FYS)) Life and Miracles of St. Benedict in Rap (Section 21A)

Abstracts

Berglove, Bloss, Breen, Cavello, Chambers, Dames, DiMarco, Drees, Eickhoff, Ferguson, Garcia-Saldana, Hurrle, Morales, Russett, Stanek, Weegman, Weyrauch: Students from Sister Mary Jane Berger's FYS "The Power of Story," read Pope Gregory's small book called *The Life and Miracles of St. Benedict*. This mere 78 page book gives the best known information about the founder of Western Monasticism. In pairs, the students transformed this ancient text into modern lyrics and set them to rap music. The students will present their Benedict Raps following a brief introduction.

Allyson, Andrzejek, Brown, Burg, Christian, Conway, Dutko, Ferns, Halloran, Johnson, Odden, Pieschel, Schneider, Tanaka, Wachowiak, Wiczek: Students from Sister Mary Jane Berger's FYS "The Power of Story," read Pope Gregory's small book called *The Life and Miracles of St. Benedict*. This mere 78 page book gives the best known information about the founder of Western Monasticism. In pairs, the students transformed this ancient text into modern lyrics and set them to

rap music. The students will present their Benedict Raps following a brief introduction.

Student Organization/Clubs

Schedule

10:00 - 11:00 AM

Quad 349

Lincoln Mullings, Taylor Kallsen (Douglas Mullin,
Student Organization/Clubs) Breaking the Brick Wall

Abstracts

Mullings, Kallsen: Living in a world where men are conditioned to adopt hegemonic masculinity containing norms of aggression dominance, emotional dormancy, and promiscuity we aim to disrupt the construct. This simulation will challenge the participant's definition of what it means to be a man. Through providing real life situations that men deal with everyday (bullying, binge drinking and peer pressure) and providing possible solutions we hope to start productive and healthy discussion. Upon completion of the simulation participants will be more aware of their role in promoting an alternative to hegemonic masculinity through a healthy definition of masculinity which encourages men to not only live life outside of the masculine construct but to define their own brand of masculinity centered around pillars of respect for all people, authenticity of self and relationships, responsibility to the community, moderation, stewardship, and love.

Benedicta Arts Center A104, CSB

Art

James Hasselbrink (Andrea Shaker, Art) A Portrait of Joe O'Connell

Presented will be a rough cut of my short documentary on local artist Joe O'Connell. The centerpiece of the work will be his Christ the King triptych in Las Vegas. The project is a combination of archival material, interviews, and footage of the art itself.

Benedicta Arts Center Colman Theater, CSB

Entrepreneurship

Zachary Brown, Edward Cavello, Joseph Christenson, Anna Davis, Genesis Gonzalez-Perez, Elizabeth Grygar, Rita Guerra, Faith Kanneh, Annette Klomp, Sarah Knoblauch, Alec Larson, Teresa Pezan, Thomas Richmond, Alexander Sais, Samantha Schad, Ramsey Sorrells, Benjamin Turnham, Brady Yoerg (Kaarin Johnston, Entrepreneurship) 30 Minutes of Improvisation

Students in this unique Entrepreneurship class will present 30 minutes of improvisation. Some of the work has been real-life scenarios while other pieces have focused on developing skills such as self-confidence, collaboration and creativity. The class is deciding which types of activities and exercises the students will share with a friendly audience! Come and be surprised!

Benedicta Arts Center Dance Studio D150, CSB

Theater

Jack Pieper, Eleanor Babcock (David DeBlicke, Theater) Aerial Acrobatic Dance Studies

From a simple foot climb to a fifteen-foot aerial drop, students from the aerial acrobatics class have developed a new type of dance skill. Dance Studies (THEA 210) has significantly changed the dynamics and context of dance in the theater department here at CSBSJU. Our lecture demonstration will consist of students presenting their choreography of falling, swinging and hanging in the air. Students will also discuss their journey from learning basic and simple safety procedures to crafting artistic, complex and vibrant aerial choreography.

Benedicta Arts Center Gorecki Family Gallery, CSB

Art

Lauren Anderson, Anna Barton, Bridget Davis, Marie Frances Angela Gonzales, Sean McClernon, Jefry Pagan, Jordyn Potter, Daniel Bruckbauer (Elaine Rutherford, Art) Going Rogue CSB/SJU Senior Art Exhibition

Works by CSB/SJU Senior Art Students

Benedicta Arts Center Recital Hall, CSB

Music

Matthew Kiminski, Cody Ewald, Mary Lara, Theodore Knudson, Johanna Dykhoff, Samantha Delke, Louise Perrion, Steven Bezdichok Pfahning, Julia Black, Elliot Olson, Adam Lara, Lucas Tomlinson (Carolyn Finley, Music) The Early 20th Century English Musical Renaissance: A Recital of Representative Composers

The late 19th century and early 20th century were an important time in the development of English art music. The healthy competition between composition students of the Royal Academy of Music and the newer Royal College of Music in the late 1800's provided inspiration for rescuing British song from the mediocrity of the Royalty ballads which were popular in the mid-late 1800's. Under the tutelage of composition teachers, Hubert Parry and Sir Charles Villiers Stanford, young composers began to look to various sources for finding a new, unique voice for British art song and other genres, which would include a revisiting of English carols, dances and folk music. Composer Ralph Vaughan Williams and musicologist Cecil Sharp helped promote the tradition of collecting Great Britain's folk songs and incorporating elements of them into their classical art song, while providing a harmonic language based on church modes and coloristic chords from French impressionist composers such as Claude Debussy and Maurice Ravel. Popular poets of this period include A. E. Housman, Christina Rossetti, John Masefield, and Walter de la Mare, although composers were still enchanted with Shakespeare's verse. A further impetus to the surge of new compositions was the new success 20th century composers found in premiering their works in large concert halls. These composers include Gustav Holst, Edward Elgar, Frederick Delius, Roger Quilter, Ralph Vaughan Williams and others. This period in Great Britain's musical history is known as the "English Musical Renaissance" and spanned approximately from the late 1800's through World War II.

In Europe, the Hapsburg empire fell, creating financial instability, and the eventual World Wars would forever change the sense of safety and security of the British public. Several prominent English composers would lose their lives fighting in World War 1, while many composers were conscientious objectors. Their music reflects a love for nature, countryside and a need to dwell on things which celebrate British culture. The composers in the period of 1900 to about 1917 were said to be of the "Fresh Air School" in that they deplored musically expressing intense emotions tied to the political unrest of the time felt in Europe. Many of these composers did fight in the wars, although many returned wounded either physically, emotionally or both.

Today's recital will feature prominent British composers whose songs are often considered "nationalistic," drawing on British inspiration, or 'post-Romantic," more influenced by European composers. The performers are students of Dr. Carolyn Finley who will accompany them at the piano.

Gorecki Center 204, CSB

Asian Studies

Elizabeth Carrizal, Cameron Johnson, Paola Solis (Zhihui Geng, Asian Studies)
Minorities and Globalization in China

It took Europe more than a hundred years to do what many parts of Asia have done in the last 20. China is the greatest beneficiary of this growth. This growth has disproportionately benefited Han Chinese, who already make up more than 90% of the population. Since the unification of China as a nation and the establishment of the Communist party, China has oppressed most of its 55 minority groups. Not only have they been condensed into these 55 groups, but the people are also forced to choose one even when they may not truly belong to it. One such oppressed group are the Uyghur people. With the growth of handheld smartphones devices, the Chinese government has been able to subjugate the Uyghur people of Sichuan province. Globalization and the proliferation of technology has allowed the Chinese government to subjugate and thereby minimize important cultural aspects of the Uyghur people.

Center for Global Education

Zhiyuan He (Joy Ruis, Center for Global Education) Bosnia and Herzegovina
Summer Internship

I participated in the internship in Balkan region last summer. I will be presenting on the skills I learned during my internship.

Jack Her, Vichian Lee (Joy Ruis, Center for Global Education) Study Abroad Experience in Japan!

My partner and I will be presenting our experience abroad in Tokyo, Japan, with our partnering school, Bunkyo Gakuin University. We will be discussing the following topics; Food, Education system and Work Ethics in Japan. We will also be promoting the Father Lawrence Scholarship, offered to Japan Abroad CSBSJU Students.

Emma McCracken, Cathal McCaughey (Nichole Matuska, Center for Global Education) Study USA, Our CSB/SJU Experience

We (Cathal and Emma) came here from Northern Ireland on a programme called 'Study USA'. The Study USA programme, originally known as the Business Education Initiative, was established in 1994 by the British Council. It is a highly successful and innovative programme which offers undergraduate students studying in Northern Ireland the opportunity to study business and management for one academic year at church affiliated universities and colleges in the USA. The programme was designed to assist with the Peace Process, which was developed in Northern Ireland to rebuild the communities after a period of conflict known as the Troubles. The White House provided their own endorsement for the programme in March 1995 in a letter written by President Bill Clinton.

We were lucky to be given the opportunity to take part in the programme; and in August CSB/SJU student community. Since coming here we have felt nothing but welcomed by the CSB/SJU community. We would like to take part in this event to celebrate all of the opportunities that this campus has given us and show other students what they can gain from a study abroad experience.

Kennedy Peitz, Bradey Kamish (Joy Ruis, Center for Global Education) International Internship Experiences on the Semester London Program

Our presentation will explain the wonderful, and sometimes intimidating experience we had as international interns in London. We were both lucky enough to be chosen to live, study, and work in London during the fall semester of 2017. The study abroad program was set up between CSBSJU

and a school called FIE in central London. We spent half of the semester strictly attending classes and the final eight weeks working at a placed internship. Our presentation will explore our realizations of the challenges, joys, and differences in the work environment abroad versus our past work experiences in Minnesota. We feel that our experiences in London greatly enhanced our ability to adapt and succeed in diverse work environments.

Jacqueline Tshiteya (Joy Ruis, Center for Global Education) Summer Science Research China Program

My poster details my experience this past summer as a participant in the Summer Research Program at China's Southwest University (SWU) through the Center of Global Education. I worked on a research project led by Dr. Xie and other graduate students on the novel genes and functions of mycobacterium tuberculosis. I was able to learn new skills in a laboratory setting and learn about scientific writing. Additionally, I was able to learn and experience Chinese culture.

Shoua Vang (Joy Ruis, Center for Global Education) Shaped by Studying Abroad in China

As a study abroad ambassador from the Fall 2017 China program, I will like to present the benefits and challenges of studying abroad. I will focus on my experiences in China and how the cultural differences and challenges helped shape me to be more flexible, understanding, and become a better problem-solver. Some of the challenges that benefited me includes: facing language barriers, learning how to use different sources of transportation, learning the difference between the education systems, bargaining, facing different living standards, eating food I have never eaten before, exploring the city individually or as a group, and keeping track of my finances. I will also go in depth about how the courses that I took in Beibei, China helped me face those challenges.

Arthur Viera (Joy Ruis, Center for Global Education) Education: Greatest vision in Latin America

Last semester, I had the greatest opportunity to study abroad in Viña del Mar, Chile. During my time abroad, I found a site to volunteer, as it is a requirement in order to successfully complete the program. I decided to volunteer at a public elementary school serving students that come from low-income and low socioeconomic families and backgrounds. As an English teacher assistant, I helped the instructor teach elementary students

learn English and provided aid to grade any work from the students. I went through many experiences, both good and bad, that allowed me to realize how important and valuable education is for students all around the world. In my presentation, I will discuss about the injustice that occur within the education system in Chile and how young students are affected by the lack of opportunities given by the government. Moreover, I will share how these students affected my life and allowed me to realize that teaching and mentoring the youth is the path towards success. I will also explain how I implemented the Benedictine values through my experience studying and teaching abroad in Viña del Mar, Chile.

Chemistry

Hordofa Burka (Margarita Geraskina, Annette Raigoza, Chemistry) Reductive amination reaction of glutaraldehyde

Glutaraldehyde is a very potent stabilizing reagent, which can stabilize macromolecules, protein complexes, or even biological specimens by creating covalent links between primary amino groups within a treated sample. This unique reactivity and non-perturbing nature of stabilization allow for glutaraldehyde to be used in numerous applications, including enzymatic catalysis, tissue preservation, and electron microscopy. The focus of these studies is to perform a reductive amination of glutaraldehyde. Despite recent advances in chemical cross-linking for the structural elucidation of macromolecules, glutaraldehyde is not readily used for this technology due to the intrinsic instability and residual reactivity of glutaraldehyde cross-links. These studies will explore the reductive amination reaction of glutaraldehyde with primary amines in aqueous solutions, where a reducing agent is added after glutaraldehyde and primary amine are incubated together.

Autumn Fuchs (Thomas Jones, Chemistry) The Synthesis of Thiourea Catalysts for Use in the Henry (nitroaldol) Reaction

Organocatalysts are popular options for the development of more sustainable synthesis. Thiourea catalysts promote reactions via reversible, and selective hydrogen bonding that can activate the electrophile and/or the nucleophile reactants. Based on this activation, is it possible to utilize milder reaction conditions than would otherwise be required. A series of organocatalyst candidates were synthesized from 3,5-bis(trifluoromethyl)phenyl isothiocyanate and o-aminophenol, p-aminophenol, o-aminobenzoic acid, or p-aminobenzoic acid. These molecules were screened in the Henry (nitroaldol) Reaction. The ortho-

carboxylic acid thiourea demonstrated catalytic activity and the para-isomer was inactive, indicating a geometric preference in activating the nitroenolate. Current work evaluating the phenolic thiourea systems for similar activity will be presented.

Joshua Gavin (Brian Johnson, Chemistry) Synthesis and Characterization of a Model Multi-Copper Oxidase

Multi-copper oxidases possess an unusual triangular copper complex; ceruloplasmin is an example. Ceruloplasmin oxidizes iron from the ferrous state to the ferric state, assisting in iron transport. This oxidn. is coupled with the redn. of dioxygen to water, the mechanism of which is unclear. In order to elucidate more the mechanism of redn., this study focuses on the synthesis and characterization of a novel copper (I) complex with a new tapma-based ligand. This tapma ligand is modeled after the tris (2-pyridylmethyl) amine-based (tpma) ligand family where nitrogen based donors are employed. This tapma ligand is synthesized from 1,3,5-tris(azidomethyl)-2,4,6-triethylbenzene in a click chem. step; the tri-substituted Et groups force the nitrogen ligand branches to adopt a conformation that brings the nitrogenous bases close to each other. NMR interpretation showed partial substitution of desired ligand product.

Seth Holland (Annette Raigoza, Chemistry) Sequential Adsorption of Octanethiol and Decyl Thiocyanate to Gold Surfaces

The use of self-assembling monolayers (SAMs) in biomedical applications is crucial to the success of metal implants and sensors due to the important surface-protein interactions that occur. One method of forming SAMs is through sequential adsorption, in which one molecule adsorbs onto a metal surface, followed by the adsorption of another molecule to the surface. These molecules create different patterns on the surface of the metal. In this research, octanethiol was adsorbed in its vapor phase onto a gold surface, and then exposed to a solution containing decyl thiocyanate (DTCN). Scanning tunneling microscopy is used to image the surface at each stage. Octanethiol forms ordered surfaces with some defects due the underlying structure or the arrangement of the molecules. The DTCN adsorbs and continues to displace octanethiol in defect areas on the surface, forming clusters. These studies help us better understand how to manipulate surface chemistry for biomedical applications.

Heidi Koenig (Thomas Jones, Chemistry) MacMillan-type Diels-Alder reactions using PAMAM bound imidazolidinone organocatalysts

Organocatalysts are an eco-friendly alternative to traditional catalysts, however they present challenges with their size, cost and efficiency. Dendrimers are symmetrically hyper-branched macromolecules that are an attractive framework for use as scaffolds for organocatalysts to overcome these problems. MacMillan-type asymmetric reactions are a possible application of polyamidoamine (PAMAM) dendrimer-bound catalysts that are expected to afford increased recovery of product and recyclability of the organocatalyst. Terminal sites of PAMAM dendrimers were functionalized with the MacMillan group's (2S,5S)-5-benzyl-2-tert-butyl-3-methylimidazolidin-4-one catalyst. These PAMAM dendrimer-bound catalysts show promising yield and recoverability in MacMillan-type organocatalytic reactions.

Taylor Loth (Annette Raigoza, Chris Schaller, Chemistry) Ring-Opening Polymerization of Cyclic Esters Using N-Heterocyclic Carbene

To improve and progress our CHEM 203 lab here at the College of Saint Benedict, we are modifying the catalyst of a ring-opening polymerization of a cyclic ester. The modification involves replacement of a traditional Lewis acid catalyst by using N-Heterocyclic Carbene (NHC) as a Lewis base catalyst. Through this research, we are hoping to improve conversion and the rate of this ring-opening polymerization of a cyclic ester. At the moment, no one else has looked into utilizing this catalyst when performing this polymerization in the setting of an undergraduate laboratory. Thus, in hopes of finding more answers, we are using this organic catalyst under standard polymerization settings and looking for the precipitation of a polymer after running the reaction. To run this polymerization reaction, we reacted an initiator, a monomer that was either caprolactone (CL) or L-Lactide (LLA), and NHC in toluene for one hour at 120 degrees Celsius. After the reaction was complete, HCl in MeOH was added and the solution was transferred to a beaker of hexanes, where it sat on ice so that a solid, white precipitate could form on the bottom of the beaker. Ultimately, we are hoping that these modifications will result in a more efficient and green way of running this polymerization reaction in an undergraduate laboratory setting.

Quinlen Marshall (Annette Raigoza, Chemistry) Adsorption of Fibrinogen Peptides on Patterned Self-Assembled Monolayer Surfaces

Self-assembled monolayers are formations of organic molecules that collect on inorganic surfaces through adsorption, forming both organized and

unorganized domains on the surface depending on different variables. The synthesis and study of SAMs can have large implications in biotechnology, nanotechnology, and pharmacokinetics. Past research has demonstrated defined domains and boundaries on gold surfaces occur regularly with octanethiol (OT) exposed SAMs. Fibrinopeptide A (FPA) is a short amino acid sequences situated at the amino termini of the alpha chain of the glycoprotein fibrinogen, which is converted to a tissue-based blood clot during tissue and vascular injury. Dynamic light scattering analysis has demonstrated limited aggregation of the peptide in water, and this factor combined with the relatively small size of the peptide makes it an ideal molecule for adsorption study on SAMs. Exposure of octanethiol patterned SAMs to biological molecules such as FPA has not been widely researched, and an understanding of their interactivity can be used to develop more efficient and effective biosensors or other surfaces analogous to those found in vivo. Scanning tunneling microscopy (STM) can be used to determine interactivity by imaging patterned SAMs at the molecular level.

Morgan Murphy (Annette Raigoza, Chemistry) Functionalization of Gold Nanoparticles with Organic Ligands to Modify Surface Properties

In order to use materials in biomedical and biotechnological applications, protein-surface interactions are important. These studies focus on the surface properties of gold nanoparticles, and their interactions with bovine serum albumin (BSA). Gold nanoparticles with a 100 nm diameter were functionalized using alkanethiol ligands with varying terminal functional groups that are hydrophobic or hydrophilic. The research included making, filtering, sonicating, and centrifuging samples of gold nanoparticles with alkanethiols. Solutions of the alkanethiols and gold nanoparticles were prepared and analyzed to determine a change in effective diameter and polydispersity of the samples using dynamic light scattering (DLS). Samples of gold nanoparticles increased in effective diameter after the addition of alkanethiols. The surface functionalization of gold nanoparticles can lead to changes in surface interactions with BSA.

Wendy Osei-Bonsu (Henry Jakubowski, Chemistry) Denaturation of DNA-labeled Molecular Beacons with Fluorophores and Quenchers

The focus of this research is to characterize the denaturation of double stranded (ds) DNA oligomers and single stranded DNA hairpins molecular beacons. We will be analyzing ds DNA containing 12 base pairs. One strand is labeled at the 5' end with a fluorophore (fluorescein -FAM) and has the following sequence: 5'-/56-FAM/TCC ACC TTC CCT-3'. The

second complementary strand is labeled at the end with Black Hole Quencher I (BHQ I), a quencher of fluorescein fluorescence when it close proximity. This strand has the following sequence: 5'-AGG GAA GGT GGA/BHQ1-3'. The single stranded DNA hairpin (which form a stem loop hairpin structure) is labeled at the 5' end with FAM and at the 3' end with BHQ I. The double stranded DNA and the single stranded DNA hairpin, if annealed correctly, should emit little fluorescence, but as the DNA denatures as a function of temperature or urea, the distance between the FAM and BHQ I will increase leading to an increase in fluorescence emission. We are attempting to elucidate the conditions necessary to denature the two oligomers of DNA to discern their structural and thermodynamic properties. We will determine the temperature and concentration of urea needed to fully denature the DNA samples using fluorescence spectroscopy. Graphs of fluorescence intensity as a function of temperature or urea concentration will be used to calculate the K_{eq} , ΔS , and ΔG for the denaturation. Obtaining these values can give us information about the structural and thermodynamic differences involved in denaturation and also renaturation of the dsDNA molecules. Difference in stability and renaturation rates should be observed for the hairpin, as renaturation is an intramolecular process, compared to the dsDNA. After these values are determined, interactions between our DNA oligomers and a target gene will be studied.

Ellen Otto (Alicia Peterson, Chemistry) Seasonal Effects on the Catalytic Ability of a Rhodium to Degrade a Groundwater Pollutant

Scientific research has shown trichloroethylene (TCE), a common groundwater pollutant, causes many health problems. The detoxification of TCE is achieved by removing chlorine atoms using the catalyst 5 wt % Rh/Al₂O₃ in the presence of 1 atm hydrogen gas at 25°C. In this study, gas chromatography is used to measure the rate of the reaction by analyzing the headspace of the reaction and monitoring the disappearance of TCE at different time intervals. The effectiveness of Rh/Al₂O₃ ability to detoxify groundwater is potentially impacted by other factors such as seasonal effects and other organic and inorganic material in the water.

Nicholas Seiler (Stuart Winikoff, Chemistry) Lab Development for Determining the Enthalpy of Vaporization of Solvents and Solvent Mixtures

Students in CHEM 205 Chemical Measurements Lab perform vapor pressure analysis of a sample to determine the enthalpy of vaporization. These studies focus on expanding the number of reagents used in this

experiment to provide students a wider range of samples to work with. Different solvents and solvent mixtures were tested to obtain standards for comparison with student data as well as to determine which species and concentrations yield discernible results. For each of these trials, data was collected for the voltage and temperature. This data was then used to generate pressure versus temperature curves and to obtain reference enthalpies of vaporization. With these adaptations, students will be able to better understand how vapor pressure and temperature are related through the enthalpy of vaporization using a pressure-sensing apparatus.

Abbey Whiting (Annette Raigoza, Alicia Peterson, Chemistry) Preparation and Characterization of Aryl Thiols on the Gold Surface for Defluorination Studies

Biosensors are necessary for the detection of organic toxins found in the environment which can lead to a variety of negative health effects. This research focuses on the formation of self-assembled monolayers (SAMs) of fluorinated arylthiols on gold (FATs), which will be selectively defluorinated using a rhodium catalyst. While fluorinated alkylthiol SAMs and arylthiol SAMs have been used as environmental sensors, FATs have not been explored. This research was done by preparing the arylthiol SAMs on gold surfaces and analyzing the surface formation with scanning tunneling microscopy (STM). STM images show ordered benzyl mercaptan on gold, formed by exposing the surface to the molecules in the vapor phase. STM images for thiophenol on gold, did not indicate the presence of an ordered surface. These results offer preliminary information on the assembly of FAT SAMs for potential use as sensors.

Communication

Sydney Caron, PaJou Thao (Emily Paup, Communication) Trailblazing Women's Voices: Coco Chanel and Hedy Lamarr

Coco Chanel and Hedy Lamarr both played intriguing roles during World War II. Both of their lives have been misunderstood and misinterpreted in one way or another throughout history. One was a trailblazing fashion designer with notorious connections, and one was a trailblazing scientist best known as a Hollywood bombshell. Our poster will attempt to portray the truth about their lives and projects during World War II as they worked on opposing sides and across the world from one another. We will compare and contrast the two, setting the record straight about their impact and legacy.

Daisy Cortez, Angelica Renteria (Emily Paup, Communication) Trailblazing Women's Voices: Maria Elena Salinas

Maria Elena Salinas, also known as “The Voice of Hispanic America” was born to Mexican immigrants which inspired her to become one of the best journalist for the hispanic community. Throughout her career, she expressed great interest in issues such as immigration, education, and philanthropy. She was an anchor for thirty-six years through which she expressed her strong voice for the non-english speaking communities. Through her popularity and influence, she has been a part of numerous foundations that represent women in media and the hispanic population.

Franchesca Cromett, Grace Kilgore (Emily Paup, Communication) Trailblazing Women's Voices: Kitty Weston and Mary Ellen Richmond

This presentation highlights two trailblazing women who have had a significant impact for women in society and health. This project will highlight two women. First, Kitty Westin is the founder of the Anna Westin Foundation (now known as The Emily Program Foundation). She speaks as a mother who lost her daughter in 2000 from an eating disorder. She is an outspoken advocate for eating disorders and spends a great amount of her time in Washington DC training advocates and meeting with members of Congress to advance the first bipartisan eating disorders specific bill to reach Congress in a decade, The Anna Westin Act. Second, Mary Ellen Richmond was a strong advocate for social welfare and social work practice, and she is known for being the first woman to fully establish social work as an occupation. Richmond worked closely with children and families, using practices such as case management and other professional intervention methods to best serve those in need.

Breanna Gates, Jia Zeng (Emily Paup, Communication) Trailblazing Women's Voices: Amb. Nikki Haley and Sen. Tammy Duckworth

This project will highlight trailblazing women of color in politics. Republican Nikki Haley was the first Sikh Governor in U.S. history, the first female Governor of South Carolina, and the current Ambassador to the United Nations. Democrat Senator Tammy Duckworth was the first disabled woman to be elected to the U.S. Senate, as she is a double-amputee Iraq War veteran. Born in Thailand, she is also one of the first Asian-American women in Congress. In 2018, she will be the first sitting U.S. Senator to give birth while serving in office. This poster will highlight the lives, careers, and accomplishments of both historic women in politics.

Ellie Hinrichs (Aric Putnam, Communication) @taylorswift13

Taylor Swift is a recognized worldwide musician, but how did she achieve this status? I argue that her usage of social media and self-promotion tactics have aided her in gaining and retaining fans. In an album by album analysis, I found that Swift's album release announcements all relied on social media platforms. Along with using the web for self-promotion, Swift also has a large social media presence allowing her to interact with her fans. This interaction portrays Swift in likeness to her fans, maintaining her likability and relatability. Swift's social media tactics provide example to others on how to use the internet to better themselves in the public eye.

Kendall Johnson (Jennifer Kramer, Communication) Weighty Talk: Fat women's resistance to weight stigma from medical providers

Introduction: With the current emphasis describing obesity as an "epidemic" both medical institutions and society at large, the common discourse has emerged to describe fat as bad, unhealthy, and "under personal control" (Budd et.al 2011). This belief, although not fully supported by evidence, results in discrimination among women during routine medical care. Purpose: To investigate the methods in which fat women experience stigma from their medical providers and ways for patients to resist further discriminatory communication using standpoint theory. Methods: Women who self-identified as obese were recruited for semi-structured interviews via electronic bulletin boards and word of mouth. Participant ages ranged from 24-60 years with 12 out of the 16 women holding Master's degree or higher level of education. Interviews were conducted by the lead author over telephone or video chat applications and were audio recorded. Interviews were transcribed and analyzed, revealing the following themes: my weight is not my problem, statements of medical preferences, stated identity/credibility, and changing doctors. Results: The study demonstrated ways in which medical providers blame health issues on weight and, in turn, the consequential forms of resistance from fat women. They study identified specific ways in which women enacted their standpoint to resist discriminatory treatment from providers. Conclusions: The medical setting is not immune from weight stigma. Fat women's experiences reveal the importance of being assertive during routine medical care by challenging providers' emphasis on weight as explanations for diagnosis/treatment.

Haylee Liestman, Lincoln Mullings (Emily Paup, Communication) Trailblazing Women's Voices: Rosa Parks and Malala Yousafzai

Throughout history, physical violence has been used to silence women's voices. Despite their activism occurring in two separate eras Rosa Parks and Malala Yousafzai are no different. Rosa Parks an activist during the Civil rights movement was arrested after refusing to give up her seat on the bus during a time of racial segregation. She stood up for her right to be seen as an equal citizen leading to the famous Montgomery bus boycott. Malala Yousafzai is a 20 year old woman who fights for the educational rights of girls. In Pakistan, she was shot in the head by the Taliban, but survived. She later went on to become the youngest recipient of the Nobel Peace Prize. Parks and Yousafzai are two women that impacted the lives of others through their words and activism. Although the women came from two different periods in history, the impacts they have made are timeless.

Macie Manning, Emily Thompson (Emily Paup, Communication) Trailblazing Women's Voices: Ruth Bader Ginsburg and Margaret Thatcher

Margaret Thatcher and Ruth Bader Ginsburg are trailblazing women in law and in politics. Margaret Thatcher was the first female Prime Minister of Great Britain and Ruth Ginsburg is only the second woman to be named a Supreme Court Justice. While both women worked on different continents, their careers ran parallel to each other in many ways. This poster will highlight their lives, careers, and accomplishments.

Cassandra Meyer, Madelyn Zinken, Denisha Demeritte (Emily Paup, Communication) Trailblazing Women's Voices: Women in Space

This group presentation will highlight the brilliant yet unheard voices of women who helped humankind explore the cosmos and the moon. These exceptional women include Katherine Johnson, Dorothy Vaughan, Mary Jackson, and Mae Jemison. This presentation will dive into their accomplishments such as exploring outer space, creating and unraveling the code that got humankind off the ground and into space. They remained under-celebrated through their success stories. These women have overcome countless challenges and has surmounted many gendered expectations, breaking barriers in a male dominated field of study. We want others to experience their stories and celebrate them as we have come to through our study and research of their lives and accomplishments.

Janna Quick, Marie Sedesky (Emily Paup, Communication) Trailblazing Women's Voices: Lise Meitner and Mary Claire King

Throughout history, accomplishments of women in STEM fields have been overlooked or credited to men. We want to highlight the accomplishments of two of these women, Lise Meitner and Mary-Claire King. Lise Meitner earned her doctorate in physics from the University of Vienna in 1906, and she went on to discover nuclear fission. Mary-Claire King is a geneticist whose research led to the discovery of the "breast cancer gene", and she went on to use her knowledge and resources to fight for human rights around the world.

Kaitlyn Rasmussen, Caitlin Reilly (Emily Paup, Communication) Trailblazing Women's Voices: Katharine Graham and Christiane Amanpour

This project will highlight the accomplishments of two revolutionary women in journalism, Katharine Graham and Christiane Amanpour. It will include a description of their early lives, how they broke barriers for women in media, and the impact they had on the world of journalism.

Sweetsel Ravelo, Haley Thelen (Emily Paup, Communication) Trailblazing Women's Voices: President Corazon Aquino

This project will be about the 11th president of the Philippines, Corazon Aquino, who was the first female to win the election and become the leader of the country. She was born January 25th, 1933 in Tarlac province, Philippines. She was known as the mother of Asian Democracy and through her presidency she successfully promoted non-violence and bloodless peace revolution for democracy against dictatorships. This led many to admire her not only for her but for the Filipino people, as well. President Corazon Aquino's first and boldest move was the creation of the Presidential Commission on Good Government (PCGG), which was created to go after the Marcos ill-gotten wealth; but the organization didn't last because of the PCGG being involved in corruption. Due to Corazon Aquino being such a strong woman that she was and expressing this through her presidency, repressive laws were eliminated while she was in office and restore civil liberties. In 1973, the "Marcos Constitution" was exterminated and this got rid of the Marcos allies, loyalists, supporters-dominated, and Batasang Pambansa (Former Parliament in the Philippines). After this she immediately created a Constitutional Commission, which she directed for the creation of a new constitution for

the nation. She passed away on August 1st, 2009 from colorectal cancer. She was president from February 25th, 1986 to June 30th, 1992.

Ellen Stensrud, Sarah Spaulding (Emily Paup, Communication) Trailblazing Women's Voices: Reshma Saujani and Sheryl Sandberg

The technology industry has grown and continues to grow at a rapid pace. This is in part to the many voices, innovators, and leaders pushing for success. Our project highlights two of these prominent voices, Sheryl Sandberg, the Chief Operating Officer of Facebook and Reshma Saujani, the founder of the non-profit Girls Who Code. Both women are leaders in their field and have efficiently used their platform to advocate and encourage women to break into these fields. Our project dives into some of their most powerful speeches, TEDTalks and books, while highlighting the many milestones that have brought them to this place.

Alexandra Williams, Jamie Weekley, Kailey Tillung (Emily Paup, Communication) Trailblazing Women's Voices: Ellen DeGeneres and Mindy Kaling

It's no secret that the comedy industry is gendered and that women tend to be underrepresented within it. We will showcase two of the most influential women in the comedy industry, Mindy Kaling and Ellen Degeneres. Mindy and Ellen have brought many smiles to many faces and we are excited to share their stories with the CSBSJU community. This will showcase their comedic journey, where they are today, and how they have influenced other women in comedy.

Education

Allison Cwikla, Natalie Frier (Catherine Bohn-Gettler, Education) Theoretical Analysis of the Impact of Emotion on Reading Comprehension

Cognitive products created by emotions and comprehension are essential contributors to an educational experience. Therefore, it is of interest to investigate concepts and theories of both emotion and comprehension in an educational setting. Specifically, it is known that emotion influences processes by which one comprehends textual material (Bohn-Gettler, C.M., & Rapp, D. N., 2014). Therefore, it is important to generate an organized, integrated theory of how emotions influence textual comprehension processes. In this proposal, we suggest the mapping of various emotion theories (i.e. Affect Infusion Model, Broaden and Build Theory, Global vs Local Processing) onto the RI-Val model, a well-accepted textual comprehension theory. We suggest that the selected theories of emotion

play a role in textual comprehension during integration and validation components of comprehension. Integration is the action of keeping relevant information activated during the resonance step of comprehension, and then linking it with prior text and background knowledge. During validation, integrated information is verified, and may be subjected to influences of emotion. Our proposed model maps various key concepts of the Affect Infusion Model and the Broaden-and-Build theory of emotion onto the RI-Val model of reading comprehension during both integration and validation processes to yield a superimposed theory. The proposed theoretical analysis will contribute organization and the fostering of new ideas in research relating emotion and reading comprehension.

Katie Langer, Nicole Praska (Catherine Bohn-Gettler, Education) Proposed influences of emotion on resonance within the RI-Val model of reading comprehension

Comprehension of a text is vital for learning and understanding. The RI-Val model is a theory of comprehension that combines processes of resonance, integration, and validation while reading a text. This analysis focuses on resonance, which is a passive process that occurs when relevant information is activated in memory (within a semantic network) during reading (Cook & O'Brien, 2014). However, factors that influence resonance remain underspecified. In particular, emotions may play a role in comprehension and resonance. Specifically, congruence between text and reader emotions may affect the degree of resonance or activation achieved. For example, if emotions between the reader and the text are incongruent (i.e. happy reader and sad text), resonance could lead to a narrower spread of activation than when these emotions are congruent. This could be connected to emotional arousal and activation, as discussed by Mouw et al. (2017). However, the affect infusion model (Forgas, 1995) specifies how particular emotion valences can likewise influence spread of activation. With a negative emotional state, the connections made between the content of the text and prior knowledge may be narrower, while a more activated or positive emotional state may lead to a broader spread of activation. This theoretical analysis has practical implications for reading instruction and students' strategies for comprehension.

Sabrina Urick, Maly Lor (Catherine Bohn-Gettler, Education) The influence of emotion on top-down models of comprehension

The process of comprehension consists of top-down components that include inferences, standards of coherence, and goals. In terms of standard

of coherence, a higher standard of coherence is ideal because it facilitates inference generation and understanding. Inferences are a critical component that contribute to comprehension, because they allow readers to develop a deeper understanding of the material. Goals and standards are influenced by factors such as the type of task, the reader's emotion(s), actions, knowledge, and beliefs. However, emotions are understudied in this field. Emotions may influence the reader's standards of coherence. Negative emotions may encourage local inferences about the text because lead individuals to be more egocentrically focused. A reader experiencing more positively valenced emotions may be more likely to make global inferences, indicating a more comprehensive and cohesive understanding of the text. Therefore, a reader experiencing a negative emotion may have a lower standard of coherence than a reader experiencing a positive emotion. Importantly, goals, inferences, and standards of coherence will vary from individual to individual based on emotion, prior knowledge, and skill level. It is important to understand how emotion may influence top-down models of comprehension because it allows us to understand the holistic understanding of students.

Exercise Science and Sport Study

Madeline Bremel (Mary Stenson, Exercise Science and Sport Study) Efficacy of technology based and in-person health education in college-aged women

Purpose: The purpose of this research was to determine whether an in-person or technology based bone health intervention produced greater change in knowledge and positive bone health behaviors in college-aged women.

Methods: 30 college-aged women were randomly divided into three groups: personal intervention (n = 10), technological intervention (n = 10), and control (n = 10). Both intervention groups received identical information regarding the importance of bone health and appropriate behaviors for maintaining strong bones including weight bearing exercise, calcium consumption, and vitamin D consumption. The technology group received the information via an online video, and the personal group via a one-on-one health intervention. Changes in bone health knowledge and behavior were measured via questionnaires designed to address specific topics from the intervention. Knowledge was measured immediately before and after the intervention. Behaviors were measured before the intervention and one-month post-intervention. Bone health behaviors were categorized into changes in exercise frequency, exercise duration, food frequency, and food quantity.

Results: A significant interaction was found between time and group for knowledge ($F(2,27) = 13.5$; $p < .000$). Post hoc analysis revealed the personal group experienced a significantly greater change in knowledge than the control ($p = 0.022$). The change in knowledge between the technology and personal group was also not significantly different ($p = 0.19$). There was no significant difference between groups for change in food frequency behavior ($F(2, 27) = 2.10$; $p = 0.14$), food quantity behavior ($F(2, 27) = 1.52$; $p = 0.24$), exercise duration behavior ($F(2, 27) = 3.16$; $p = 0.059$), or exercise frequency behavior ($F(2, 27) = 2.51$; $p = 0.1$).

Conclusions: The in-person health education intervention produced greater gains in knowledge than the control intervention, and neither the in-person nor the technology intervention was effective at encouraging positive behavior changes. Any potential gain in knowledge from the intervention did not lead to a corresponding significant change in behavior.

Matthew Burgstahler (Mary Stenson, Exercise Science and Sport Study) Effects of Guided Mindfulness Meditation on Perceived and Biomarker Stress in a Pre-Healthcare College Student Population

Chronic stress is highly prevalent in pre-healthcare college students and is associated with negative effects on mental, emotional, and physical health. Mindfulness is linked to increased immune system function, decreased psychological distress, improved well-being, reduced anxiety, and improved empathy and compassion. Heart rate variability (HRV) offers an evidence-based physiological measure of biomarker stress indicating the relationship between the sympathetic nervous system and parasympathetic nervous system. PURPOSE: To examine the relationship between guided mindfulness meditation and perceived and biomarker stress using a web-based intervention method. METHODS: Thirty-three pre-healthcare college students (ages 19-22 y/o, $M = 20.48 \pm 0.94$) were asked to complete 5-12 min of daily meditation online 6 day/week for 8 weeks. Stress (Perceived Stress Scale [PSS]), anxiety (State [STAIst] and Trait Anxiety Inventory [STAItr]) and mindfulness (Five Facet Mindfulness Questionnaire [FFMQ]) were measured pre and post intervention. 3 min HRV analysis using the emWave Pro was conducted pre and post intervention. Total minutes of meditation for each participant were collected using EdPuzzle. RESULTS: Paired Samples t-tests and Bivariate Correlations ($p > 0.05$) were performed to examine the differences and relationships between minutes of mindfulness meditation and PSS, STAIst, STAItr, FFMQ, and HRV. The entire dataset was analyzed then broken into 4 quartile groups based on minutes of mindfulness meditation. Significant differences were found pre to post intervention for all variables:

HRV coherence score ($t=-2.9$, $p=0.007$, $d=0.469$), PSS ($t=4.28$, $p<0.000$, $d=0.804$), STAIst ($t=3.45$, $p=0.002$, $d=0.554$), STAItr ($t=3.7$, $p=0.001$, $d=0.423$), and mindfulness total (FFMQ) ($t=-5.6$, $p<0.000$, $d=0.689$). Group 1 ($n=8$) (0-184.25min) had a significant increase in total mindfulness ($t(7)=-2.45$, $p = 0.044$). Group 2 ($n=9$) (184.26-267.60 min) had a significant increase in total mindfulness ($t(8)=-2.42$, $p = 0.042$). Group 3 ($n=8$) (267.61-350.24min) had a significant decrease in state anxiety ($t(7)=3.22$, $p = 0.015$) and a significant increase in total mindfulness ($t(7)=-2.746$, $p = 0.029$). Group 4 ($n=8$) (350.24-424.05min), had a significant decrease in stress ($t(7)=4.43$, $p = 0.003$), a significant decrease in state anxiety ($t(7)=3.73$, $p = 0.007$), a significant decrease in trait anxiety ($t(7)=4.59$, $p = 0.003$), and a significant increase in total mindfulness ($t(7)=-3.75$, $p = 0.007$). CONCLUSION: 5-12 minutes of daily mindfulness meditation is associated with decreased stress, anxiety, and increased mindfulness in a pre-healthcare college student population with greater changes observed following more minutes of mediation.

Miranda Kremers (Mary Stenson, Exercise Science and Sport Study) Differences in Anxiety and Mental Health Resource Knowledge and Use on Campus

Anxiety in college students is related to an increased risk for other mental health disorders. Males and females experience stress differently and utilize and access mental health resources differently PURPOSE To understand the relationship between gender, anxiety, and access to and use of mental health services. METHODS 102 participants (23 Male, 79 Female; ages 18-22) completed an anonymous three-part online survey consisting of demographic questions, the Generalized Anxiety Disorder-7 (GAD-7), and 8 mental health resource knowledge and access questions. RESULTS The average GAD-7 score for males was 8.09 ± 5.18 and 7.96 ± 6.14 for females, both were out of a total 21 points. No significant differences existed between the GAD-7 scores for men and women ($t(100)=0.089$, $p=0.929$). Men were significantly less aware of mental health resources on campus than women ($t(27)=2.30$, $p=0.029$); and men were significantly less likely to utilize campus mental health resources than women ($t(74)=2.70$, $p=0.009$). CONCLUSION Gender influences awareness and utilization of mental health resources on campus. Men are significantly less likely to be aware of and to utilize these resources. Campus mental health services can use this information to target campaigns towards men in order to reduce anxiety in college-aged males.

Elizabeth Latterell (Donald Fischer, Exercise Science and Sport Study) Case Study:
Breathing Techniques as a Tool to Manage Anger Behaviors of a Child with
Multiple Behavioral and Emotional Disorders

Many children within the education system in the United States struggle with behavioral and emotional disorders throughout their lifetime. Anger management is a particular problem in the school setting due to safety concerns and the disruptions of the learning environment. Typical strategies to address anger behaviors include having a separate area to calm down, wearing compression vest, sitting under weighted blankets, and breathing techniques. This case study, examines the use of breathing techniques to manage the anger relate behaviors of a child with behavioral and emotional disorders in an after school program. Over the observation period, the number of anger events remained constant, but the severity of the events reduced greatly when breathing techniques were initiate as the child became visibly agitated. The incorporation of breathing techniques may be a useful strategy to reduce the severity of the anger behaviors in a school setting.

Haylie McClung (Donald Fischer, Exercise Science and Sport Study) Death and the
Dying Process Within Hospice Care: A Case Study Analysis

There is a definitive moment when we are born into this world, but when does dying begin? Are the end of life stages the same for everyone? This case study compares the typical death and dying process, as described in the medical literature, to one patient's experience with the death and dying process. The effect of hospice care in assisting the individual in their final stages is also examined. Observations show that death and dying is an individualized process. Individuals providing hospice care should tailor the care provided to the client's experience, as well as to the client's values and beliefs about death and dying.

FoCuS

Savanna Nolan (Christen Strollo Gordon, FoCuS) Characterization of locally
sourced clay

This project aims to classify and characterize samples of clay via spectrochemical methods. Cation exchange capacity and iron content will be assessed. A high cation exchange capacity results in a more chemically reactive clay which may be the cause of the color changes in clay sample when fired. Cation exchange capacity has been used to measure the reactivity of soil samples, but less has been done on clay samples. Changes

in the mass of iron in clay may contribute to the color changes when firing. Calibration curves will be prepared to quantify iron as well as ammonium and cation exchange capacity. This research will get our foot in the door, for clay sample testing.

Hispanic Studies

Alexandra Castellanos (Nelsy Echavez-Solano, Hispanic Studies) Enseñado Ingles Efectivamente/ Teaching English Effectively

In the United states, about 6 million children speak Spanish as their first language. For those children it may be hard to learn English easily and/or effectively. Having students learn English effectively gives Spanish speaking students the chance to show all their abilities in English speaking classrooms. In order for students to feel connected and learning English in effective manners, teachers can focus on three methods to help their bilingual students. Specifically, with Spanish speaking students, teachers can focus on connecting with the student through the language, culture, and a good student-teacher relationship. Teachers can help teach English effectively to Spanish speaking students by learning the language, not fluently but enough to help the student with directions and basic phrases needed in a class room. By understanding and even involving the culture in classrooms helps the student form connections to English and Spanish. Once more connections are formed in the classroom, a student can also create a positive and strong relationship with their teacher. With that relationship, their interactions within the classroom change and they feel more confident about their learned English and what they are learning. With just three small factors to apply to a classroom, Spanish speaking students are able to interact and work better in their classrooms.

Alexandria Daggett (Patricia Bolanos-Fabres, Hispanic Studies) Una solución para la continuidad de cuidado médico para los latinos e hispanos

En el sistema médico en los Estados Unidos, hay varias barreras al acceso adecuado, especialmente para la población latina e hispanoparlante. En adición a las barreras que tienen varios grupos minoritarios en acceder el sistema de salud, los latinos e hispanos que no hablan el inglés tienen barreras idiomáticas y culturales. El sistema de intérpretes no es suficiente para atender las necesidades de los latinos e hispanos con dominio limitado del inglés. Es necesario que el sistema sanitario use un modelo exhaustivo para servir mayor a partidarios, navegantes y pacientes. En esta obra, voy a discutir la importancia de la continuidad de cuidado sanitario, las barreras que los latinos e hispanos experimentan, y las soluciones para que ellos

puedan mejorar su salud y accedan a servicios sanitarios al mismo nivel de calidad como angloparlantes. Voy a explorar el rol del intérprete y defensor de pacientes en una escena clínica u hospital. La investigación viene de la literatura e investigaciones ya existentes en adición a entrevistas informáticas con profesionales médicos de varios puestos en un hospital pediátrico.

In the United States Healthcare system, there are various barriers to adequate access, especially for the Latino/Hispanic and Spanish-speaking population. In addition to the barriers that various minority groups face in accessing the health system, Latino and Hispanic patients that do not speak English face idiomatic and cultural barriers. The interpreter system is not sufficient to attend to the needs of Latinos and Hispanics with Limited English Proficiency (LEP). It is necessary to change to a healthcare system with system advocates and navigators for patients with Limited English Proficiency. In this work, I will discuss the importance of continuity of care, the barriers that Latino and Hispanic patient experience, and the solutions so they can improve their help and access health services at the same quality level as English-speakers. I will explore the role of the LEP Patient Family Advocate in a clinical or hospital setting. The research comes from a literature search of pre-existing research in addition to information interviews with medical professionals of various titles in a Pediatric hospital.

Anna Muller (Nelsy Echavez-Solano, Hispanic Studies) Machismo and Domestic Abuse in Latin America / Machismo y Abuso Domestico en Latinoamérica

Abstract

Domestic abuse, an epidemic that affects so many all over the world has been an ongoing issue for centuries. Many countries, in their fight for gender equality have come to a better understanding of the importance of healthy familial relationships, but some countries still struggle with seeing the equality between men and women in the household. Many of these countries are of the Middle East and Africa, where the women's rights movements are still in early stages, or are hardly existent at all. But, there are countries that have laws advocating women's rights and against domestic abuse such as those of Central and South America, which still have huge problems with emotional, sexual, and physical abuse to the same caliber of those countries without developed protection laws for women. This is attributed largely to the machismo culture and its traditional aspects of dominance, superiority, aggression, over sexualizing women, high sexual activity and womanizing behavior, along with hyper-masculinity that have not changed throughout the centuries. Machismo influences and

contributes to a society that turns their heads the other way to situations of domestic abuse because of long-standing tradition of a sense of pride in a highly masculine and dominant male role in the family. Machismo negatively affects the women of Latin America as well as the children because of their upbringing in a household of abuse and their sense that this machista lifestyle is the norm. Psychologically, the hyper-masculine behavior comes from a sense of inferiority rooted in the rearing of young boys. The fathers and their dominant presence in the family along with the power they hold over the women and children in the family can cause a sense of inferiority. Because of this sense of inferiority the young men grow up with, this machista mindset and continue the behaviors of their fathers and the cycle of machismo and domestic abuse continues.

John Nguyen (Nelsy Echavez-Solano, Hispanic Studies) El cacao: comida de los dioses, comida de la gente

Few foods and fruits have left such a deep imprint in history as the cacao seed has. Beginning with the Mayans, Aztecs, and the Olmecs, cacao has been used as a bitter beverage, currency, and even medicine. Throughout the ages, the seed has transformed its identity to include people from all types of social and economic classes and can be seen as a way to influence and provide agency.

This paper explores the many ways that the plant has influenced the lives of Guatemalans and other Central American nationalities through historical and cultural values, globalization and its effects on the local economies, and how cacao affects women in the commodity chain. It is hoped that this study will inform about the integral role that cacao has in not only maintaining the historical connection of the Mesoamerican civilizations and their descendants today, but also improving the standard of living for local communities.

Nicole Pfeffer (Elena Sanchez Mora, Hispanic Studies) The End of DACA. Now What Do We Do?

The United States immigration policy – which has been influenced by the conflictive political relationship it has had with Latin American countries--, has changed over the years, but xenophobia has been a constant. As the Trump administration seeks to replace DACA (Deferred Action for Childhood Arrivals) —a temporary policy not intended to obtain US citizenship--, Canada's merit-based immigration system has been seen as a better alternative to the current US system based on reuniting families.

While there is no single way to solve this problem, it is clear that we can create a better immigration policy for the future.

Huba Sekesi (Nelsy Echavez-Solano, Hispanic Studies) Language shift and language maintenance of hispanics in the US

Almost 17% of today's population in the US has Hispanic and Latino American roots and 47 million of a total of 52 million are American citizens. They compose the second largest ethnic group nationally and their language is one of the most recognizable aspects of their heritage. Even though, the US has the second biggest Spanish-speaking population in the world, it has yet to be recognized as an official language. The use and value of the language has changed over the past various generations due to historical, political and sociological factors, and therefore the maintenance of Spanish discourse has become a concern. As a result, a linguistic phenomenon, known as Spanglish, has evolved from the contact of the Spanish and English language.

Samantha Strout (Nelsy Echavez-Solano, Hispanic Studies) DACA: Past, Present, and Future

This project explores the details of the Deferred Action for Childhood Arrivals program, abbreviated DACA. This project talks about the political and social realms of DACA's past, present, and future. The details presented in this work deal with all sides of the DACA spectrum including how other foreign governments feel about the present proceedings of DACA, how our government plans to come to a solid solution about this program, the sentiments of those who receive benefits from this program, and the way DACA is perceived to American citizens. This project also demonstrates that a loss of a cultural identity is at stake the longer the DACA program remains without a definitive solution.

Honors

Kaitlin McBee (James Crumley, Honors) Mass Extinction by Asteroid

My project is about finding the probability of an asteroid mass extinction. Using statistics from information on past asteroids, I have been developing a function that can calculate the probability of an asteroid large enough to cause planet wide devastation hitting the Earth.

Integrative Science

Katherine Banovetz (Donald Fischer, Integrative Science) Case Study: Workplace Wellness Programming for an Individual with Mild Mental Retardation

Obesity is a major health problem in the world, especially for people with mental retardation. Additionally, individuals with mental retardation frequently demonstrate low fitness levels and work productivity. At WACOSA, a place for individuals with disabilities to work and serve their community, wellness classes are incorporated every day for a fourteen-week period. This case study will examine the effect of a 14-week wellness program on one individual's health related variables and work productivity. The results of this case study indicate workplace wellness programming can be an effective strategy to improve health and work productivity.

Donovan Inniss (Donald Fischer, Integrative Science) Uptake, Efficacy and Sustainability of a Fitbit Based Lifestyle Program for Patients with Non-Alcoholic Fatty Liver Disease (NAFLD)

Abstract: Non-Alcoholic Fatty Liver Disease (NAFLD) is a highly prevalent disease affecting approximately 30% of the US population. It is associated with metabolic diseases including diabetes, obesity, and high cholesterol. Currently there are no FDA approved pharmacologic therapies to halt or reverse liver injury. Prior studies have found that improvement of liver histology and metabolic parameters has been achieved with increases in physical activity and nutritional lifestyle interventions. However, it has been difficult for many patients to initiate and maintain these lifestyle changes. Hypothesis & Aims: We hypothesize that a less vigorous and minimally time-consuming approach to implement these lifestyle changes will serve as an effective and sustainable option for patients. Therefore, the goal of this study is to assess the efficacy, feasibility, and sustainability of a technology (Fitbit) based lifestyle intervention program for patients with NAFLD. Methods: To assess this, a pilot trial of 40 patients was designed. To date, 23 patients have been enrolled. Baseline metabolic, physical activity, nutritional and Health Related Quality of Life (HRQOL) parameters were collected for each patient, and will be compared to the same measures taken at the end of the 6-month study. Over the course of the study, patients are given weekly individualized feedback on their step counts. Results: The current approached/enrolled ratio of 52%, is comparative to other lifestyle based programs and is indicative of the general appeal of the program to this patient population. The median age of the cohort is 52. 5 years, with 52% males and 96% whites. The median baseline BMI is 33. 4 and 39% have diabetes. Median baseline AST is 40 and HgA1c is 6. On the Fibroscan the median F score is F0-2 and CAP

percentage of steatosis is 348. Among the enrolled patients, 74% are wearing the Fitbit $\geq 80\%$ of the time. The baseline weekly step count was 5,733 steps and 50% of patients had stable or increasing step counts thus far over the course of the study. Conclusion: As enrollment is ongoing, knowledge gained from the study will improve understanding of the optimal methods to help implement lifestyle changes for patients with NAFLD. This study can then be used to help design larger trials comparing structured lifestyle intervention programs to other NAFLD therapies.

Mathematics

Antonio Arellano, Elizabeth Bjerke, Madeline Bodnar, Eva Boncich, Amanda Campbell, Michaela Delmont, Lucy Dornbach, John Garcia, Sharaia Goble, Shanna Grambart, Isabella Johnson, Molly Johnson, Grace Kerner, Mary Kolasa, Alexis Lawinger, Logan Lintvedt, Keegan McSherry, Brittany O'Neill, Hannah Pfannenstein, Jordan Sales, Dalia Serrata, Jenna Stanze, Brianna Theisen, Yuritz Vazquez (Bret Benesh, Mathematics) Math 121: Individual Project Presentations

Students will be explaining why certain arithmetical tricks work. For instance, you can tell that 582 is divisible by 3 by noting that $5+8+2=15$ is divisible by 3. However, this trick does not work for, say, 7, since 14 is divisible by 7 by $1+4=5$ is not. The students have been working on these types of problems throughout the semester.

Kayla Borglund, Kezia Burrows, Hannah Calton, Madeline Duncan, Kylie Forystek, Michael Gruber, Morgan Holthaus, Julia Johnston, Rachel Jungmann, Kallie Kampsen, Gianni LaPanta, Ashlynn Mattson, Kaylee McGovern, Xia Nelson, Anna Schulzetenberg, Mackenzie Schurhamer, Abbey Schwob, Mary VanHeel, Kadee Vesledahl, Abigail Weidner, Sydney Weigold, Lauren Wicka, Hailey Wimmer, Kyle Yetzer (Bret Benesh, Mathematics) Math 121: Individual Project Presentations

Students will be explaining why certain arithmetical tricks work. For instance, you can tell that 582 is divisible by 3 by noting that $5+8+2=15$ is divisible by 3. However, this trick does not work for, say, 7, since 14 is divisible by 7 by $1+4=5$ is not. The students have been working on these types of problems throughout the semester.

Thomas Fulton (Thomas Sibley, Mathematics) How Statistics Benefited Modern Agronomy

Before Ronald A. Fisher introduced his book *The Design of Experiments*, statistics on field plots were useless. Fisher created an outline for better designed experiments. Consequently, understanding that the makeup of the

experiment can affect the statistical tests of crops helped seed technology grow to where it is now. The two seed layouts, Latin squares and random assignments, have advantages and disadvantages but choosing them is based on the experimenter's knowledge of the land. This project will show, through ANOVA tables, when it is appropriate to use each of these seed assignment techniques.

Lindsey Hoeschen, Emily Twardy, Debra Dunham, Kathryn Dempsey (Thomas Sibley, Mathematics) PI-thagoreans à la Mod

A "mod" is a special way of limiting all numbers into a smaller pool of numbers. For example, adding 9 hours to 4 hours on a clock gives us 1, not 13. So, $9+4$ is congruent to 1 (mod 12).

A Pythagorean triple is three natural numbers a , b , c such that $a^2 + b^2 = c^2$. We know that all Pythagorean triples in the integers stay congruent in any mod. However, not every modded triple can be "traced back" to a pythagorean triple in the integers. We set out to determine when a set of triples in mod n can not come from the integers.

With the example, $9+4$ is congruent to 1 (mod 12), $3^2 + 2^2$ is congruent to 1^2 (mod 12), and we know that this example cannot be traced back to the integers.

Kaylee McGovern (Bret Benesh, Mathematics) Explaining the Divisibility Rule

I explain the reason why the shortcut for determining whether a number is divisible by 3 is valid from a mathematical standpoint. I do this by considering the relationship of 3 to a base ten system and why digits will add to a multiple of three because of resulting patterns.

Anna Schulzetenberg (Bret Benesh, Mathematics) Divisibility by 3 Explanation

There is a fast and easy way to determine if a number is divisible by 3 in base ten. If all the digits of a number are added together and the sum is divisible by 3, the whole number itself is divisible by 3. My presentation poster will give an explanation for why this method works.

Abbey Schwob (Bret Benesh, Mathematics) Divisibility by 3's

My project will demonstrate why you can see if a larger number is divisible by 3 by adding the digits together to see if the sum of the digits is divisible by 3. My poster will have an explanation for why this method works in base 10.

Nutrition

Zoe Boehmer (Emily Heying, Nutrition) Investigating dietary habits and health risk factors of vegetarian and omnivorous college-aged students

Background – Previous research on vegetarian diets have shown improvement in cardiovascular health, body composition, and dietary habits. College-aged students are a unique population group to study if the same perceived health benefits of following vegetarian diets exist.

Objective – The objective of this study was to compare the cardiovascular health, body composition, and dietary habits between college students consuming vegetarian diets and non-vegetarian (omnivorous) diets.

Methods – One time measurement with 46 participants (25 non-vegetarians and 21 vegetarians) where height, weight, BMI, body fat percentage, blood pressure, and Hemoglobin A1C were collected. A General Nutrition Knowledge Questionnaire and a 24-hour dietary recall (using ASA-24 software) was also administered. Independent sample T-tests were used to statistically analyze data.

Results – No significant difference existed for anthropometric measures, BMI, body fat percentage, blood pressure, Hemoglobin A1C, or the General Nutrition Knowledge Questionnaire between the two groups. Analysis of the 24-hour dietary recall found no significance for iron, calcium, sodium, monounsaturated fat, polyunsaturated fat, saturated fat, and vitamin D between vegetarians and non-vegetarians. Potassium intake was higher in vegetarians (1573.69 + 540.38) than non-vegetarians (1224.59 + 322.95 mg) ($p = 0.0086$). Dietary fiber intake was also higher in vegetarians (30.23 + 8.09 g) than non-vegetarians (10.41 + 3.35 g) ($p = 0.0019$) and sugar intakes were significantly higher in vegetarians (56.38 + 16.69 g) than omnivores (42.53 + 16.56 g) ($p = 0.0059$). Protein was significantly higher in non-vegetarians (43.58 + 10.39 g) than vegetarians (32.74 + 10.09 g) ($p = 0.00064$).

Conclusion – Vegetarian diets provide no evident improvement in weight, BMI, body fat percentage, blood pressure, or Hemoglobin A1C in college-aged students in comparison to college-aged students who consumed an omnivorous diet. Increased intake of potassium and dietary fiber may result from following a vegetarian diet, which may improve health as potassium and dietary fiber are important nutrients that are often low in a typical American diet.

Hosanna Fortmeyer (Emily Heying, Nutrition) Investigating CSA Member Engagement with Recipe Demonstration Videos

Video-based food education and demonstration is increasingly popular as a method of reaching audiences. Meanwhile, members of Community Supported Agriculture (CSA) programs often seek help with utilizing the produce in their shares and could potentially benefit from visual food demonstration. The goal of this pilot study was to determine the effectiveness and utilization of visual food demonstrations by CSA members in St. Joseph, Minnesota. An initial online survey gauged participant interest in demonstration videos. Initial interest by participants (n=29) was high, as 97% of participants responded yes or maybe when asked how likely they were to view recipe demonstration videos accompanying CSA shares. However, only 34% of participants indicated they would be more likely to make the recipe. Three recipe demonstration videos (featuring Chinese cabbage, beets, and collard greens) were made and uploaded to YouTube during the CSA season, and participants were asked 2-3 questions related to the videos on online surveys. At the time of each survey, only about 20% of study participants had watched the video corresponding to that share. Participants viewing the videos at the time of the survey reported the videos to be somewhat or very helpful. Although participants who watched found the videos helpful, for the majority it did not translate into making the recipe or referring more to the newsletter recipes. Demographics, prior confidence of participants, and timing of surveys could also be contributing factors to video demonstration engagement, and future research should involve more investigation into these factors and other barriers to video engagement and implementation.

Madison Holm (Emily Heying, Nutrition) THE INFLUENCE OF VARIOUS TYPES OF PRE-PAID MEAL PLANS ON THE NUTRITIONAL STATUS AND BODY COMPOSITION OF UNDERGRADUATE STUDENTS

Introduction

Most colleges offer different pre-paid on-campus meal plan options allowing students to dine on campus at varying frequencies. Campus meal plans may make it easier to obtain healthy food but also unhealthy food. In relation, college students are gaining weight at a rate that is six times higher than the general-public. Overall, campus food and pre-paid meal plan options may influence college student's nutrient intake and weight gain. This study examines the differences in nutrient intake and anthropometric

measurements between various campus meal plans in undergraduate students attending a rural, private college.

Methods

A total of 84 male (n=25) and female (n=59) undergraduate students having various campus meal plans were recruited. Participants completed one, three-day food record and had anthropometric measurements (weight, height, waist/hip circumference, body fat percentage) taken during an individual meeting. Food records were entered into ESHA nutrient data software and analyzed. Average BMI, body fat percentage, and nutrient intake were assessed for each meal plan group and then compared.

Results

There were no significant differences in nutrient intake, BMI (p value=0.45), and body fat percentage (p value=0.501) between the meal plan groups. Fruit (cups) (p value=0.087), fat (g) (p value=0.088), and iron (mg) (p value=0.093) intake were all trending towards significance.

Conclusion

Having a prepaid campus meal plan may not influence nutrient intake and anthropometric measurements in students who attend a rural, private college. Future research should assess specific student demographics, amount of nutrition education, and time spent participating in physical activity to better determine the significance of college meal plans on the health of students.

Brianna Johnson (Emily Heying, Nutrition) NUTRIENT INTAKE AND NUTRITION KNOWLEDGE IN LACTOSE INTOLERANT AND NON-LACTOSE INTOLERANT COLLEGE-AGED FEMALES

Background: Lactose intolerant individuals often exclude dairy food sources from the diet, increasing risk for nutrient deficiencies. Lactose intolerance correlates with health conditions such as osteoporosis, type II diabetes mellitus, and hypertension. However, lactose intolerant individuals can consume adequate amounts of calcium and vitamin D without the aid of dairy products. Nutrition education is one effective way of teaching lactose intolerant individuals prone to nutrient deficiencies how to combat health problems.

Objective: The goal of this study was to analyze how a one-time education presentation impacts nutrient intake and general nutrition knowledge between lactose intolerant and non-lactose intolerant college-aged women.

Methods: Nutrient intake was analyzed in participants (n = 24; 12 lactose intolerant, 12 non-lactose intolerant; 24 females) through three separate 3-day dietary food records taken before the intervention (one-time education presentation on importance of calcium and vitamin D intake), one week post intervention, and one month post intervention.

Results: Body mass index (BMI) and blood pressure were similar between lactose intolerant (n=12) and non-lactose intolerant (n=12) participants. Supplementation with vitamin D and calcium was more common among lactose intolerant participants than non-lactose intolerant participants. There was a significant difference in saturated fat intake between lactose intolerant and non-lactose intolerant participants (p=0.01). There was no significant difference in calcium and vitamin D intake (with and without supplementation) between lactose intolerant and non-lactose intolerant participants. There was a significant difference in total caloric intake (p=0.006), dairy intake (p=0.002), and vegetable intake (p=0.047) between lactose intolerant and non-lactose intolerant participants. There were no significant differences in participants' nutrient intake over time. The education intervention was not effective.

Conclusion: The one-time education presentation had no effect on nutrition knowledge or nutrient intake one week and one month post intervention. Both lactose intolerant and non-lactose intolerant participants were deficient in calcium and vitamin D. College students should focus on eating more nutrient-dense foods.

Kendall Johnson (Emily Heying, Nutrition) Investigation of text message and social media support on daily steps and health risks of CSB/SJU staff and faculty members

INTRO: Almost a third of the world's population are not active enough for ideal health. Promoting varying approaches to increase physical activity and encourage an active lifestyle is a public health priority. Evidence suggests community walking programs and technology applications can promote physical activity, potentially lowering the risk for chronic disease risk.

PURPOSE: To assess and compare the impact of pedometers, text message, and Facebook group support on daily step completion and health risk factors in College of Saint Benedict and Saint John's University staff and faculty members. METHODS: Participants (n=30; 25 female and 5 male) tracked daily step count for one week before being randomized into three groups for a 6 week pedometer intervention: "Pedometer Only" group (n=10), a "Pedometer + Text Message" group (n=10), and a "Pedometer + Secret Facebook Group" group (n=10). Daily steps were tracked via an online form throughout the intervention. Blood pressure, fasting blood glucose, body mass index and a physical activity survey were assessed before

and after the intervention period. RESULTS: Daily step count did not differ between groups during the baseline week prior to intervention ($p=0.98$). There was no difference between groups both pre and post intervention for systolic and diastolic blood pressure, BMI, and fasting blood glucose. About 63% of participants spent 6+ hours sitting per work day at baseline. 63% of participants indicated they participated in moderate intensity physical activity at least two to three times per week. Steps did not significantly increase from baseline throughout the intervention ($p = 0.477$), and there was no interaction between treatment group and time ($p = 0.553$). Participants completing the post-intervention survey ($n=27$) indicated the program was “helpful” ($n=19$) and accountability arose as a theme for motivation ($n=7$). CONCLUSION: The effectiveness, feasibility, and nature of text message and social media support using Facebook needs further investigation in order to effectively use technology in future health promotion. Results indicate the need for longer, more personalized programs but provide an encouraging starting point for community interventions involving technology.

Holly Kidrowski (Emily Heying, Nutrition) Factors that Influence Food Choice and Perceptions Of GMOs in an Undergraduate Student Population.

There is a lot of controversy surrounding GMOs due to the advances in biotechnology and the lack of biotechnology knowledge among the general public. While GMOs propose solutions to common agricultural problems, many consumers avoid purchasing GMOs. The objectives of this study were to compare undergraduate students' biotechnology knowledge to their overall perception of GMOs and determine if these influence food purchases. A questionnaire asking about biotechnology knowledge, biotechnology perception, GMO influences, and factors influencing food choices was sent out the undergraduate population at the College of St. Benedict and St. John's University. A total of 173 participants completed the questionnaire. Participants ranked cost, healthiness, and taste as the greatest influences when purchasing food products. Natural science division majors were less concerned about cost than other major divisions (humanities, social science, etc.). Biotechnology knowledge did not differ between natural science division majors (score = $8.8 + 1.7$ out of 11) and other division majors (score = $8.3 + 1.8$ out of 11). Self-reported nutrition knowledge and the number of nutrition courses taken by student significantly impacted how important students ranked having a Non-GMO label when choosing food ($p = 0.011$). Some participants expressed fears about companies designing GMOs and most participants indicated wanting to learn more about GMOs and the potential risks or benefits associated

with them. This indicates that the scientific community should take the initiative to educate the general public on GMOs.

Audrey Kristufek (Emily Heying, Nutrition) Hydration status, performance, and nutrition knowledge of CSB/SJU musicians

Background

College-aged musicians are a population that suffers from poor hydration status and nutrition knowledge, yet there have been very few studies with this population.

Objective

The goals of this study were to assess the nutrition knowledge of college-aged musicians and determine whether there was a relationship between hydration status and self-reported performance assessments.

Methods

Wind instrumentalists and vocalists from the College of Saint Benedict and Saint John's University (n=34) completed three tasks after four randomly chosen rehearsals during practice and concert weeks. The participants completed the General Nutrition Knowledge Questionnaire (GNKQ), provided urine samples, and filled out hydration status and performance questionnaires in which they assessed their performance and provided information about their fluid consumption. The specific gravities of the urine samples were measured to determine hydration status.

Results

A large majority of the participants were at least minimally dehydrated (82% on rehearsal days, 68% on concert days). The average score on the GNKQ was 62% ($\bar{x} = 0.62 + 0.09$). Females scored significantly higher than males on the GNKQ ($\bar{x} = 0.66 + 0.09$, $\bar{x} = 0.58 + 0.08$ respectively, $p = 0.03$). Participants were significantly better hydrated on the concert collection days compared to the rehearsal collection days ($p = 0.027$). There was no correlation between the hydration status, performance score, or GNKQ score variables.

Conclusions

The poor hydration status and low level of nutrition knowledge of the participants provides evidence that may support the implementation of a nutrition education program for the college-aged musician population.

Madeline Simonet (Emily Heying, Nutrition) Impact of Nutrition Knowledge and Body Image on BMI Assessment in College-Aged Men and Women

Background

A majority of the population struggles with body image everyday. However, college students/young adults seem to struggle the most. In a recent Psychology Today Body Image Survey, 56% of college-aged women and 43% of college-aged men were dissatisfied with their overall appearance.

Objective

To assess how accurate college-aged males and females are in estimating own body images by measuring perceived vs. actual BMI and to analyze if a participant's nutritional background knowledge affects the accuracy of BMI prediction.

Methods

One time data collection was used. Participants (n=23 female, n=17 male) estimated BMI via silhouette choice. After BMI estimation, participant height and weight were collected to determine actual BMI and compare to perceived BMI to determine accuracy. Participants also completed two body image assessment surveys and a nutrition knowledge questionnaire. Results of survey and questionnaire were used to investigate influences on BMI estimation accuracy.

Results

Females were more accurate in predicting actual BMI (-0.7+2.6) than males (1.6 + 3.6) (p=0.014). A total of 12 females underestimated BMI, while 11 female overestimated BMI (n=23). A total of 12 males underestimated BMI, while 5 overestimated BMI (n=16). Males had significantly higher average actual BMI (25.5 + 5.1 kg/m²) than females (22.4 + 2.8 kg/m²) (p=0.018). Fourth years significantly underestimated BMI (-0.71 + 2.1) while third years (1.9 + 4.8), second years (0.6 +2.6), and first years (1.9 + 3.4) significantly overestimated BMI (p=0.047). Body Shape Questionnaire scores and Body Appreciation Scale scores did not differ by General Nutrition Knowledge Questionnaire performance.

Conclusions

Some recognized themes from the data suggest that undergraduate females were more accurate in predicting their BMI than undergraduate males. Fourth years significantly underestimated BMI while third years, second years, and first years significantly overestimated BMI. BSQ scores and BAS scores did not differ by GNKQ performance. These results provide an opportunity of awareness to enforce positive body image in young adults.

Theater

AnnMarie Backstrom (Mark Hennigs, Theater) Lighting Design for Next to Normal

Next to Normal is a musical about family and mental illness. Through the lighting design I studied the script to understand the story, so I could experiment with the themes of family, love, and loss present in the story. In addition, I evaluated the character's emotions and developed a structure for portraying the character's emotions through color changing lights. Then I used these concepts to create lighting cues that would enforce the set design and this compelling story.

AnnMarie Backstrom (Mark Hennigs, Theater) Lighting Design for Dancing at Lughnasa

Dancing at Lughnasa is about a family and the memories they shared together in Ireland in the summer of 1936. The lighting design was set in non-realism, which allowed me to study the emotional flow of the story and helped me enforce the memory aspects of the script. Then I used this information to create a light plot that was versatile, so I could use the lighting cues to paint the set and backdrop to match the time of day and dialogue present in the script.

Jessica Davis (Mark Hennigs, Theater) Lighting Design for Black Satire

This will be a poster detailing research, methods, and final product of the work that went into the lighting design for the production of Black Satire earlier this semester.

Evelyn Flaherty (Mark Hennigs, Theater) The Scenic Design of "Nathan the Wise"

Hello,

My name is Evelyn Flaherty and I am a junior Biology and Technical Theatre major. I will be presenting on a project I did last semester with the

Theatre Department. When I was a sophomore, the theatre faculty approached me asking if I would be interested in being the student scenic designer for "Nathan the Wise", a play for next semester. There hadn't been a student scenic designer in 14 years so I was a bit of a guinea pig in this project. As student scenic designer, I was responsible for designing the set; which included mainly the furniture, color choices, and a huge, 20x20 ft groundcloth (basically a backdrop on the floor that actors and audience can walk on). I worked closely with Professors Kaarin Johnston (director) and Mark Hennigs (the usual scenic designer) and our technical director Kenneth Cartwright during the process.

Our student designers are usually theatre majors or minors and it is very rare when we get someone outside the Theatre Department. I want to use this opportunity to talk with students and get them interested in all the opportunities that our Theatre Department offers as well as showing them what goes into a show behind the scenes. There is so much more to theatre than acting, and I think it is important that all aspects of theatre be recognized.

Viviana Gomes, Shannon Govern, Alaina Graupman, Allegra Hoppe, Madison Molloy, Christopher Ortman, Caleb Pflug (Amelia Cheever, Theater) Costume Design Class

Research and Costume Designs for George Bernard Shaw's Arms and the Man, Comedia dell Arte Stock Characters, Mother Nature, and Tennessee Williams One Act Plays.

Jacob Laundergan (Mark Hennigs, Theater) Sound Design for Dancing at Lughnasa

Sound designing a theater show may sound like an easy job. After all, shows don't really "need" sound effects right? While technically, this statement is accurate, without them a performance can seem slow or boring or not convincing at all. Sound helps an audience fully immerse itself into a production and actually believe the story being told. This presentation will show just a snapshot of what it means to be a sound designer for a production and may just convince you that sound is not only a want, but a need.

Andrew Noah, Noah Anderson, Lindsay Janke, Breana Burggraff, Ryan McCanna (Kaarin Johnston, Theater) Collaborative Design for Jean Genet's "The Balcony"

Students from Theater Capstone will present their collaborative design for Jean Genet's "The Balcony". Students will discuss their concept as well as lighting, sound, set, and costume designs.

Dana Svensson (Amelia Cheever, Theater) Costume Design for Nathan the Wise

Original costume designs for the CSB/SJU production of Nathan the Wise in Fall of 2017.

Undergraduate Research Program

Kristina Rudin, Donovan Inniss, Matthew Miller, Morgan Craig (Lisa Lindgren, Jennifer Schaefer, Undergraduate Research Program) Mayo Innovation Scholars Program 2018

The 2018 Mayo Innovation Scholars Program (MISP) team will be presenting an overview of the program.

Henrita Academic Building 107, CSB

Center for Global Education

Caitlin Harvey (Joy Ruis, Center for Global Education) Exploring Ireland's Green Energy

While abroad in Ireland last Fall semester, I had the opportunity to observe and explore how energy is produced, and how Ireland is shifting to cleaner energy. I have created a short documentary about my travels and my findings, and it will explain how the Irish government and people are involved in the change to green energy, and the types of energy production used in Ireland today.

Ashley Yang (Joy Ruis, Center for Global Education) Japan Study Abroad Fall 2017

During my study abroad experience in Japan, I learned many things about Japanese Culture and Modern Life. The video will include several excursions my group went to such as Japanese Shinto shrines, Festivals, and traditional ceremony. It will also include seeing both traditional and modern aspects of Japan.

Music Building 028 Choral Rehearsal, SJU

Music

Allison Meinecke (Patricia Kent, Music) Communities In Song

This presentation is my contribution to the ongoing conversation about inclusivity in our CSB/SJU community. Music is the language I use to communicate. To me, music is such a powerful and obvious way to connect with people and come to understand them, yet it seems that we don't use it. With the help of my fellow students, I have collected songs that are important in their own cultures, communities, and religions and related them to our Benedictine Values in order to demonstrate that the morals and beliefs that guide our lives are not exclusive to the Benedictine tradition, but are prevalent around the globe. I invite you to "Listen with the ear of your heart" as you experience the gift of human connection that music facilitates.

Peter Engel Science Center 212, SJU

MapCores

Rita Guerra (James Crumley, MapCores) Lego Robots

We programmed Lego robots to follow a tape track.

Caitlin Harvey (James Crumley, Sarah Yost, MapCores) Color Constancy

Remember that colored dress that shook the internet because it appeared to be 2 different color schemes depending on the lighting under which you saw it?

That same problem is a real-life instance of the Color Constancy problem. The Color Constancy problem stems from the difference between how our eyes and brain perceive colors, and even when another color of light is shining on an object, we can still tell what color the object actually is. I conducted an experiment, shining different colored shades of light on a Mondrian (a white canvas with multi-colored rectangles on top). I have written a computer program that will allow me to assess these images for their true RGB color values to see if a computer can "see" the real color behind the light, just as our eyes can.

Nimco Hussein (James Crumley, MapCores) Likelihood of a Supervolcanic Eruption

A supervolcano is a volcano that rarely erupts, but has a greater magnitude of destruction after an eruption. What is the likelihood that a supervolcano will cause mass extinction within the near future? What are the

environmental and societal impacts of a supervolcanic eruption? This presentation will focus on answering these questions by presenting the probability of a supervolcanic eruption using Poisson distribution. The Poisson distribution measures the probability based on multiple occurrences within a given time scale. The derived probabilities from this research indicated that in the next 100 years, the probability of one supervolcanic eruption is 0.0043.

Morgan Murphy (James Crumley, MapCores) The Double Pendulum

This project looks at modeling the motion of a double pendulum, where one pendulum is attached to the end of another. This creates a simple example of a chaotic system, where motion of the system is dependent on initial conditions. Here, this example of a chaotic system was modeled using Mathematica. Videos of a double pendulum with different initial conditions including starting angles and initial velocities were recorded and modeled in Mathematica to further understand motion in chaotic systems.

Jessica Thwaites (James Crumley, MapCores) Modeling solitary waves in the Earth's magnetosphere

Solitary waves occur in many mediums, both on Earth and in space. These waves are a single isolated wavelength or half wavelength of a full wave. This research focuses on observing these waves at the Earth's magnetopause, the region around Earth where the Earth's magnetic field controls the motion of particles. This research applies a Gaussian function to model solitary waves in Mathematica, utilizing electric potential data gathered by NASA's Polar spacecraft. The code is able to loop through the data set, finding fit parameters for the function for each wave. It can also loop through the entirety of our data set, 183 separate waves observed by Polar. With more refinement, we hope to obtain confidence levels for the value being given in the fit, which will help us make the model more accurate. This research is ongoing, with the ultimate goal being to fit the large number of events we have and to obtain a distribution of wave sizes and other parameters in order to allow us to infer what geometric shape the solitary wave may have had.

Physics

Kaitlin McBee (James Crumley, Physics) Mass Extinction by Comets and Asteroids

We calculated the probability that the Earth would be severely damaged by a comet or asteroid.

Quadrangle 346, SJU

Sociology

Julia Abell, Hannah Stoner, Maria Schrupp (Mary Block, Sociology) Getting more white students involved in diversity/inclusivity initiatives

Our video is attempting to capture the importance of white student's involvement in multicultural events at CSB/SJU. We will illustrate both why this attendance would be valued and appreciated and why white students have been hesitant to participate in the past. By looking at multiple student perspectives, we hope to discover new ways to promote this form of cross-cultural dialogue and, ultimately, make our campus a more inclusive space.

Marissa Bauer, Dorette Neba, Allan Melendez (Mary Block, Sociology) Is CSB/SJU Diverse and Inclusive?

Is CSB/SJU diverse and inclusive? We set out to discover what Bennies and Johnnies knew about diversity and inclusivity, and how they seem them reflected on these campuses. Fellow students share their personal experiences, and provide their insights into how we can truly become a more inclusive community.

Mackenzie Carlson, Jordan Parker (Mary Block, Sociology) World Cafe

This film profiles The World Cafe, an event on campus meant to facilitate discussion about students' different experiences on campus, especially in regard to racial identity. The film strives to point out issues on campus as they're perceived by students including issues of prejudice and lack of inclusion.

Maly Lor, Kyle Wagner, Madelyn Konsor (Mary Block, Sociology) Silence is Powerful

Silence is powerful, and it is perpetuated in many ways on the CSB/SJU campuses. Recognizing that there is injustice and bigotry yet staying quiet about it harms our college community and it is an issue that needs to be addressed. The goal of our film is to take an activist approach, gain insight from admin but especially students, and empower students to use their voice in times of injustice, inequality, and inequity.

Sarah Minnehan, D'Havian Scott, Dakotah Dorholt, Madeline Anderson (Mary Block, Sociology) First Impressions/Experiences as Transnational Students

The goal of our film is to investigate the different programs and services CSB/SJU implements to help international students transition into their life as a student in a new country. We plan to interview international students and hear about their experiences and how their lives as students have progressed during their time at CSB/SJU. The film will hopefully include themes of diversity and inclusivity and what role international students play within those themes on campus.

Simons Hall G10, SJU

Political Science

Elijah Henderson (Christi Siver, Political Science) Why People Participate in Rebellion

When focusing in on the mistreatment of citizens by the government, rebellion has been considered a main effect. Due to the governmental mistreatment people are more likely to participate in rebellions. The more we understand about rebellions the more we can aid those who feel this is the last resort. Why do people participate in rebellions? I've looked at a lot of qualitative data that examined different surveys of people. Looking at the surveys I found that toxic masculinity as well as grievances towards the government were some of the main reasons why people participate in rebellion. By using qualitative data, the survey results played a huge role in the influencing of my data. Responses by those who participated were collected and examined to find different patterns. This study is important because it highlights the reasons that lead into rebellions. By tackling these issues before they expand into actual rebellions we can identify and make these issues aware to the rest of the world. The more awareness for these issues can address the problems the citizens face before the resort to rebellion.

Ella Lindberg (Christi Siver, Political Science) The Different Variables to Humanitarian Crises

After a natural disaster, groups and organizations flood in to "help", but do these organizations really help during a country's time of need? My research takes a look at the increasing humanitarian crises all around the world and whether or not an increase in collective action occurs when multiple interest groups are present? I take a look at past humanitarian crises and

how different variables during these crises are affected such as interest groups, aid, and external state influence. I will be using a mixture of quantitative approach by drawing on existing data and qualitative approach by looking at three case studies in order to support my question. The mixture of these two approaches is beneficial in all three of my independent variables because they allow my research to be more well-rounded so I can get clear conclusions. This information will prove to be useful in order to determine whether or not collective action benefits organizations and countries after a crisis or it hinders their ability to receive aid. This information is important in order to better prepare for crises that could potentially happen in the future. Humanitarian crises are an overarching topic that affects millions of people worldwide and does have a lasting impact on nations and its citizens.

Aidan Lorentzen (Christi Siver, Political Science) Culture and Socioeconomic Affects On Political Ideology

Some groups, such as farmers in rural areas or groups of wealthy people in the cities, often hold similar political ideologies with one another. How do these local cultures and socioeconomic situations affect people's political ideologies? To simplify the understanding of the political ideologies that people hold, I will be looking at them as either liberal or conservative, without allowing any middle ground between the two. I will be surveying people to understand the culture of the area that they live in and the socioeconomic statuses of the subjects' families. To collect the data I will be issuing a survey to willing participants of different backgrounds from developed countries all over the world. The model will only be looking at developed democracies because I only want to get the points of view of people who have similar levels of involvement in the political systems of their countries. The survey will ask questions about how they lean politically, what their socioeconomic background is, what their perceived social mobility is, and what local culture that they are surrounded by. This study will help to better understand what factors play a role in how people decide to act politically and what factors lead people to vote in favor of specific parties.

Tracy Magooba (Christi Siver, Political Science) External and Internal Threats: The Shaping of a State

This paper will be examining the role of external and internal threats and how they shape the development of a state. The study looks at the differences between strong and weak states that are developing by

examining how autonomy and sovereignty is maintained or undermined with pressures from such internal and external threats. Additionally I will be examining the differences between the two kinds of threats and what kinds of risks they pose to the political, civil, and economic institutions of the state. I will also examine the history and legacy of colonialism that shaped the development of the state in relation to how the external and internal threats evolved. Ultimately its important to understand the impact external actors whether, internal or external, have on state behavior and norms.

Alexander Modeas (Christi Siver, Political Science) Social Media's Role in Social Movement Participation

As technology continues to advance in our society, social media has played a more pivotal role in shaping how people think and react to politics.. The way we've looked at social movements today (Black Lives Matter, LGBTQ +) and the amount of information and perspectives out there is much different than social movements before (Civil Rights Movement) where online social media was not existent. Although there have been significant changes in news over time, does it have an effect on social movement participation? The question I will be investigating is the effect of traditional & social media on social movement participation. There our a number of different theories that I research regarding the media's effect. One claim I test is proposed by Sidney Tarrow, as she claims that the media have no effect on social movements, and our simply focused on the business of reporting unless the movement escalates to violence or intensity. Another lense I look at this question from is through state-owned media versus privately-owned media. Based on my analyzation of research by Scott Radnitz, I investigate what types of media discourage or encourage political activism. I'm looking to find the psychological reactions to social media and how it translates to activism within social movements. I'll be analyzing trends and hoping to develop an initial understanding of the topic, which closely aligns with a qualitative approach. This study is important because we'll be able to dictate whether or not social media is detrimental or healthy to an informed and active citizenry.

Allison Ryan-Mosley (Christi Siver, Political Science) Factors Explaining Women's Empowerment and Economic Development

Women make up half of the human race, yet, in nearly all aspects of the social condition, they are disadvantaged. Women have less political representation, less access to adequate medical health resources, less legal

protection, and less access to education than men across the world (Martha Nussbaum, 1947). Because of the aforementioned morally compelling reality of women, women's empowerment should be at the forefront of the political agendas of policymakers. Nevertheless, an economic incentive often increases the likelihood of change as well as the urgency of implementation. Recent cross-country studies illustrate a groundbreaking positive correlation between women's empowerment and economic development. In my research, I explore the following question: what structural factors explain the positive correlation between women's empowerment and economic development? I will test women's representation in government, maternal and child health, women's financial inclusion, and investment in women's education as the structural factors that explain this correlation. I will use two-three different countries as case-studies to test these variables, and I will perform a process-tracing analysis that illustrates each step that occurs in a country from the point of women's empowerment to a subsequent result of economic development. This study strengthens the findings from the groundbreaking cross-country studies by applying it to specific case-studies and outlining the explicit process of this transformation for policymakers to consider.

Simons Hall G30, SJU

Political Science

Chloe Becker (Christi Siver, Political Science) Effects of Nationalism on War: Yugoslav Wars

The Yugoslav Wars fought from 1991 to 2001 are a perfect example to study the effects of nationalism on war and what specific components of nationalism are used and manipulated during times of war and what makes it such an effective tool to be utilized. Overall, how do leaders use aspects of nationalism to motivate people to go to war? The first explanation for this puzzle that I will test will be the creation of the Other as an enemy in a nation's national myth, or more simply, "Otherization" and the creation of a threat. This surrounds the idea that myths are escalated during conflict to the point that a differing ethnic group from the state itself is presented as evil and as an enemy to go to war against. The second explanation for this puzzle is the importance of a state's territory and the purity of their identity. Within a nation's myth, a differing ethnic group is sometimes framed as an obstacle to the success of the nation at hand and a riddance of this group and having a territory specifically for the nation alone will create a more pure and thriving nation. The method I will use to test these explanations will follow along a qualitative analysis of case studies of ethnic

wars and wars for independence, specifically looking at the Yugoslav Wars and the Rohingya crisis in Myanmar. Studying how nationalism works to encourage war and deepen ethnic divides is essential in understanding what nationalist methods used by leaders, from propaganda to speeches, is to evoke pride and what is potentially dangerous.

Matthew Burke (Christi Siver, Political Science) Democratization and the Proliferation of Democratic Institutions: Successes and Failures

After the collapse of the Soviet Union, the former communist states of eastern Europe and Central Asia were left to create new governmental structures. Their successes and failures have allowed for the study of how the formation of institutions allows for the development of democratization within a state. This essentially has allowed political scientists to approach answering a difficult question: How are democratic institutions fostered after the collapse of authoritarian regimes, and what factors separate those which successfully do so from those which slip back into authoritarian governance? To explain how transition away from authoritarianism functions, it is essential to focus which institutions are maintained from the previous regime, and whether the use of violence in the transition matters in determining the nature of the government which emerges from it. If institutions are maintained, they may push the new government toward the authoritarian tendencies of the old regime, and there are significant differences in democratization within those states which had a violent revolution in contrast to those which transitioned peacefully. The clearest examples are the post-Soviet states, as they begin the process with largely identical governing structures, but diverge wildly in both structure and nature of their transition. This makes them useful as a case study. In particular, using Azerbaijan, Russia, and the Czech Republic creates a useful model representing a return to authoritarianism, a flawed democracy, and a full democracy respectively. The study of democratization and the proliferation of democratic institutions is an increasingly critical field. As more nations transition away from authoritarianism, it is essential to understand how to do so successfully, and to learn from those states which failed to do so.

Daniel Davitt (Christi Siver, Political Science) Rent-seeking strategies and failed states: The Case of Namibia

African diamonds are an abundant and lucrative resource. They have been the staple of African rent-seeking nations. These diamonds have both fueled civil wars and exacerbated regional tensions, causing many states to fail.

However, in the case of Namibia, diamonds bound the elites of a country to the regime that was in power. While Namibia did experience a brief civil war, the elites and regime were bound together, ultimately causing a comparably stable state. My research question is: How does a variation in rent-seeking strategies affect fragile and failed states? I will test documented rent-seeking states and compare the strategies used and what outcomes occur to the state. In addition, I will also test the correlation in the number of logistics needed to extract a resource, to the potential binding that occurs to the regime and elites of the state. To complete this research, I will look at the rent-seeking case studies for various countries, from different parts of the world, and test how their rent-seeking affected public policy and the outcome of the state. The importance of this research is to expand the knowledge that we have on how rent-seeking and failed states correlate. With this knowledge, politicians in the future will be able to give better recommendations on how to help fragile and failed states.

George Doyle (Christi Siver, Political Science) Perspectives of Democracy within Predominantly Muslim Countries

Islam is currently both the world's fastest-growing religion and the second-largest religion, according to Pew Research Center, and current data projects the world's Muslim population to increase up to 70 percent by 2060, up to 3 billion from 1.8 in 2015. While one could be tempted to think otherwise, multiple studies and surveys have shown that most Muslims worldwide are in support of democracy. Given this, it is of the utmost importance to study Islam's relation to democracy, especially since support for democracy varies among Muslim-majority countries. What factors account for differences in support for democracy? I will test several explanations for this variance, including levels of religiosity, modernization, and individual freedoms, as well as several control variables such as gender and age. To do this, I plan to conduct a quantitative study using regression analysis to plot measures of these variables against levels of support for democracy taken from the World Values Survey. In testing how strongly these variables correlate with support for democracy, I hope to gain more insight into the political role and democratizing potential of Islam itself, as well as how other non-religious factors can potentially shape individuals' perspectives of democracy within predominantly Muslim countries.

Cole Souto (Christi Siver, Political Science) The Funding of Rebellion

The Eritrean People's Liberation Front (EPLF) and the Revolutionary United Front (RUF) of Sierra Leone were two rebellions that took different

approaches in their actions. One was just focused on changing the current regime that was in power, while the other wanted to pillage the entire country. These two rebellions, and other rebellions like this, have provided researchers with data to further examine existing cases and their results in order to try and answer the question: how are rebellions supported? The variables that I examined is where do the rebellions get their funding from. Next, the research examines how much money do the rebellions shave incoming? The data collection methods are a mix of qualitative and quantitative drawing statistics from informal economy stats where the rebellion is taking place as well as data from the U.S. Treasury terrorist finance tracking program. The study of this topic is significant because it will help to further understand the sources of rebellion funding, and if they are coming from criminal activity, possibly stopping that source of funding.

Juan Vasquez Garcia (Christi Siver, Political Science) British Immigration Policies

After the vote on Brexit, one thing was made clear. A slight majority of British citizens rejected the European Union and wanted nothing to do with it. Although the biggest issue that came during the Leave campaign was how immigration through policies set by the European Union had harmed working-class Britons. By comparing three different years across the last two decades in a case study format, I hope to clarify how British society was affected by the immigration policies set by the United Kingdom initially AND was later READJUSTED by the European Parliament in Brussels.

Abigail Zieska (Christi Siver, Political Science) Correlating Gendered Roles and Gender Equality

Historically, women stayed at home and took care of the kids while men went out and worked. In time, women have expanded their presence in the workforce and now dominate certain fields, such as childcare, teaching, and nursing. Men still dominate many fields such as construction, manufacturing, and political positions. Despite the progress women have made toward equality in the professional world, gendered professions are an example of the progress that society has not yet made toward gender equality. My research project asks the question: What contributes to gender equality? I will measure gender equality based on the Gender Development score from the United Nations for each country I analyze. I will compare the score to statistics about the workforce from the Bureau of Labor in the United States, Canada, and Germany. I will also compare the Gender Development scores of these countries to data about the demographics of

different fields of study. In addition, I will compare the Gender Development scores of Germany, the United States, and Canada to the percentage of stay at home moms compared to the percentage of stay at home dads. I will be using a quantitative approach by analyzing information about the entire populations of these countries. The findings of my research project will determine whether there is a correlation between gendered roles and gender equality. Additionally, my research will identify potential contributors to gender inequality, along with potential solutions, which could be beneficial information to use as a tool to help better equality for women.

Fine Arts Presentations:

Theater

Schedule

3:00 - 3:20 PM

BAC Colman Theater Ryan McCanna, Kevin Duong, Stephen Dornbach, Farrad Williams, Sarah Griffin, Breana Burggraff, Lindsay Janke, Dana Svensson, Sarah Larson (Kaarin Johnston, Theater) Theater Research and Competition, KCACTF 2018

3:30 - 3:50 PM

BAC Colman Theater Lindsay Janke, Noah Anderson, Andrew Noah, Breana Burggraff, Ryan McCanna (Kaarin Johnston, Theater) A Proposed Season: Theater Capstone 2018

Abstracts

McCanna, Duong, Dornbach, Williams, Griffin, Burggraff, Janke, Svensson, Larson: This January, eight students travelled to Des Moines, Iowa to present and compete in the regional level of the Kennedy Center American College Theater Festival. Actors, designers, and playwrights alike joined students from across the nation and competed for scholarships, attended workshops, presented original designs, and challenged each other to think critically and creatively during about this unique opportunity.

Janke, Anderson, Noah, Burggraff, McCanna: Discussion and presentation of a proposed college/university theater season created by the Theater Capstone Class of 2018.

Humanities Presentations:

Gender & Women's Studies

Schedule

2:00 - 3:00 PM

CLEML Study Area

Clarice Bartek-Miller, Francisca Caballero Gonzalez, Sarah Dischinger, Lucy Dornbach, Gladys Galvez, Lisa Giering, Blake Gilmore, Jayme Harlander, Klive Hume, Sarah Knoblauch, Martha Koenig, Marcos Nunez, Rachel Perri, Paige Ryer, Alexis Salas, Kendyll Spells, Frances Thornton, Belinda Vang (Madhuchhanda Mitra, Gender & Women's Studies) Gender Justice: Why Should You Care?

3:00 - 3:30 PM

CLEML Creativity Lab

Madeline Barclay (Madhuchhanda Mitra, Gender & Women's Studies) Privilege, Power, and Perverse Speech: A Feminist Examination of Delivery and Parenting Systems in Health care

3:00 - 3:30 PM

CLEML Creativity Lab

Paige Ryer (Madhuchhanda Mitra, Gender & Women's Studies) Gender and The Bachelor

Abstracts

Bartek-Miller, Caballero Gonzalez, Dischinger, Dornbach, Galvez, Giering, Gilmore, Harlander, Hume, Knoblauch, Koenig, Nunez, Perri, Ryer, Salas, Spells, Thornton, Vang: The students of GEND 381 class will present six Public Service Announcements addressing various forms of gender injustice that happen all around us but which remain largely invisible. The public presentation of these student-created PSAs aim to create awareness of the "hidden cost" of gender injustice that affects all of us.

Barclay: This presentation seeks to expose the levels of privilege, power, and perverse speech found operating in healthcare delivery and parenting systems. To begin, I wanted to explore the inequalities between parents during the birthing process and in raising a child. Furthermore, I wanted to examine the relationship between parents and their provider in order to determine how a provider influences the family dynamic. The texts I examined explored the history of inequalities within midwifery, looked at the evolutionary and social background of care, and discovered

how different partners define their status as a parent within their family. I also observed gendered language used by providers to new parents in a classroom setting. Through this research, I discovered that exclusive language used by providers and clinics deters some parents from using birthing or parenting services. My findings suggest that issues such as racism, sexism, homophobia, and other forms of discrimination found within the foundation of birthing systems relate to how providers treat the families, which then relates to power structures within the family dynamic. In conclusion, I will discuss how my research will inform my decisions as I move into the Health Care field after departing from the College of Saint Benedict. I will discuss the need to create space for marginalized voices and take action by listening and adapting, not dominating and projecting.

Ryer: My project is about the reality television series *The Bachelor*, and the social consequences that arise from consuming the series. The "perceived reality" of the show is what makes it dangerous for society by giving us unrealistic expectations of men and women in relationships. *The Bachelor* also endorses and exaggerates many gender and racial stereotypes which in turn have an effect on the real-life relationships of television viewers. I will look deeper into how racism and sexism are embedded in the series and what that says about reality television consumption.

Hispanic Studies

Schedule

1:00 - 2:00 PM

Gorec 204

Keegan Conrad (Nelsy Echavez-Solano, Hispanic Studies)
"Life in Movement': The stories of Central American and Mexican undocumented immigrants seeking refuge in through the work of Poetry."

Abstracts

Conrad: This article examines the journey of Central American and Mexican undocumented immigrants and the realities they had to face through written poetry. By examining this phenomenon, I explain the historical context of what caused the wave of Central American and Mexican immigration to the United States from the 1980s to 2000s. In addition, I focus on the experience of the undocumented immigrant through poetry that was made by both migrants and poets. By focusing

on this theme we can understand the root of this migration and its social and economic consequences such as Femicide (violence against women), poverty, and an existential crisis in the lives of undocumented immigrants. Data had been collected from anthologies, published documents from refuge shelters, historical research, and anthropological studies. This article challenges the socio-political rhetoric and misconceptions of undocumented immigrant by hearing the stories of undocumented migrants while they are in movement.

Languages & Cultures

Schedule

1:05 - 1:25 PM

Quad 254

Aimee Hanson (Jason Schlude, Languages & Cultures)
Femme Fatales, Foreigners, and Fiction

1:25 - 1:45 PM

Quad 254

Olivia Busch (Scott Richardson, Languages & Cultures)
Modern Classical Education: Is It a Paradox?

1:45 - 2:05 PM

Quad 254

Erin Baumer (Charles Bobertz, Jason Schlude, Scott Richardson, Languages & Cultures) Christians, Pagans, and Death

2:05 - 2:25 PM

Quad 254

Cole Timko (Wendy Sterba, Languages & Cultures)
Mozart's "Schicanery"

Abstracts

Hanson: In Latin literature, particularly of the Augustan period, a trope appears frequently across the writings of poets and historians writing to emphasize a moral point: powerful foreign woman seducing Roman males and, in doing so, seeking to undermine Roman society. Vergil, Horace, and Livy exemplify this theme in their characterizations of Dido, Cleopatra, and various Etruscan women, manipulating this archetype to achieve their various theses. In *The Aeneid*, Dido is portrayed as a distraction from Aeneas' god-ordained future and, by extension, she becomes the symbol of cultural stagnation. Horace, in his poem "Cleopatra" paints the Egyptian queen as the vicious enemy of Roman goodness, a challenger to Roman social order whose fate signifies the moral superiority of the Roman state. Livy, by examining a span of Etruscan women, from wanton princesses to the scheming Tanaquil to

crazed Tullia, uses these women as a criticism of Etruscan culture and, with the introduction of Lucretia, a juxtaposition of foreign hedonism to Roman virtue. While an initial analysis of this trope may lead a reader to simply conclude that Roman authors, tinged with the bias of a heavily patriarchal society, viewed women as nothing more than morally-deficient temptresses, the uses of these archetypal female characters indicates that they serve a different, distinct purpose: the glorification of Roman virtue. Rather than arising from blunt sexism, I argue that moral deficiency is embodied in female characters not simply because of Roman views on gender, but because of the ideological opposition which they represent. These women are foils of Roman social morality, not reflections of Roman ideologies towards gender.

Busch: This thesis explores the value of a classical education in 21st century America. Using the ideas of educational reformers such as E.D. Hirsh Jr. and John Heath, this paper challenges our modern perceptions of what is meant by a “well-educated individual” with the goal of reestablishing the practice of memorization, achieving a foundational understanding of history and the English language, introducing the importance of a diverse reading background, and cultivating an ability to understand and appreciate the Other. The purpose of this paper is to demonstrate that a modern classical education is not a paradoxical concept, but rather a effective, world-expanding method by which to train up young minds.

Baumer: It is commonly believed that Christianity was a new and original religion, but in fact, many pagan religions contributed to Christianity's ideology. In my talk, I will focus on how these religions influenced Christian views of the afterlife, and with that, their views on what the soul is and what it means to be a "good" person.

Timko: When most people think of Mozart, they think of his symphonies, his piano concerto's, or any of his countless musical works. Yet, through close inspection of his compositions along with his letters and his diary, a different side of Mozart is revealed. His mastery of anything he attempted was universal, or at least so he writes of himself in his typically braggadocious tone. Through his written works—which were often penned in a mixture of French, German, Latin, and Italian—he also left small “Zeichnungen”, doodles, through which, details about Mozart's unconscious arise. If as theorist Mladen Dolar suggests, Mozart's diary and music along with his multilingual writings are: “a combination and intertwining of different and heterogeneous traditions—Italian opera, German Singspiel, French gallantry, and Latin church music” (29), what is one to make of the doodles? My senior project attempts a reading of Mozart's doodles in light of his musical output by pairing Mozart and that other famous denizen of Vienna: Sigmund Freud to discuss the nature of what Derrida might have recognized as Mozart's graphic "(S)chicanery".

Natural Sciences Presentations:

Physics

Schedule

2:00 - 2:30 PM

PEngl 167

Michael Nelson (Dean Langley, Physics) Farnsworth-Hirsch Fusor

3:00 - 3:30 PM

PEngl 167

Erick Reyes (Todd Johnson, Physics) Supercontinuum Generation Through Nonlinear Media

3:00 - 3:30 PM

PEngl 167 -

Wednesday (4/25)

Melissa Corrigan (Dean Langley, Physics) Period-Color-Luminosity Relationship in Binaries Using WISE

3:30 - 4:00 PM

PEngl 167

Andrew Hoyt (John Adam Whitten, Physics) Solar Power Outputs from Direct vs Indirect Sunlight

3:30 - 4:00 PM

PEngl 167 -

Wednesday (4/25)

Tyler Meyer (Dean Langley, Physics) Portable Hydroelectric Generator

4:00 - 4:30 PM

PEngl 167 -

Wednesday (4/25)

Matthew Stiller (Gregory Taft, Physics) Dynamic Reflectivity and Transmissivity Measurements of Black Phosphorus Flakes

4:30 - 5:00 PM

PEngl 167 -

Wednesday (4/25)

Claire Nelmark (Gregory Taft, Annette Raigoza, Physics) Building and Optimizing a Raman Spectroscopy System for Chemical Analysis

4:30 - 5:00 PM

PEngl 167

Robert Skiba (Gregory Taft, Physics) Femtosecond Pump-Probe Measurements of Lithium Niobate

Abstracts

Nelson: We built a Farnsworth-Hirsch fusor in order to study neutron emission from nuclear fusion. Its construction involved a mechanical roughing pump, an oil diffusion pump, a vacuum chamber, a high negative-polarity power source, and a bubble dosimeter neutron detector. To determine the efficiency of the fusor we look at the neutron emission flux and the power input. We then compare those results to obtain a ratio of power input versus the power output by the fusor.

Reyes: Supercontinuum is a process where laser light is converted to light with a very broad optical spectrum. Supercontinuum is achieved by propagating pulses through nonlinear media such as photonic crystal fibers. This results to a very broad spectra and is often described as a kind of laser rainbow.

Corrigan: Please note that this presentation is part of the Wednesday Physics Talks.

Hoyt: The power output from a solar panel was measured in two configurations: one with incoming sunlight directly perpendicular to the solar panel, and one with the solar panel directly opposite from the incoming sunlight. The data was used in calculations aimed to determine the percentage of the St. John's University solar power output coming from direct and indirect sunlight. As expected, direct sunlight contributes much more to St. John's University's overall solar power output, although the percentage varies throughout the day.

Meyer: Please note that this presentation is part of the Wednesday Physics Talks.

Stiller: Please note: This presentation is part of the Wednesday session of Physics Talks.

We studied the dynamic reflectivity and transmissivity of black phosphorus flakes using a pump-probe laser system. Charge carriers in the flakes were excited with ~50-fs laser pulses and then subsequent changes in the optical properties of the flakes were measured. The relaxation time of the excited charge carriers was measured to be ~250fs from transmission measurements. Reflectivity measurements showed longer relaxation times which could not be measured sufficiently due to limitations of the experimental setup.

Nelmark: Please note: This presentation is part of the Wednesday session of Physics Talks.

A Raman scattering spectroscopy set-up was designed and optimized using free-space optics, a visible light spectrometer, and a 532-nm pump laser. The spectrometer was placed to collect Raman scattered light at a 90° angle from the incident pump laser light. This geometry, in combination with an interference filter

that blocked 532-nm light, minimized the unwanted detection of incident pump light and Rayleigh scattered light by the spectrometer. Changes to the collection optics and the spectrometer were made to improve the detection sensitivity. The system was tested for accuracy by measuring the Raman scattering of a methanol sample. A broad background peak was removed from the measured spectrum using Fourier filtering. Narrow peaks in the measured spectrum match with those in a previously reported Raman spectrum for methanol. Once the system was tested, Raman scattering data was collected to analyze various chemical species.

Skiba: Ultrafast dynamics of lithium niobate were measured using 50-fs pulses from a Ti:sapphire laser system. Pump pulses with energy of 0.5 nJ and 800-nm center wavelength were used to excite charge carriers in the sample. Probe pulses with energy less than 5% of the pump pulse energy and the same center wavelength were transmitted through the excited sample at a controlled time delay after the arrival of the pump pulse. Small relative changes in the transmitted probe light were measured with a photodiode detector and lock-in amplifier. These measurements show changes in the transmission versus time delay that persist for about 2 ps after the arrival of the pump pulse.

Social Sciences Presentations:

Accounting & Finance

Schedule

12:00 - 12:15 PM

Simms 330

Tevin Zavadil (Warren Bostrom, Accounting & Finance)
How does firm size effect job satisfaction and turnover?

12:00 - 12:15 PM

Simms 340

Stephanie DuBord (Warren Bostrom, Accounting & Finance) What is the typical path to becoming the CFO of a Fortune 500 Company?

12:15 - 12:30 PM

Simms 330

Tara Paulsen (Warren Bostrom, Accounting & Finance)
What characteristics of Fortune 500 CEO's most commonly increase their total compensation?

12:15 - 12:30 PM

Simms 340

Zachary Glienke (Warren Bostrom, Accounting & Finance) Is there a difference in job satisfaction and job turnover rates amongst different sized accounting firms?

1:00 - 1:15 PM

Simms 310

John Archbold (Warren Bostrom, Accounting & Finance)
CEO Profiles

1:00 - 1:15 PM

Simms 330

Conor Failor (Warren Bostrom, Accounting & Finance)
What are the trends in Fortune 500 CEO's and CFO's?

1:00 - 1:15 PM

Simms 340

Nicholas Haase (Warren Bostrom, Accounting & Finance) CEO Profiles

1:15 - 1:30 PM

Simms 310

Dominick Thompson (Warren Bostrom, Accounting & Finance) Does Advanced Education Benefit CPAs?

1:15 - 1:30 PM

Simms 340

Lauren Perinovic (Warren Bostrom, Accounting & Finance) Which factors most heavily influence the audit fee?

1:15 - 1:30 PM

Simms 330

Ian Langeberg (Warren Bostrom, Accounting & Finance) Are there definitive trends regarding the Big 4 firms and their audits of Fortune 500 companies?

1:30 - 1:45 PM

Simms 340

Quinn Renshaw (Warren Bostrom, Accounting & Finance) How do lower GPA accounting students/grads fare when attaining their first job/internship?

1:30 - 1:45 PM

Simms 330

Angela Yang (Warren Bostrom, Accounting & Finance) Power Representations in CEO Profiles

1:30 - 1:45 PM

Simms 310

Tyler McCollum (Warren Bostrom, Accounting & Finance) What factors contribute to or have the biggest impact on career success?

1:45 - 2:00 PM

Simms 330

Kellen Metling (Warren Bostrom, Accounting & Finance) What factors, including GPA, affect career success for accountants?

1:45 - 2:00 PM

Simms 310

Jennifer Kleason (Warren Bostrom, Accounting & Finance) Does gender affect compensation as well as other qualifications of CEOs or CFOs in the Fortune 500 or the company's overall success?

1:45 - 2:00 PM

Simms 340

Anthony Strelow (Warren Bostrom, Accounting & Finance) Is there higher job satisfaction and lower turnover at smaller accounting firms/offices as compared to larger ones?

2:00 - 2:15 PM

Simms 330

Patrick Strom (Warren Bostrom, Accounting & Finance)
What sorts of trends exist among Fortune 500 CEOs and CFOs?

2:00 - 2:15 PM

Simms 340

Sherry Thao (Warren Bostrom, Accounting & Finance)
What Types of Trends Are Found Within The Fortune 500 Companies and Its Respective Audit Firms?

Abstracts

Zavadil: This project is about researching the impact of firm size on job satisfaction and turnover. The research was conducted by analyzing and manipulating data obtained through a survey sent to Minnesota CPAs asking various questions involving their job satisfaction and turnover.

DuBord: My presentation focuses on the path to becoming a CFO of a Fortune 500 Company. It further examines the CFO profile trends based on gender.

Paulsen: This research study evaluates the characteristics of CEO's and CFO's of Fortune 500 companies. The goal was to determine common characteristics among each group, as well as to determine if there was any correlation between specific characteristics and increased total compensation.

Glienke: I analyzed survey data to find out what factors contribute to job satisfaction and job turnover and compared those factors to survey responses from CPAs in different sized accounting firms.

Archbold: N/A

Failor: This is our capstone presentation that looks at the Fortune 500 companies and shows the trends of what a CEO or CFO might look like

Haase: What are some of the similarities and differences between the Fortune 500 CEOs and what does their path look like?

Thompson: I conducted a survey of Minnesota CPAs regarding their perceived benefits of obtaining or not obtaining post-undergraduate education, in addition to having their CPA license.

Perinovic: My presentation is on which factors most heavily influence the audit fee.

Langeberg: I, along with 8 others from my Accounting Capstone class gathered data regarding the "Big Four" firms and their audits of the Fortune 500. We used these companies' 10-k and proxy statements to find data about their audit fees, revenues, and who audits each company. We also looked into their sector and location of the headquarters. I analyzed this data to look for trends regarding the audit firms based on location, sector, and fee structure. These trends are the basis of my scholarship and creativity day presentation.

Renshaw: Entails data analysis from a survey of a couple hundred CPAs on how their GPAs were affected in college and how it helped/hinder then in the past and present. Helps show how GPA may or may not affect your career success.

Yang: This project explores the power representations within CEO profiles, asking whether they exist and the causes for them.

McCollum: My project consists of analyzing results from a survey conducted by my professor, Warren Bostrom. This survey consisted of questions about college activities (both academic and extracurricular), starting and current salary, and what people value most in their jobs.

Metling: This project reviews the relationship between college GPA and career success.

Kleason: This presentation includes an analysis of Fortune 500 CEOs and CFOs in terms of the gender gap.

Strelow: I looked for evidence in data collected from a survey that would explain whether job satisfaction is higher and job turnover is lower at smaller accounting firms/offices as compared to larger ones. Further, I examined the data to find potential factors that contributed to different levels of job satisfaction and turnover at various sized accounting firms/offices.

Strom: This project analyzes trends among Fortune 500 CEOs and CFOs related to gender, compensation, and experience.

Thao: This presentation will be an analysis on different types of trends or correlations between the Fortune 500 companies and its audit firm.

Entrepreneurship

Schedule

2:00 - 6:00 PM

ALCUL 178

Muqkadeen Poole, Gary Harala, Bardia Bijani Aval, Bridget Erickson, Samantha Halseth, Jacob Kirsch, Lucas Harmon, William Gillach, David Johnson, Hayden Lacy, Anahi Ortiz-Acosta, Joseph Caughey (Paul Marsnik, Entrepreneurship) Entrepreneur Scholars E14 Feasibility Analysis Presentations

Abstracts

Poole, Harala, Bijani Aval, Erickson, Halseth, Kirsch, Harmon, Gillach, Johnson, Lacy, Ortiz-Acosta, Caughey: Members of the Entrepreneur Scholars E14 cohort will be presenting their Feasibility Analysis Presentations to a panel of CSB/SJU alums to provide insight on their venture viability and market potential. Students will use this feedback to continue pursuing the venture launch or pivot to alternative venture possibilities in Fall 2018 during the 2nd course of the Entrepreneur Scholars curriculum sequence. Presentations will be scheduled in increments throughout the presentation time block.

Exercise Science and Sport Study

Schedule

2:30 - 3:15 PM

ASC 105

Madeline Bremel, Kendall Johnson (Mary Stenson, Exercise Science and Sport Study) Practical methods of health behavior change: A discussion of two interventional studies

Abstracts

Bremel, Johnson: Programs designed to improve health outcomes do not always result in meaningful positive behavior change. Their efficacy may be limited by clinical resources and variation in motivation and learning style between patients. This presentation compares two studies: one aimed at improving the average daily step count of faculty and staff at the College of Saint Benedict through text message or social media encouragement, and one aimed at improving the bone health of female students through an online video or one-on-one provider-patient intervention. Both studies provide interesting comparisons of health interventions across different age groups, and between education versus motivation based behavior change. Both studies address the importance of applying research to the clinical setting. In the faculty/staff population, despite the absence of significant behavior change, 70.4 percent of participants who completed the post intervention survey

reported text message and social media encouragement helped them be more active. Participants identified accountability as the main motivator for behavior change. Technology based health interventions may be important in making desirable health outcomes more accessible to patients and reduce the burden on health professionals. No gains in student learning in the education based intervention led to corresponding changes in behaviors. This provides some insights into the discordance between knowledge and behavior in college students, indicating a motivation instead of education based intervention may be more effective in this population. When considered together, the results of these two studies provide important insights for future research towards accessible behavior change.

Global Business Leadership

Schedule

2:30 - 3:00 PM

ALCUL 381

Precious Drew, Rachel Broos, Brennan Lafeber, Michael Flicek, Sierra Schmelz (Stephen Schwarz, Global Business Leadership) Society for Advancement of Management Case Study Research

Abstracts

Drew, Broos, Lafeber, Flicek, Schmelz: The S.A.M. Student Case Study Competition Team consists of five CSB/SJU students that participate in a National Case Study Competition. Students in this program conduct industry and company specific research in order to travel to the S.A.M. Conference and present their strategic recommendations to a panel of judges, (academic and representatives from the company)

This year's case study was on Ryder Logistics and the S.A.M. won 1st place in this national case competition in Washington D.C.

Students will present an overview of the program and discuss the research methods used to do strategic analysis on an organization.

Political Science

Schedule

12:00 - 12:45 PM

Abstracts

Anderla: The alliance of the United States and Japan has withstood years of cooperation and competition, emerging from a violent past as unlikely partners. The alliance continues to face challenges and the solutions to these problems suggest a unique relationship. Beginning as violent competitors, the international system witnessed the creation of a strong and mutually beneficial alliance. This paper considers leadership role conception, role prescription and norms of consultation that contribute to changes within alliance relations, like those that occurred between the United States and Japan. Analyzing these variables in the case of the US-Japan alliance provides a clearer understanding of what contributes to policy change in bilateral alliances. I analyze the alliance at two different time periods in the relationship. First, alliance relations and security policy during the Nixon and Sato leadership give a better understanding of the Okinawa Reversion and Nuclear Deterrent issue of 1972. Second, the 1991 Persian Gulf Crisis raised tensions due to unclear roles and lack of consultation regarding the conflict. The roles that these nations play in the alliance help to understand how tensions are either alleviated or heightened due to role variation and consultation practices. Role conceptions and perceptions along with formal or informal norms of consultation contribute to changes in alliance relations. Tensions are alleviated when norms of consultation exist and when roles are in alignment. Research on alliances often ignores normative variables and attributes much of change to arguments in the realist camp that emphasize system pressures. Focusing on different aspects of decision-making expands the research on change in alliances and fills the gap of intra-alliance relations research.

Interdisciplinary Presentations:

Institute for Women's Leadership

Schedule

1:00 - 2:00 PM

HCC Alum Hall

Martha Koenig, Alejandra Gallardo, Mary McConville, Louise Haupt, Alexis Solheid, Caitessa Venables, Elizabeth Riitters, Brigid Mark, Caiying Selmo, Xia Vang, Elise Miller, Alexis Neas, Julia Petron (Corrie Grosse, Institute for Women's Leadership) Who is a Bennie? Who is a Johnnie?: An Analysis of Inclusivity on Our Campuses

Abstracts

Koenig, Gallardo, McConville, Haupt, Solheid, Venables, Riitters, Mark, Selmo, Vang, Miller, Neas, Petron: The Hynes Scholars are a group of sophomore CSB students who spend a year engaged in learning and research related to gender and leadership. This year they are conducting research to understand how students and alumni conceptualize the “Bennie” and “Johnnie” identities and how to enhance inclusivity on the campuses of CSB/SJU.

